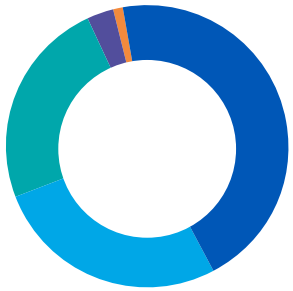
FOCUS FORWARD

ANNUAL REPORT
2023

Key Figures

	2023	2022
Sales	**€46,627 million**	**€43,801 million**
Adjusted EBIT Adjusted EBIT margin	**€2,367 million** 5.1%	**€2,038 million** 4.7%
Net profit or loss before tax in % of sales	**€763 million** 1.6%	**€562 million** 1.3%
Net profit or loss after tax	**€126 million**	**€376 million**
Adjusted free cash flow[1]	**€1,382 million**	**€544 million**
Investment in property, plant and equipment	**€2,235 million**	**€1,888 million**
Equity ratio (Dec. 31)	**19.7%**	**22.1%**
Employees (Dec. 31)[2]	**168,738**	**164,869**



Sales Development by region

- 44% Europe
- 28% North America
- 24% Asia-Pacific
- 3% South America
- 1% Africa

74%

Cars and light commercial vehicles <6t

18%

Commercial vehicles >6t

8%

Construction and agricultural machinery, rail drives, marine craft and wind power

€46.6 billion

Sales

€3.5 billion

Expenditure on research and development

168,738

Employees

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

Company Profile

Focus on strengths to grow with sustainable technologies

ZF is a global technology company. We supply mobility systems for passenger cars, commercial vehicles and industrial technology.

In the four technology domains of Vehicle Motion Control, Integrated Safety, Automated Driving and Electric Mobility, ZF offers comprehensive product and software solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. We are constantly driving our transformation forward with focus and speed. The increasing presence in global growth markets, investments in high-yield products and future technologies as well as an efficient and resilient organizational structure are top priorities. In short, we are continuously expanding our strengths. This also includes the Group's unique ability in the market to transfer innovations and technologies across segment boundaries.
The ZF Group is represented with 162 production locations in 31 countries.

With some 168,700 employees worldwide, ZF reported sales of €46.6 billion in fiscal year 2023.

Our key to success is that we have the broadest product and technology portfolio in the market, paired with the ability to integrate products into system landscapes and our customers' vehicle environment.

With its diverse competencies, ZF covers both current and future mobility solutions.

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Board of Management Letter

Dear Readers, Dear Employees,

Speed and focus – this is what I had announced to you in the 2022 Annual Report as a guiding principle behind our activities. And this is an equally apt description of the past year. We have increased the pace of transformation, focusing even more on the strengths that will allow us to successfully manage the transformation of our industry.

However, it is also true of 2023 that circumstances have again proved to be anything but easy. I won't waste your time by running through the list of old and new crises, geopolitical challenges and uncertainties on the political stage. Instead, I would like to recommend this Annual Report as a source of detailed information on how ZF, as a well-positioned technology company, dealt with these issues last year and what we can derive from this for the new fiscal year and the future. ZF follows a clear strategy with priorities, which we had already set out in January 2023 as the action maxim for the entire ZF team. These priorities supplement ZF's previous strategic mission statement with certain prioritized annual targets and initiatives that provide orientation for all employees.

From the beginning of the year, our focus was on achieving our financial targets. Thanks to the joint efforts and a large number of swiftly initiated measures, ZF performed well in 2023 and achieved its sales and income targets. Sales of €46.6 billion were up 6.5 percent. We also increased the adjusted EBIT margin from 4.7 percent to 5.1 percent compared to the previous year. In terms of cash flow, the targets set were achieved thanks to the joint efforts that saw us achieve adjusted free cash flow of €1.4 billion. This metric has a direct impact on our ability to continue to repay debt.

"In the last third of the year, it was evident that the adopted measures were gaining traction and sustainably improving ZF's financial situation."

Dr. Holger Klein, Chief Executive Officer

In the last third of the past year, for example, it was evident that the adopted measures were gaining traction and sustainably improving ZF's financial situation. This development makes us confident and optimistic about the current fiscal year, during which we will continue to implement the ZF strategy with its priorities. 2023 was a decisive year because we set the right guiding principles for ZF's strategic orientation.

The focus was on bolstering ZF's strengths by concentrating on the company's technological transformation. This is also reflected in our future investments of €18 billion over the next three years, which are divided between research and development as well as property, plant and equipment.

We are increasingly focusing on high-yield products and technologies and making ourselves more independent of market fluctuations in individual business areas. Industrial and commercial vehicle technology as well as the aftermarket are therefore expected to grow faster than the passenger car business over the next few years. We have already set in motion the corresponding investment decisions.

Conversely, we exit investment-intensive business areas if they are not going to contribute positively to the company's success in the long term. For example, we have realigned the business with self-driving shuttle vehicles and transferred it to a ZF-owned engineering service provider, after failing to find an external investor who would have developed the business with us. The great expertise of the ZF specialists for autonomous vehicles thus remains in the company and can be used profitably here for in-house and customer projects. We will also continue to develop components for autonomous vehicles and offer them to our customers with a high level of systems expertise. However, we are no longer planning to build and operate our own shuttles.

These measures form part of the adjustment of the corporate structures to make ZF more efficient and even more customer-oriented. A year ago, we announced that we would spin off ZF's passenger car axle assembly business in order to expand it with an external partner and participate in the growing electric mobility business. In the summer of 2023, Foxconn came to Lake Constance as a strategic partner and investor to sign the joint venture agreement.

We expect the deal to be closed, subject to regulatory approvals, in mid-2024.

As planned, we are also making progress with the independent setup of the successful Passive Safety Systems Division. In January this year, we informed our customers that we were implementing the legally independent structure of the new company in the current year.

I would also like to mention the excellent team performance in merging the Active Safety Systems and Car Chassis Technology divisions into the new Chassis Solutions Division within just a single calendar year. The new division has more than 30,000 employees worldwide and current annual sales of €14 billion. What is more important for our customers, however, is that for the first time they have a single point of contact at ZF for steering, brakes and damping. All aspects of driving dynamics are now under a single roof. At ZF, the innovations of the new Chassis Solutions Division are also finding their way into industrial and commercial vehicle technology, so that our customers will benefit from economies of scale and rapid innovation transfer.

Meaningful structural changes are taking place throughout the company. All in all, this creates a leaner central Group structure with strong and more independent divisions that also benefit from joint technology development. One standout example of this is the synergies in electric mobility across passenger cars, commercial vehicles and industrial technology. ZF is looking to establish itself permanently as a cross-segment innovation leader in this field and is therefore entering into new partnerships here as well. Together with the industry leader Wolfspeed, we are pursuing the project of building the world's largest fab for silicon carbide semiconductors not far from our transmission plant in Saarland, Germany. Supplemented by a new research center in the greater Nuremberg area (Germany), a new innovation center for the highly efficient conversion of electrical energy is being built in the heart of Europe.

Improving overall competitiveness remains crucial for ZF's future. With that in mind, we have launched several programs, including a new target-setting process, especially for our German locations. It is about securing sustainable employment through to the end of the decade or even beyond. Through clear analyses of all locations and the involvement of the employee representatives, we are creating a transparent process that has already delivered some initial successes. Take Saarbrücken (Germany) for example, where we managed to locate electric mobility components thanks to a future pact between the Saarland state government, ZF and its employees. Or Friedrichshafen (Germany) where we have reached a long-term agreement that even includes the establishment of an additional production line at the corporate headquarters for the very successful TraXon commercial vehicle transmission.

ZF will continue to invest in its German locations if their competitiveness stands up to international comparison. But these solutions are not viable everywhere, as Gelsenkirchen and Eitorf unfortunately demonstrate. At both locations, ZF has begun consultations with the works councils and trade unions regarding the closure of the business. Our company is clearly committed to finding socially acceptable solutions here, because even in such cases it is important to us to find solutions to the challenges posed by the transformation in our industry together with the employee representatives.

The year 2023 once more proved immensely demanding for the entire ZF team. The aim was to sharply reduce our costs, cut inventories, engage in dialogue with customers about pricing – and, at the same time, to further advance the accelerated transformation of our company and digitalize processes. And all this had to happen while day-to-day business continued and we strive to meet ambitious sustainability goals. Finally, we are committed to the goal of full climate neutrality by 2040 and to the ten principles of the United Nations Global Compact. This is perceived externally, as the presentation of the German Sustainability Award in the Automotive Industry category underlines.

I am very grateful to the entire worldwide ZF team for this outstanding commitment! The result is clear to see: We are emerging stronger from this year, because together we have set the right strategic course, set priorities and increased the pace. Although this does not make 2024 any less challenging, we are increasingly succeeding in dealing with the various crises and finding a way to use transformation as an opportunity for new perspectives and sustainable growth.

I would like to thank the shareholders' representatives and the members of the Supervisory Board for their constructive support over the past year and for the trust they place in me.

Dr. Holger Klein
Chief Executive Officer

Board of Management

from left to right

Prof. Dr. Peter Laier
Production, Region of India
Commercial Vehicle Solutions, Industrial Technology

Dr. Lea Corzilius
Chief Human Resources Officer/Director of Labor Relations
Human Resources, Legal and Compliance

Dr. Holger Klein
Chief Executive Officer
Sales, Research and Development, System House of Autonomous Mobility Systems
Aftermarket

Stephan von Schuckmann
Materials Management, Region of Asia-Pacific
Electrified Powertrain Technology

Dr. Martin Fischer
Quality, Regions of North and South America
Passive Safety Systems, Electronics and ADAS, Chassis Solutions

Michael Frick
Chief Financial Officer
Finance, IT and M&A

More information about the Board of Management.

Report of the Supervisory Board

Dr. Heinrich Hiesinger

Dear Reader,

The current and future challenges to be met by companies in the automotive industry are enormous. They have been putting the industry to the test for many years now and are an increasing strain on the profitability of companies, which at the same time have to master the technological transformation towards electric mobility. In addition, the disruption of supply chains and the spiraling inflation have changed the business model in the industry to the detriment of the supplier industry. Since global vehicle production is recovering only slowly from the setback in 2020, the coronavirus year, it is necessary to further adapt many structures and capacities from the peak years 2016 to 2018. These factors lead to massive cost increases, which clearly reduce or even entirely erode earnings and cash inflow.

In order to counteract the numerous challenges, the Board of Management reacted quickly by initiating comprehensive programs. The top priority and overarching objective is to improve the company's own operational performance in order to ensure a positive cash inflow. In addition, it was necessary to focus the technology portfolio on ZF's strengths, including, in particular, the competencies acquired as part of the acquisitions of TRW (2015) and WABCO (2020). However, the resulting debt requires particular attention and the ability to repay debt continuously, especially in light of the current interest rate environment. At the same time, it is important to invest the necessary money in research and development and in the production facilities for future technologies. The Supervisory Board welcomes the consistent decisions and the prudent leadership of the Board of Management aa well as Management.

In 2023, ZF presented numerous new products and positioned itself as an innovation leader in many areas. The 800-volt electric drive went into volume production at the beginning of the year and an industry-leading further development in terms of power density by making it lighter and more compact was presented in the middle of the year. With the future-oriented steer-by-wire technology, a vehicle steering system without mechanical or hydraulic connections, ZF has attracted customers in all important regions. In addition, cooperation was agreed with the semiconductor manufacturer Wolfspeed to establish silicon carbide chip production with ZF participation in Saarland as well as a joint R&D center for semiconductor technologies in the greater Nuremberg area (both located in Germany). Silicon carbide chips are highly relevant for power electronics in efficient electric drives.

Further major progress has been made in the area of sustainability. ZF has again increased its share of green electricity as the largest lever for decarbonizing the plants and has preponed the achievement of the 100 percent target by five years from 2030 to 2025. On the technological side, ZF has developed an electric motor that is ready for volume production. It does not require any magnets or rare earths, which can reduce the carbon footprint in the production of electric motors by up to 50 percent.

In the fall of 2023, ZF was awarded the German Sustainability Award in the Automotive Industry category for the remanufacturing of components as a prime example of a functioning circular economy.

In 2023, there were significant changes in the company's boards. On January 25, we were informed of the unexpected death of the highly appreciated member of the Supervisory Board Dr. Joachim Meinecke. Since 2008, he had represented the interests of the Dr. Jürgen and Irmgard Ulderup Foundation in the Supervisory Board. We will honor his memory with great appreciation and admiration. Ms. Dagmar Steinert, Mr. Joachim Holzner, Mr. Jürgen Otto and Dr. Mohsen Sohi left the Supervisory Board due to the closing of the term of office of the Supervisory Board as of March 15. We thank them for several years of valuable cooperation in the company. Ms. Rachel Empey, Dr. Feiyu Xu, Dr. Rolf Breidenbach and Mr. Jürgen Sammer were newly elected to the committee. As a representative of the Ulderup Foundation, Dr. Thomas Schulze completed the committee again from October.

Dr. Holger Klein, member of the Board of Management since October 2018, was appointed as Chief Executive Officer as of January 1, 2023, to succeed Mr. Wolf-Henning Scheider. Mr. Michael Frick joined the Board of Management on December 1, 2022, and succeeded Dr. Konstantin Sauer as Chief Financial Officer at the turn of the year. On January 1, 2023, Prof. Dr. Peter Laier joined the Board of Management and assumed responsibility for, i. a., Commercial Vehicle and Industrial Technology from Mr. Wilhelm Rehm. Dr. Lea Corzilius took over responsibility for Human Resources, Legal and Compliance as of August 1, 2023, succeeding Ms. Sabine Jaskula, whose appointment ended on July 31, 2023.

I am convinced that in both committees we have the necessary competencies and personal strengths to meet future requirements.

In fiscal year 2023, the Supervisory Board performed the duties as required by the law, our articles of association and code of procedure duly and with great diligence. It continuously monitored the work of the Board of Management and provided advice in the management and strategic further development of the company. The Board of Management promptly and directly involved the Supervisory Board in all issues and decisions of fundamental significance. The Chairman of the Supervisory Board also liaised regularly with the Board of Management, especially the Chief Executive Officer, and received regular reports from him about current and important developments in the Group, also outside of committee meetings.

At the end of 2023, as in previous years, the Supervisory Board carried out a self-evaluation with the aim of further optimizing cooperation and efficiency in its own activities. The members provided valuable feedback and suggestions for the further development of committee work, which will be taken up in the new year.

In 2023, the Supervisory Board met for four regular meetings during which the Board of Management duly reported on business performance and all relevant current and strategically important issues. In addition, a constituent meeting and two extraordinary Supervisory Board meetings took place. As an additional element, regular further training measures on technological and regulatory topics were also carried out in 2023 for all Supervisory Board members. For this purpose, there is an annual Technology Day and the regular meeting date in July was extended to two days to deep-dive into focus topics.

In its regular meetings, the Supervisory Board extensively discussed with the Board of Management the company's situation, the development of the major sales markets, the sourcing markets, the general political conditions as well as the key financial figures.

The reports on the business situation regularly featured the status of the numerous market challenges and measures taken, such as on the reduction of inventories or the status of measures to offset inflation through price negotiations and cost reductions. Furthermore, the Supervisory Board was informed about portfolio measures and location decisions as well as the status of the preparation of internal organizational changes, such as the merger of the Car Chassis Technology and Active Safety Systems divisions as of January 1, 2024.

Other focal points at the Supervisory Board meetings were in-depth reports on sustainability and technology strategies as well as the performance programs. As part of the Technology Day which focuses on new products, more details were given on the topic of software-based vehicles. In July, a cybersecurity training course took place.

As part of the Group-wide enterprise risk management, the Board of Management reported regularly to the Audit Committee and the Supervisory Board on the main opportunities and risks identified. When analyzing the overall picture of significant risks and opportunities, no risks can be identified which could jeopardize the company's continued existence, either alone or in combination with other risks. Furthermore, the Board of Management reported duly on the effectiveness and further development of the Compliance Management System.

In its regular meeting in December 2023, the Supervisory Board, after a thorough examination, approved the Group's operational planning after being informed in detail about the objectives at Group and division level.

In its four regular meetings and three extraordinary meetings in 2023, the Executive Committee advised in particular on the strategic alignment of the ZF Group as well as relevant legal issues and personnel matters.

The Audit Committee held four regular meetings in 2023. During its meeting on March 14, 2023, the appointed auditor reported in detail to the Audit Committee on the results of the 2022 annual financial statements and the consolidated financial statements, and discussed these with the Board of Management.

In the July meeting, the committee discussed the 2023 semi-annual financial statements in detail. At the meeting on December 14, 2023, preparations for the annual financial statements 2023 were discussed. A key element of the committee's work in all the meetings is the Group's corporate governance. To this end, the persons responsible for the four core disciplines Enterprise Risk Management, Internal Control System, Compliance and Corporate Audit presented an integrated Governance, Risk and Compliance (GRC) report with detailed reports, including the respective implementation and effectiveness status of the measures initiated. Other key topics included preparation for the implementation of ESG reporting as per CSRD as well as detailed consideration of cybersecurity risks and measures.

The chairpersons of both committees, Dr. Heinrich Hiesinger and Mr. Axel Strotbek, reported in detail on the activities and essential issues 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, 2023, 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 and examined it themselves; all members of the Supervisory Board had access to the audit reports in good time. The auditor explained the main audit results first to the Audit Committee and then to the Supervisory Board during the board meeting on March 20, 2024.

The Supervisory Board had no objections after its concluding audit result. During this Board meeting, the appointed auditor's report as well as the annual financial statements of ZF Friedrichshafen AG were approved and the consolidated financial statements were adopted.

For fiscal year 2023, the Board of Management drew up a report on the relations to affiliated companies (dependent company report) according to Sec. 312 German Stock Corporation Act (AktG). After thorough review of the dependent company report, the Supervisory Board had no objections.

Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft audited the report and issued the following audit opinion:

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

firstly, the actual statements of the report are correct;

secondly, the contribution by the company with regard to the legal transactions presented in the report was not unreasonably high."

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

ZF has mastered the year 2023 with all its challenges and unforeseeable developments well.

The Supervisory Board expresses its gratitude to the Board of Management and all employees of the ZF Group who have made this possible thanks to their hard work and great commitment.

Friedrichshafen, March 2024

For the Supervisory Board

Dr. Heinrich Hiesinger
Chairman

Focus Forward – How We Implement Our Strategy

We are advancing the transformation of ZF by picking up the pace and honing our focus. The increasing presence in global growth markets, investments in high-yield products and technologies as well as a more efficient organizational structure are top priorities on our agenda.

In recent years, we have developed the basis for this unique position with the Next Generation Mobility strategy, by consistently aligning ZF with forward-looking, sustainable technologies and growing markets, by continuously developing the company as a whole, and not least by enabling an improved transfer of innovations and technologies across segment boundaries.

Focus, promote, grow

Last year, we further developed our strategy with the clear goal of continuing to grow in those areas where we have a particularly strong and successful position. The clear motto is therefore:

We use our resources
in a targeted manner and promote
high-yield technology fields.

That way we generate additional, profitable growth. The foundation stone was laid with far-reaching investment decisions for the areas of commercial vehicle and industrial technology. Examples include the development of new electric mobility solutions, the localization of our products in the regions (local for local) or the expansion of capacity for the production and testing of wind turbine gearboxes. ZF Aftermarket can also look back on a successful year and expect potential for further growth thanks to innovative products and digital services.

Continuous optimization of the portfolio (e.g., through restructuring, partnerships or divestments) and the focus on growth areas pave the way for more investments in high-yield technologies and products.

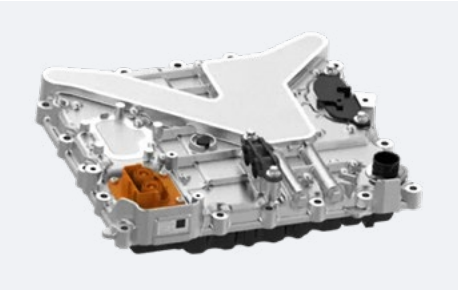
As a result, we will significantly outpace market growth through targeted investments in the three most profitable segments: commercial vehicles, industrial technology and aftermarket. In the passenger car sector, we will focus on high-yield future technologies. The passenger car business remains a permanent growth area for ZF with good development opportunities. Here, too, we will outpace market growth, but expect the share of passenger cars, which currently still account for around 75 percent, in ZF's total sales to decline in the next decade.

Portfolio optimization, strategic partnerships and resilient structures

On the other hand, focusing on our strengths also means finding solutions for areas in which we are not one of the strongest players in the market or which do not have enough synergies with our core business. We are actively looking for sustainable models for these areas to leverage growth opportunities with investments and reinvest associated revenues in high-yield future technologies.

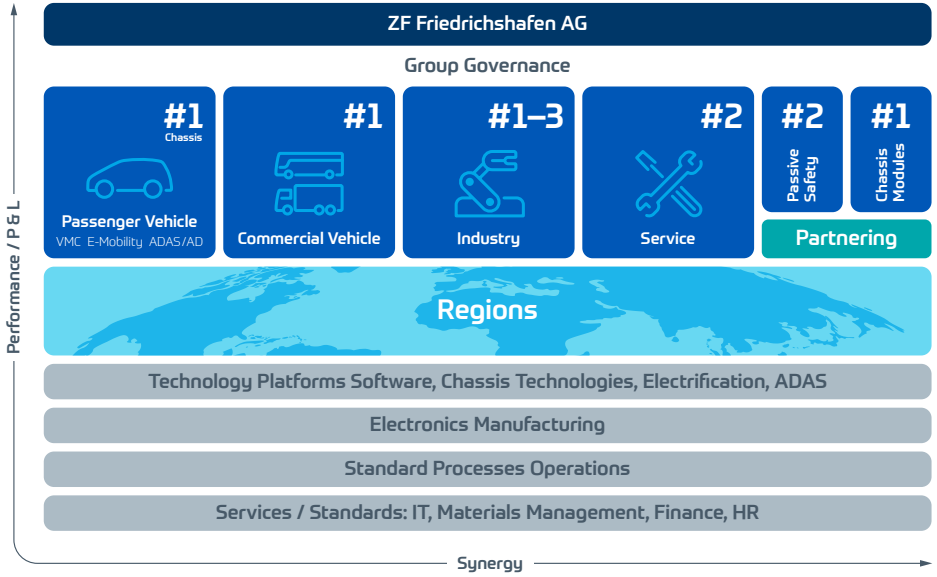
In 2023, we managed to acquire Foxconn as a partner for our chassis systems and modules business and will complete the transaction by mid-2024, subject to regulatory approvals. As a joint venture between Foxconn and ZF, Chassis Systems is now the global market leader and is ready to exploit the opportunities of electric mobility for the axle assembly business. In the future, the joint venture activities in the field of axle assembly will integrate high-quality components such as electric motors, inverters and battery systems. No other competitor can draw on decades of expertise in the axle business and, at the same time, leverage added momentum and economies of scale from the world's largest electronics contract manufacturer.

We are also working on a model for the future for our Passive Safety Systems Division to further expand our solid position in the passenger car market. To this end, we are setting it up independently as part of a spin-off. All options for this attractive business segment will be considered, in order to deliver the best long-term solution for the division's growth opportunities. In the field of silicon carbide technology, we have concluded a pioneering cooperation with the semiconductor specialist Wolfspeed. A joint research center is being built under the leadership of ZF in the greater Nuremberg area (Germany). We will also participate in Wolfspeed's new chip fab in Saarland (Germany). Forging these kinds of cooperative ventures is an important aspect of ZF's strategy of contributing its own strengths and combining them with those of its partners. In this way, transformation provides an opportunity.



Silicon carbide inverters for commercial vehicle applications.

If, on the other hand, the prospects for earnings, sustainable growth and successful partnerships are non-existent, then ZF acts consistently and exits from technologies or sells participations. Accordingly, last year, among other things, we sold our stake in the engineering service provider asap and strategically realigned the business with autonomous shuttles by transferring it to a ZF-owned engineering service provider.



ZF is up with the best or even number 1 in many areas.

Finally, we are also working on further optimizing our organizational structure, focusing on profitability and thereby increasing agility and resilience.

We fine-tuned the setup of the Commercial Vehicle Solutions Division and merged the two divisions for passenger car chassis solutions into one new division. This new structure now includes all aspects of passenger car driving dynamics.

Leading the field – from commercial vehicle and industrial technology to the aftermarket and the passenger car sector

As a supplier, we lead the commercial vehicle segment internationally.

Our key to success is that we have the broadest product and technology portfolio in the market, paired with the ability not only to deliver products, but also to integrate them into system landscapes and our customers' vehicle environment.

We let our systems "talk" to the infrastructure, for example by transferring data from a brake to fleet management and thus integrating data on upcoming maintenance work into vehicle management at an early stage.

In industrial technology, we rank among the leading suppliers and are also one of the top 3 in the key segments – such as construction and agricultural machinery, material handling, special vehicles and marine applications. Our Aftermarket Division is the global number 2 in the spare parts and service business – not only for passenger cars, but also for trucks and buses or for construction and agricultural machinery. Taking just the spare parts market in the commercial vehicle sector, we are even number 1.

Today, we are the world's number 1 in chassis components in the passenger car segment and the technology leader in the by-wire sector. We have a broad product portfolio that allows us to meet the high worldwide demand of our customers.

We also lead the field in subsegments of electric mobility for passenger cars and in components for automated driving.

We have strengths in all our technology fields. Over the next few years we will focus particularly on:

- Chassis technologies for all vehicle segments, e.g., brake-by-wire, steer-by-wire
- Electric mobility for passenger cars & commercial vehicles – e.g., new electric drives for buses and light commercial vehicles, magnet-free motors
- High-performance computers for automated driving
- Technology for wind turbines
- Software and digitalization
- Digital and traditional service models and spare parts (aftermarket)

Typical ZF USP – technology transfer

Another core element of our strategy is technology transfer – another proven ZF strength that we will continue to expand.

Technology transfer as a USP – three advantages:

Speed
As a result, divisions can be the first-to-market with innovations, acting as technology leaders – for example in markets where certain technologies will only be widely used at a later stage.

Efficiency
ZF can offer products at even more competitive prices, as many technologies have already been developed for or together with another division.

Scaling
Divisions in which development takes place benefit from economies of scale due to larger quantities and often a share in their development costs.

We see this as developing technologies and platforms one-time and then using them across different product segments. This gives us a competitive advantage that only ZF can fully exploit. After all, no other supplier covers as many mobility fields as ZF.

We have already adopted this principle in chassis technologies, for example in the electronically controlled air suspension OptiRide ECAS, in electrification and with cameras for automated driving. But in basic technologies such as noise reduction, we also leverage the knowledge and expertise of our engineers across many different segments – from passenger car drives to wind turbine gearboxes. Our goal in the coming years is to build on these advantages resulting from the synergies of our technology platforms. To this end, we are also working on new models of cooperation between the divisions.

Focusing on additional aspects of our strategy

In growth regions such as Asia-Pacific, India and North America, we aim to expand our local-for-local activities and further increase their share of sales. The goal is to benefit from the momentum of local economies and to grow sustainably. We also see additional potential in new customer groups. This includes, for instance, the large number of new brands in the automotive sector, such as in China and the USA.

Acquiring these brands and strengthening our customer relationships are further building blocks in our strategy.

The continuous improvement of our performance in conjunction with a performance-oriented culture is another way of safeguarding profitability and increasing resilience during crises. Here, we are assisted by new technologies, such as the use of artificial intelligence (AI) in software development, or the optimization of processes in production and administration. Digital twins or virtual reality (VR) can be used to carry out faithful simulations and to optimize procedures. Other examples include AI-based purchasing negotiations or newly launched performance programs in the commercial vehicle and passenger car sectors.

Strong and balanced foundation for future growth

We made our strategic decisions even faster in 2023, with a more focused and more consistent approach. These decisions will allow us to continue to grow sustainably and emerge stronger from the transformation. This makes us not only more profitable, but also more efficient with implementation, more attractive to our customers and more successful in the market.

Learn more about ZF's strategy

Technologies from different industries serve as models that benefit from each other.

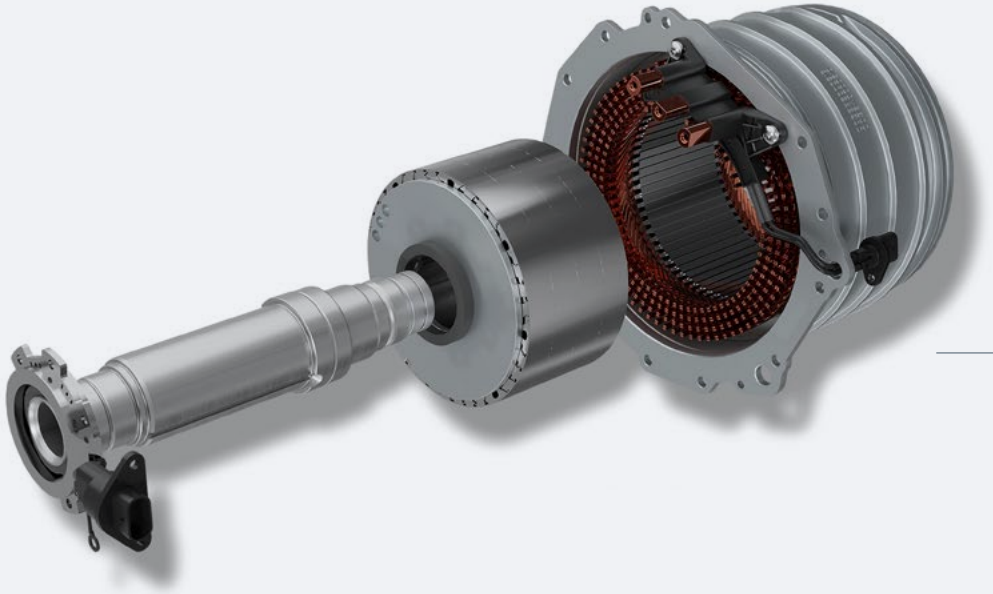
A digital twin is a digital copy of real components or systems. This allows the behavior of the object to be displayed as faithfully as possible in simulations.

2023 - Plenty of Accomplishments, but No Reason To Rest

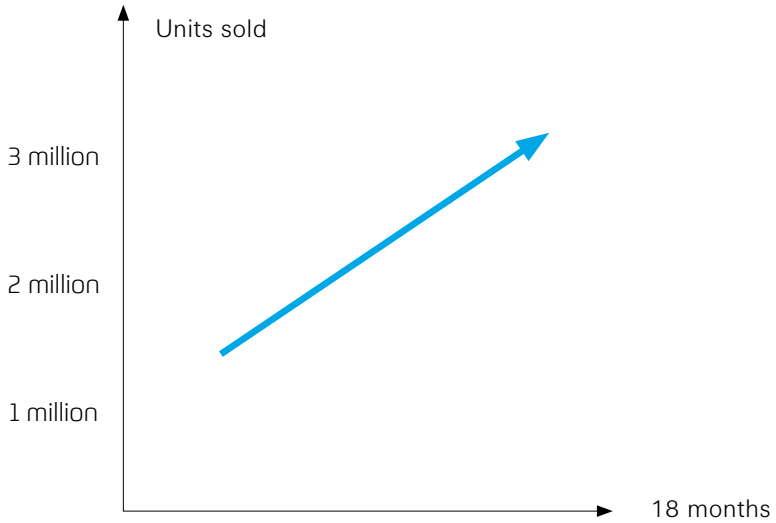
Strategies are the guiding principles that underpin our business activities. Acting Now was our theme in the 2022 Annual Report, which described the implementation of the transformation and the need for quick and focused action. We wanted products and technologies that would enable us to beat the competition to occupy the top slots in the various mobility segments.

With Focus Forward, we are now focusing on doubling down on our activities and picking up the pace. We focused on strategically important and value-adding areas, honed them in key areas, laying the foundation for the further structural development of the Group – under the guiding principle of further bolstering our strengths. 2023 has shown that with our technological developments in recent years, we have correctly anticipated market developments. Today, ZF is a strong technology company with excellent market positioning and an attractive product portfolio.

PROOF



ZF is driving forward the evolution in electric mobility: The Group produces all the components required to build electric drives. In addition to state-of-the-art motors with 800-volt technology (left), these also include inverters with silicon carbide semiconductors.



Within just 18 months, ZF doubled production from 1.5 to 3 million electric motors.

ZF electric motors: strong demand

Example of electric mobility: In 2008, when less than 500,000 electric cars were produced worldwide, ZF became the first company in Europe to start volume production of electric motors for cars. Fifteen years later, nearly eight million electric vehicles have been registered.

In the past three years alone, sales have more than tripled.

ZF's long-term strategic focus on this future market has proven to be correct. And ZF's sales figures for electric drives show that being involved from the get-go allows you to benefit more from growth than the latecomers. Within just 18 months, ZF has doubled production from 1.5 to 3 million electric motors.

Growth continues

The market for electrified drives continues to gain momentum. Forecasts show that production – including of plug-in hybrids, which are important in many markets – will grow to 37 million per year by the end of the decade. We share this assessment of the development with our customers – the manufacturers. This is demonstrated by the massive investments currently being made in the expansion of electric mobility capacities. All vehicles that will come off these

production lines in the future will need components that ZF can supply almost in their entirety.

Transformation also in the workshops

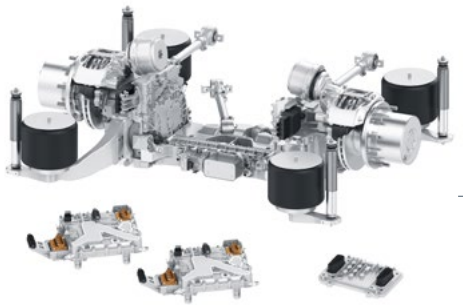
The repair kits for electric drives and the new ZF Lifeguard E-Fluids for electrified vehicles illustrate that ZF is driving the trend toward electrification in all divisions and for all product life cycle phases. The tailor-made kits comprising specific spare parts presented by ZF Aftermarket in 2023 allow independent workshops to perform up to 43 different repair tasks on axle drives – without having to remove the electric drive.

The drive for the modern-day bus

Electrified drives can be found in all areas of mobility – from bicycles to heavy trucks. In hardly any other segment, however, has their uptake been so spectacular as in city buses. Analysts from the International Energy Agency predict that the total number of electric buses in the world will increase by 235 percent from 800,000 in 2022 to about 2.7 million in 2030. A gigantic future market in which ZF is already represented today with its electric drives such as the AxTrax AVE low-floor portal axle.

To further expand our strong position in this segment, we presented the all-new AxTrax 2 LF low-floor portal axle in 2023. The innovative solution uses the technology know-how of the Electrified

Learn more about electric mobility



AxTrax 2 LF complements ZF's electric drive series for city and intercity buses up to 29 tons. The solution also includes two standalone silicon carbide inverters and one ECU.

ZF Aftermarket is one of the Group's most successful divisions. Electrification is also finding its way into this area.

Connectivity as a success factor: ZF Bus Connect makes fleet operation more efficient.

Learn more about ZF Bus Connect

Powertrain Technology Division, which, among other things, supplies two independent silicon carbide inverters and the electronic control unit. The highly integrated axle can be used in battery-electric buses, fuel-cell buses and trolley-buses with a gross vehicle weight of up to 29 tons.

Light commercial vehicles: now with CeTrax lite

Much like city bus fleets, parcel services and logistics companies are increasingly converting their van fleets to emission-free drives. The reasons behind this are similar, with the high usage rate and predictable usage profile favoring the switch in both segments. In the case of logistics companies, the rapid increase in e-commerce with deliveries in urban areas is also a significant factor. With its electric drives for all application areas, ZF is well prepared for this future market.

The CeTrax lite electric drive covers precisely this segment and is the perfect solution for light commercial vehicles.

Its production start – with Isuzu as the first customer – represents an important milestone in the transformation, pointing to a future that can already be seen in urban centers.

Technology transfers between the divisions

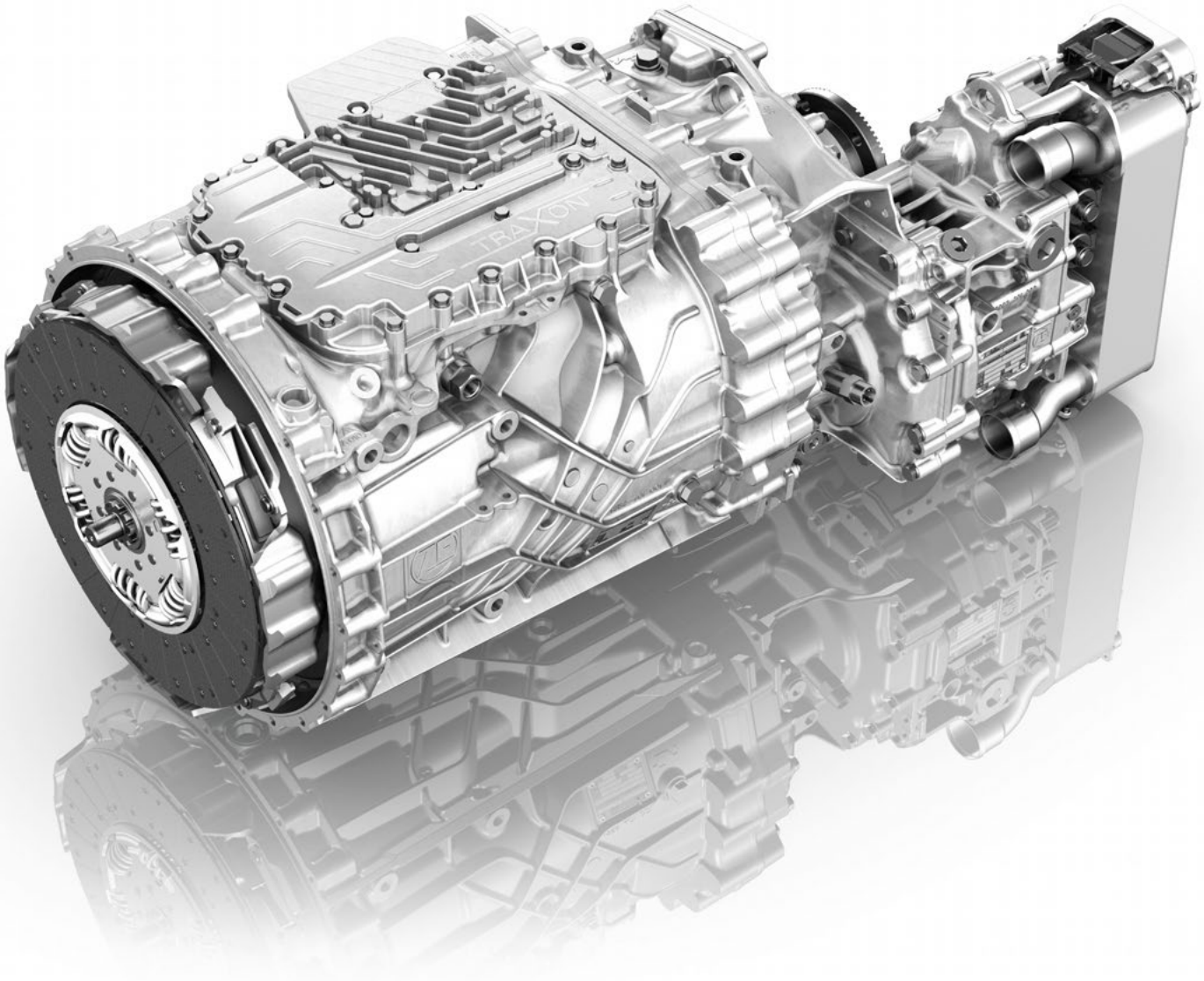
Whether CeTrax lite or AxTrax 2 LF: Our new electric drives for commercial vehicles, which also use state-of-the-art technologies such as silicon carbide inverters, are representative of a strategic advantage that only ZF has in this form. We offer an intensive technology transfer between the divisions – and everyone benefits from it. It is not only about components for electrification, but also about software and networking technologies as well as sensor technology – all those areas whose importance will increase significantly in the years ahead.

The ability to transform and the willingness to change – this is another reason why ZF has been so successful following the seamless integration of WABCO as one of the largest commercial vehicle technology suppliers.

Telematics Award 2023

For its ZF Bus Connect system, ZF received the German Telematics Award 2023 from publisher ETM-Verlag. As an advanced fleet management tool, ZF Bus Connect enables bus manufacturers and fleet operators to improve uptime, efficiency and performance. It optimizes timetables, route planning and reduces fuel or energy consumption.

Preventive inspections minimize downtime and ZF Bus Connect monitors driving behavior for greater driver and passenger safety.



More information on TraXon

Million mark reached

In commercial vehicles, we have reached a new success mark in 2023: Since 2014, a total of one million TraXon transmission systems for heavy commercial vehicles have rolled off the production lines in Germany, China and Brazil.

TraXon very successfully meets the growing global demand for efficient transmissions to reduce costs and emissions.

Vehicle Motion Control refers to all technologies that influence the longitudinal, transverse and vertical dynamics of a vehicle. Mechanical and mechatronic components work together here. The software determines and controls the optimal interaction of all actuators in the vehicle.

More information
on Vehicle Motion Control

Vehicle Motion Control

Our strategy includes not only the electrification of all mobility segments, but also all technology fields that lay the foundation for our future growth. The establishment of our integrated Chassis Solutions Division underscores the increasing importance of the Vehicle Motion Control technology field. It offers an unrivaled portfolio in the industry for integrated chassis technology.

Here, too, we have reached important milestones in 2023. Special highlights include the new Lotus Eletre, which started rolling off the production line in 2023. It is filled to the brim with ZF technology. From the electric 800-volt driveline and ZF sensors to the Vehicle Motion Control Coordinator cubiX. In the new sports SUV, the software product controls chassis functions such as brakes, front and rear axle steering, active roll stabilization and the electric ZF axle drive.

ZF also attracts a great deal of customer interest in the future-oriented steer-by-wire technology, which is an important prerequisite for autonomous driving.

Several volume production starts in 2024/25 are already in the pipeline. But steer-by-wire also benefits drivers who prefer to take the wheel themselves:

In terms of steering feel – from sporty-direct to comfortable-relaxed – every setting is possible in the same car.

The system can also translate the same steering wheel movement variably depending on the driving situation. For parking and at low city speeds, the wheels turn substantially to change direction, while they turn minimally at high highway speeds.

Products for future markets

The latest studies show how important the industrialization of technologies can become for autonomous driving:

For example, Boston Consulting Group expects annual sales of semi-autonomous cars to reach nearly 76 million vehicles by 2035.

For ZF, this means that the greater the degree of automation of a vehicle, the greater the need for integrated chassis technology to control longitudinal, transverse and vertical movements.
With our high-tech solutions, which we industrialized in 2023, we are also on the right track in this growth market.

However, assisted and semi-autonomous vehicles do not only require technologies from the Vehicle Motion Control area. Powerful sensor and camera systems are a key prerequisite for safe driving. ZF received the Automotive Innovations Award 2023 for its imaging radar technology. The high-resolution radar perceives the vehicle environment in four dimensions, including height, and, thanks to detailed scene and object recognition with a range of up to 350 meters, meets the exacting requirements of automated driving at Level 3 and 4.

ZF's innovative approach to sensor technology is also demonstrated by the further development of the new S Cam 6. The new model fuses camera and radar data with its image processing module systems, providing detailed scene and object recognition, an important sensor set for automated driving functions as well as scalable ADAS and AD systems.

Technologies for rail

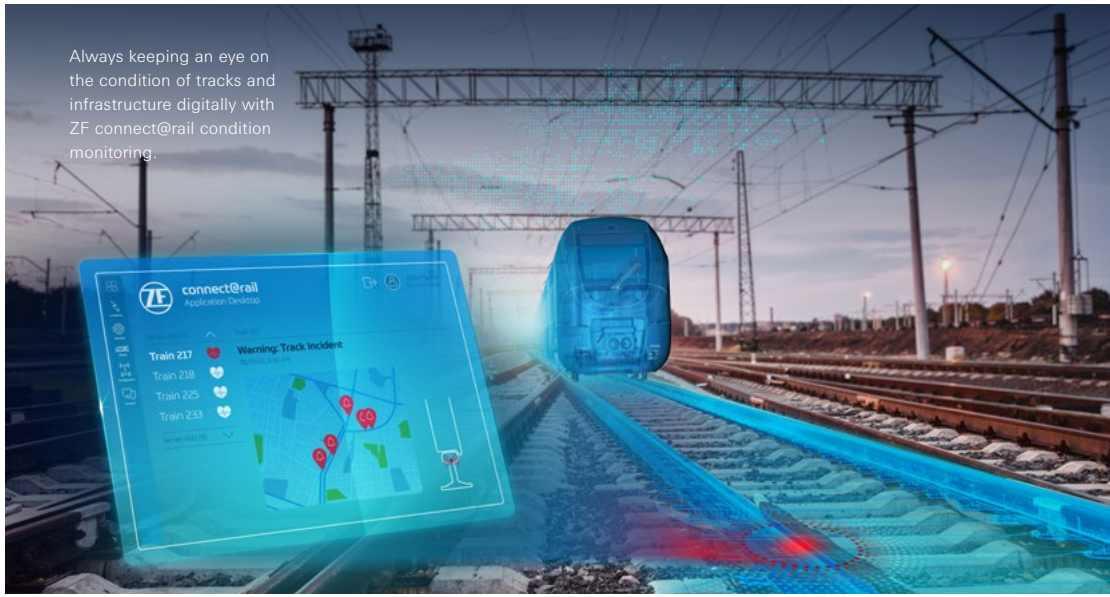
Rail transport plays a key role in achieving the emission targets in the transportation sector.
For products for rail vehicles, ZF focuses on electrification, digitalization and automation. In 2023, we attracted attention with two solutions: A supply agreement for a new, two-stage spur gear was concluded with the metros of the two largest Italian cities – Milan and Rome. The weight- and noise-optimized transmission will be installed in around 1,200 railcars of both fleets.

With the new track monitoring function, we are expanding our connect@rail condition monitoring system for rail vehicles and infrastructure. The function enables digital track inspections and seamless infrastructure monitoring. The system detects cracks, corrugation, fractures and surface damage, allowing maintenance and repairs to be completed before punctuality, driving comfort or safety are seriously compromised.

Learn more about connect@rail

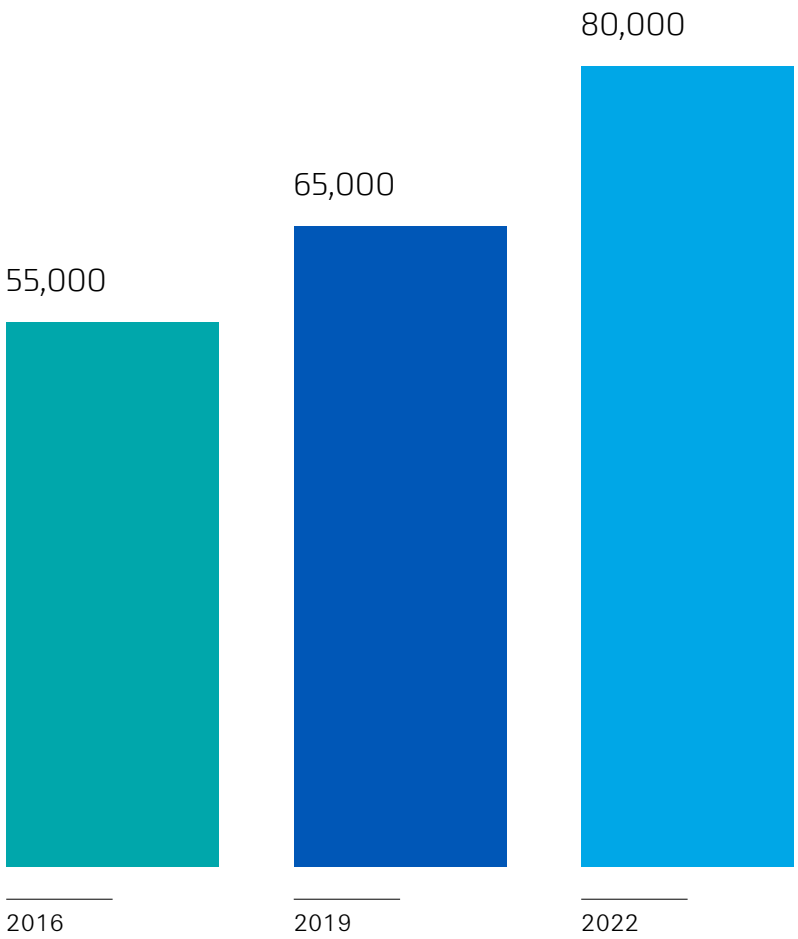
Also suitable for off-road applications

Off-road, high-tech applications in agriculture make use of all ZF technology fields: from electrified to autonomous driving.



Always keeping an eye on the condition of tracks and infrastructure digitally with ZF connect@rail condition monitoring.

Number of installed ZF gearboxes
for wind turbines



Since 1979, ZF Wind Power has supplied more than 80,000 gearboxes for wind turbines that power turbines with a production capacity of 180 gigawatts. This is comparable to the power supply of more than 150 million households. So effectively, almost one out of every four gearboxes in those wind turbines fitted with a gearbox comes from ZF.

No. 3 of the world's wind power suppliers

Whether subways, electric buses or electric cars, they all only run locally emission-free when their traction current comes from renewable sources. A domain in which ZF is equally at home.

Electricity will be the main energy source by 2050, providing more than half of the world's energy needs. More than 90 percent of this is covered by renewable energies.

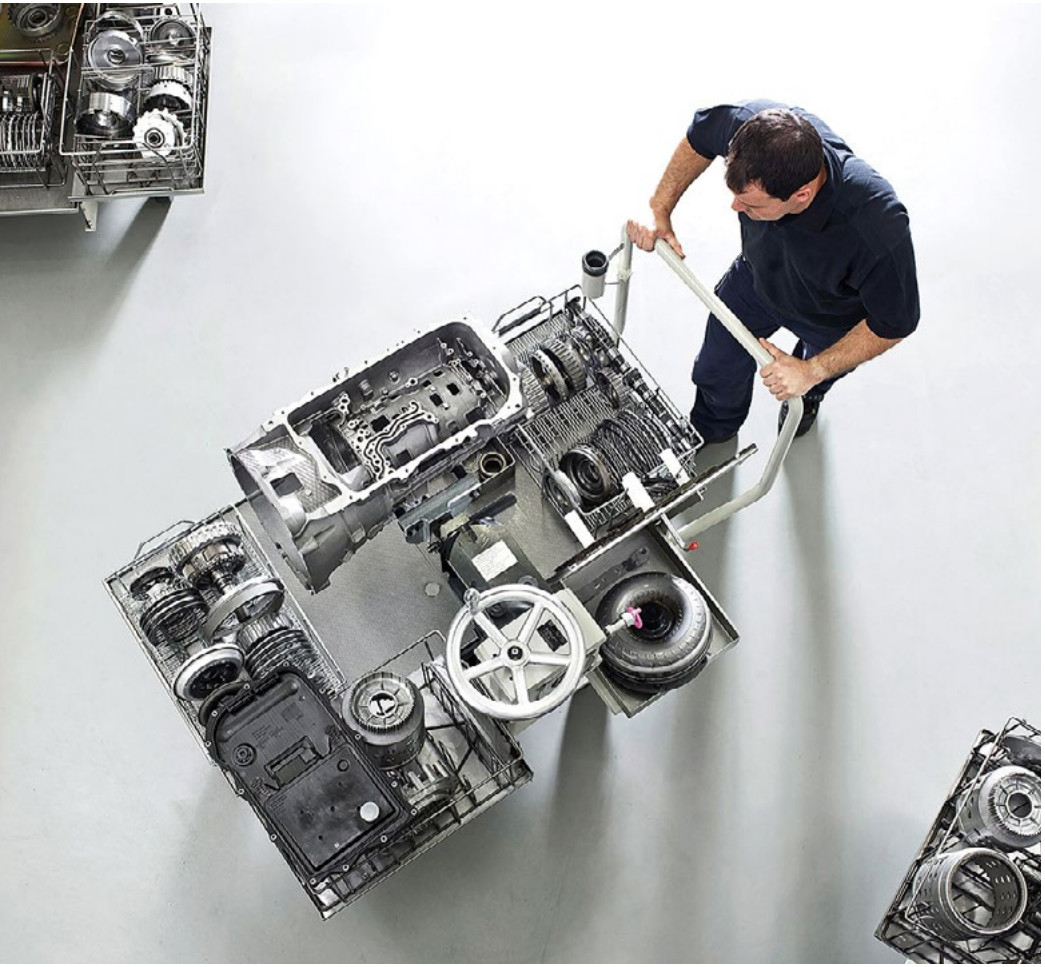
The increasing green electricity demand and the increased production capacity of the individual wind turbines are constantly making their gearboxes larger. As a result, our new test center for wind turbine gearboxes in Lommel (Belgium) was completed in 2023. It will start operation in 2024 and has the world's most powerful validation test bench needed to develop the next generation of wind turbine powertrains of up to 30 megawatts.

The test bench can validate complete powertrain systems for onshore and offshore wind turbines. Ever larger drive units with rotor blades up to 115.5 meters long are now being transported on the water in an environmentally friendly manner. The combination of inland navigation and short sea shipping offers logistical and environmental benefits. In comparison, ships emit much lower CO_2 when transporting goods. This commitment to new turbines and transport routes should pay off, as approval hurdles for new wind turbines are being lowered in Europe as part of the Green Deal.

Learn more about
ZF's wind power technology

Quieter wind turbines

ZF uses synergies from passenger car transmission engineering for its wind power technology. The aim is to make wind turbines quieter to increase their social acceptance, as onshore wind turbines are being built ever closer to urban areas. An international team of ZF engineers has succeeded in significantly reducing the noise emissions of wind turbine gearboxes for new generations of large-scale systems with rotor diameters of over 140 meters – advantages that can be leveraged for various ZF product applications.



The aftermarket activities with 20 remanufacturing locations in 15 countries cover more than 250 product families.

This is a prerequisite for adding even more momentum to the forecast growth in the wind energy market in the years ahead. For ZF Wind Power, we expect sales to increase from around €1 billion today to €2 billion by the end of the decade.

China's annual onshore wind turbines will increase by 25-30% from 2023 to 2030. Globally (excluding China), the growth of onshore wind energy is even stronger, with annual installations doubling between 2023 and 2030.

In 2022, electricity generation from wind energy increased by a record 265 TWh (+14%) to more than 2,100 TWh, according to the International Energy Agency (IEA). This corresponds to about four times the annual electricity consumption of the whole of Germany.

Deutscher Nachhaltigkeitspreis

Singled out for sustainability

The many examples from the different divisions, markets and industries show that we have kept our word with Acting Now – also with the goal of shaping a more sustainable future. This is also perceived outside the Group.

At the end of November 2023, ZF received the German Sustainability Award in the Automotive Industry category.

The winners of the individual sectors were selected by the Stiftung Deutscher Nachhaltigkeitspreis e.V. in cooperation with the Federal Ministry for the Environment, the German Chamber of Industry and Commerce (DIHK) and other partners. ZF's commitment to a sustainable circular economy was behind the award. The model here is the remanufacturing location in Bielefeld (Germany), which specializes in the remanufacturing of powertrain modules for vehicle manufacturers and the global aftermarket.

Focus Forward

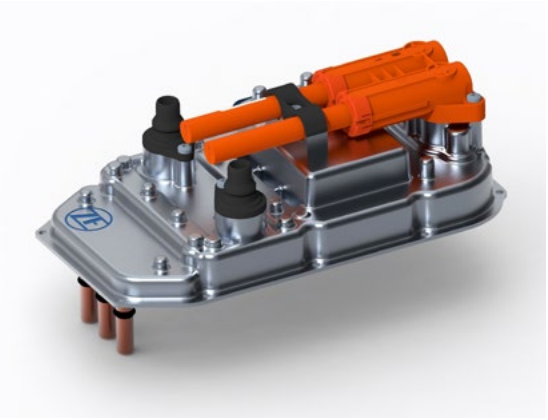
Focus Forward involves ZF continuing to gain momentum as it implements its strategy, relying even more on its proven strengths in core areas.

What does this mean for the future? We must now prepare, take and implement decisions to achieve our ambitious sustainability goals and to develop sustainable technologies that secure and further extend our lead.

Last year, ZF set new standards in both areas, with projects that prepare our supply chains and our product and service portfolio for the challenges of the future.

“Silicon carbide helps extend the range of electric vehicles and shorten charging times. This will greatly increase the demand for silicon carbide – even if it does not replace today’s silicon but complements it.”

Dr. Holger Klein, Chief Executive Officer



At the cutting edge: ZF power electronics for 800-volt on-board electrical systems.

The goal firmly in view

Focus Forward means increasing the momentum for new technologies and expanding the lead where ZF is a pioneer. ZF has given impetus to new mobility solutions with pioneering technologies.

In 2023, we presented a series of forward-looking concepts that show that we are not resting on our laurels, but are continuing to pick up the pace. And we have launched pioneering projects and formed partnerships that allow us not only to develop but also to industrialize numerous new technologies.

Access to silicon carbide semiconductors

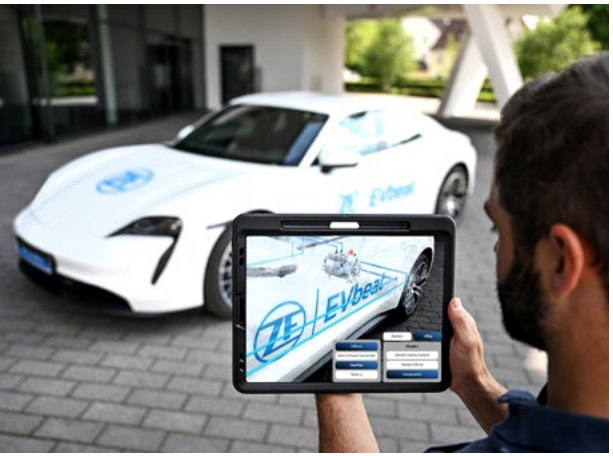
Silicon carbide semiconductor technology is a game changer. In order to extend the range and shorten charging times for as many electric cars as possible, industrialization strategies are required that rise to the magnitude of this task.

ZF has therefore entered into a partnership with Wolfspeed to support the construction of the world’s most modern and largest silicon carbide semiconductor factory in Ensdorf, Saarland (Germany).

In addition, together with Wolfspeed, we are planning a joint research and development center in the Nuremberg metropolitan area (Germany) to promote world-class innovation in silicon carbide systems.

Not just for electric passenger cars, as we also expect synergies here in the areas of commercial vehicles, construction machinery and industrial technology.

Learn more about silicon carbide semiconductors



Ultracompact electric drive package with thermal management and software: The EVbeat concept vehicle has up to a third more range in winter.

Torque world champion

A technological highlight was the presentation of the EVbeat design study. It shows the potential that optimized electric vehicles offer by consistently using integrated thermal management.

The concept vehicle with the prototype of a new 800-volt electric drive sets standards for compactness, low weight and high efficiency.

The ultralight drive weighing 74 kilograms is a compelling proposition with its world-beating torque density of 70 Nm/kg and has cloud-connected drive software as well as holistic thermal management. At temperatures around the freezing point, this increases the range in real operation by up to a third compared to conventional technology.

Learn more about EVbea

Eliminating magnets and rare earths

Another focal point is the externally excited synchronous motor I2SM, also presented in 2023. This development shows that electric motors that dispense with magnets and, in turn, with rare earths can be singularly compact and competitive.

The ultracompact design is made possible thanks to an inductive current transmission unit inside the rotor shaft.

As a result, the efficiency is on a par with permanent-magnet synchronous machines (PSM), currently the most widespread electric motor technology in electric vehicles. The absence of magnets and rare earths increases supply security and offers significant advantages in terms of sustainability and efficiency.

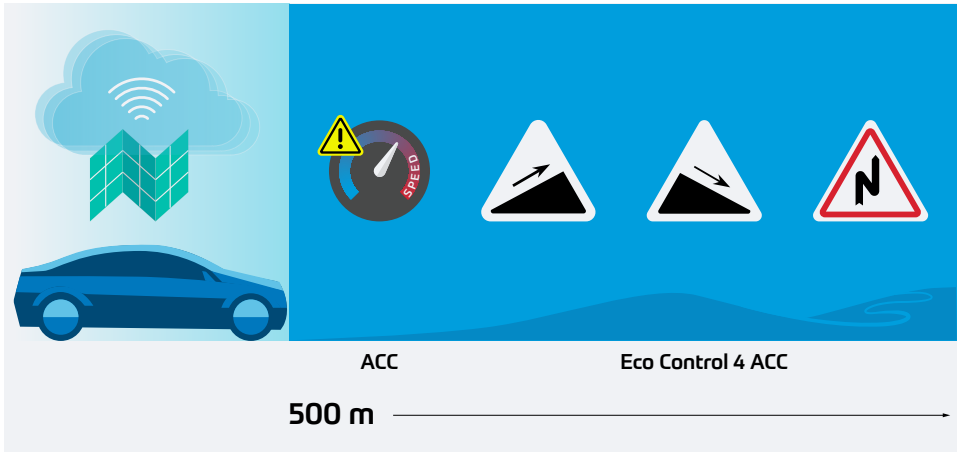
Maximized range

The result of our cooperation with Embotech shows that, besides hardware, software can also improve the efficiency of electric cars. Algorithms increase the range under real driving conditions by up to eight percent. The optimization algorithm uses map data, sensor and drive information to save energy while driving. Adaptive cruise control already available in many of today's vehicles can be supplemented by this 500-meter predictive software function.

Fast-charging capability for trucks

Commercial vehicles with electric drives from ZF also benefit from the technological lead of the 800-volt silicon carbide drive solutions proven in the passenger car sector and in Formula E.
Especially for vehicles with large battery capacities, 800 rather than 650 volts and the significantly increased charging speed are beneficial. With 800 volts, trucks can not only charge faster. They can also drive more efficiently.

Ultracompact, modular electric drive: the EVSys800.



Algorithm for more sustainable mobility: up to eight percent more range under real driving conditions.

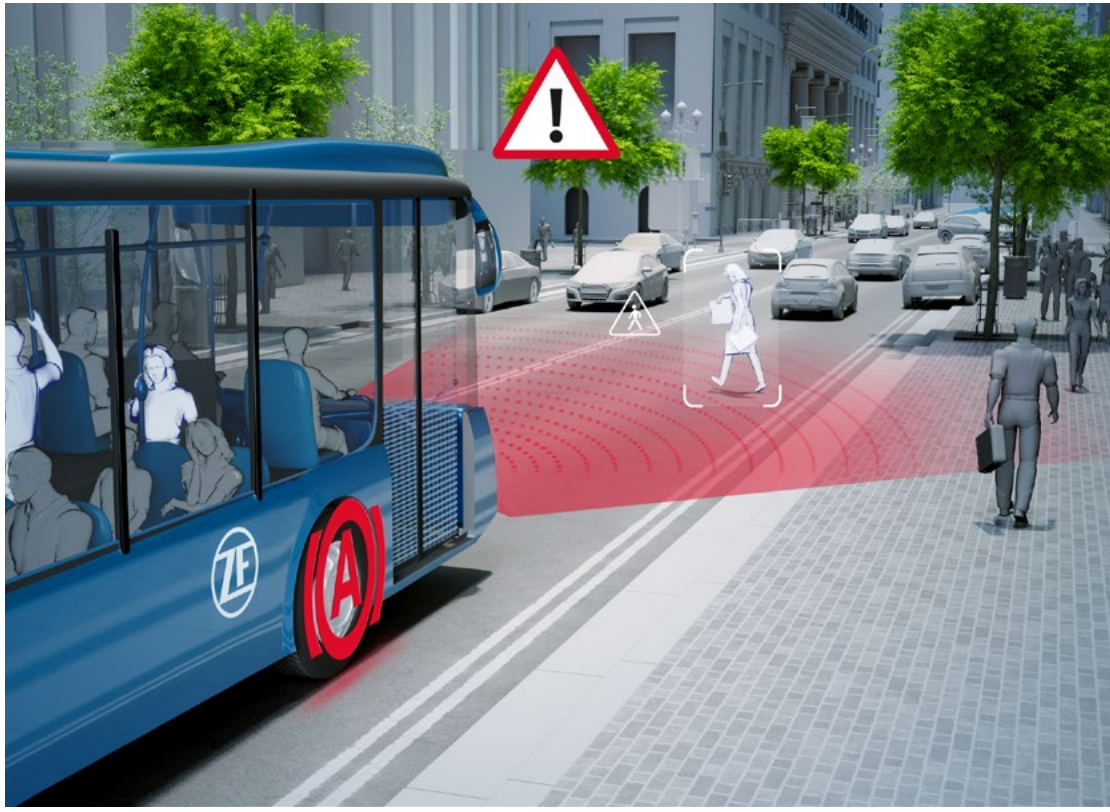
Enhanced safety for more vulnerable road users

For new passenger cars, emergency brake assist has been mandatory in the EU since 2022. With a clever combination of driver assistance and brake control technology, ZF enhances safety in city traffic. The new brake assist for city buses (City Bus CMS) helps prevent accidents.

The basis for automatable vehicle systems

ADOPT, the Vehicle Motion Control platform for commercial vehicles, opens up even more potential for automated systems. It relies on the know-how of all technology areas of existing products. Similar to the cubiX control software for passenger car applications, ADOPT translates the driving instructions of a virtual driver into real vehicle motion commands. The system offers a simplified plug-and-play approach that accesses defined interfaces with industry-standard specifications. Special attention is paid to data security. Thanks to defined variability in the interfaces, ADOPT can control the longitudinal and transverse movement of commercial vehicles in various vehicle configurations.

ADOPT implements the vehicle movements according to the requirements of various virtual drivers or remote controls to guarantee the necessary stability and safety of the vehicle at all times. The coordination of the individual control commands to the actuators improves efficiency, performance and safety.



City Bus CMS: a brake assist system for passengers and road users

Learn more about City Bus CMS

Boosting sustainability

The overarching goal of many new technologies is to pave the way for a future with even more sustainability. However, we also pursue sustainability in numerous projects relating to the procurement, production and use of our products. And in addition to climate and nature, our focus is also on the well-being of people and consistent values.

In this context, two flagship projects exemplify the production of the future.

Blueprint for existing plants

In the Czech city of Klášterec lies the hub of the Zero Emission Factory project. This involves the sustainable use of energy with the aim of reducing greenhouse gas emissions. ZF itself therefore generates solar power and heat using heat pumps; the purchased electricity is also green. The Klášterec factory thus provides the blueprint for retrofitting existing plants within the Group.

As part of its sustainability initiatives, ZF also aims to generate electricity through wind turbines in which ZF uses its own components.

Emission-free production of power electronics

Plant 2 in Pančevo, Serbia, is the first newly built zero emission production plant in the Electrified Powertrain Technology Division. It sets a new standard for sustainable production throughout the Group.

This is where power electronics are created on a 400-volt basis for plug-in hybrids and on an 800-volt basis for all-electric vehicles. The entire building infrastructure has been honed for maximum sustainability and efficiency. This ranges from improved thermal insulation to energy generation, the handling of water and wastewater, lighting technology and the use of state-of-the-art heating, ventilation and cooling technology.

To minimize energy consumption, solely heat pumps are used for heating and cooling. Heat recovery and demand-based ventilation also increase efficiency.

The ZF plant in Klášterec, Czech Republic: The 3,400 solar modules installed on the roof and next to the existing plant deliver a peak electrical output of 1,411 kilowatts.

Plant 2 in Pančevo, Serbia, built last year, is heated by heat pumps without the use of climate-damaging natural gas or oil. View of the technology inside the building.

More informationen on the plant in Klášterec

Green energy

Climate neutrality along the entire supply chain is our ambition through 2040. The consistent reduction of emissions is already an important element in our competitiveness. This includes the supply of green energy. Here, ZF has ratcheted up its ambitions and is sending a clear signal: All plants are to be supplied completely with green electricity by 2025 rather than 2030.

A special focus is on technical green energy solutions and on power generation by wind turbines with ZF technologies.

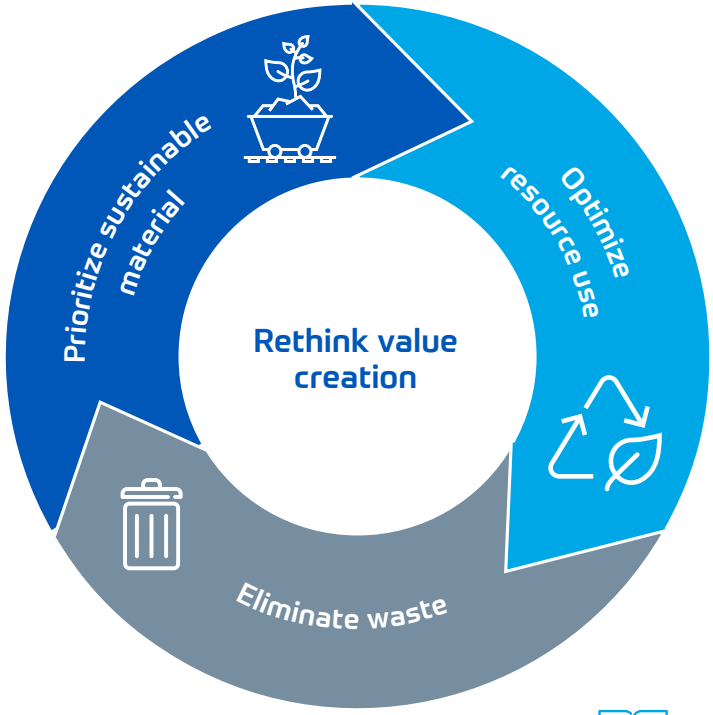
Green steel

The 2.7 million tons of steel (including cast iron) that ZF processes per year account for the largest share of CO_2 in the supply chain. We have therefore agreed a binding seven-year contract from 2026 with the Swedish start-up H2 Green Steel for the supply of steel produced almost emission-free. This contract alone will save ZF around 475,000 tons of CO_2 per year.

Circularity Framework

Closing material cycles is one of ZF's central sustainability goals. We have set ourselves the goal of moving from the linear economy to the circular economy in order to decouple our economic development as far as possible from additional resource consumption.
The development of circular business models underpins the ZF Circularity Framework. The focus is on building a circular product portfolio. The key here is forging new partnerships and building on existing ones.

This requires an efficient exchange of data in the network. The Catena-X open data ecosystem supports this and makes progress along the supply chain transparent.



Learn more about Sustainability

Human rights along the value chain

In times of transformation, we as a globally active company shoulder social responsibility. It is our task to identify environmental and human rights risks in connection with our business activities along the entire value chain and to reduce them wherever possible.

We are committed to this in our Code of Conduct and we have a duty to do so. This responsibility affects the entire value chain. To incorporate the Code of Conduct even more into our business decisions in the future, we have created the new position of the Human Rights Officer.

ZF is increasingly working to ensure that the universally applicable human rights are adhered to in our own business segment and at suppliers in all countries – even with different legal frameworks and cultural circumstances.

We create a piece of the future every day – conceived, developed and produced with the passion of our employees around the globe. They enable our innovations.

Sustainability

33 — Sustainability Strategy and Governance
39 — Climate and Nature
49 — Our People
61 — Supply Chain
65 — Product Quality and Safety
69 — Business Conduct

Sustainability Strategy and Governance

KEY FACTS

- **Implementation of Sustainability Steering Board and Sustainability Council as Group-wide steering committees.**
- **Group-wide knowledge platform for sustainability and human rights developed.**
- **Finance portfolio expanded by issuing green bonds.**

Our sustainability strategy "Acting now. Sustainability@ZF" takes into account the dimensions of environment, society and governance. In the field of the environment, the focus is on climate protection and the development of circular products and business models. With regard to the social impact, we want to offer our employees an inclusive work culture, valuing diversity and promoting continuous learning and development. The safety of all employees is just as important as that of our products. We also ensure that human rights are observed in our own operations and along the entire value chain. We believe that good and responsible corporate governance includes, e.g., compliance and creating long-term values.

Acting for climate and nature

With its climate strategy, ZF is committed to reducing its absolute Scope 1 and Scope 2 greenhouse gas emissions by 80% until 2030 compared to 2019. In Scope 3, the aim is a reduction by 40%, measured against sales, in the same period. In order to achieve the goal of climate neutrality across all emission categories by 2040, ZF uses two central levers for climate protection: reducing CO_2e emissions in the company and at suppliers by all possible means and increasing the share of renewable energies in electricity consumption. Other main levers for protecting climate and nature are fostering the concept of circular economy and improving our CO_2e footprint by further electrifying our portfolio wherever this is feasible.

Acting for all people

ZF treats all employees equally, regardless of gender, age, cultural background and similar characteristics. Cooperation within ZF is guided by equal rights and respect, as well as by equal opportunities for personal development. The best possible health and occupational safety has top priority throughout the company. We feel obligated to demand compliance with human rights for our company but also along the entire value chain, for example from our suppliers, and to ensure fairness in working conditions and payment. In addition, ZF cooperates with charitable and non-profit organizations for the benefit of local communities and society.

G. 01 **ZF Sustainability Strategy**

Acting for lasting values

In order to create lasting values, our business conduct – both on our own and in reliable partnerships – is transparent as well as ethically and legally sound at all levels. Our Code of Conduct serves as a compass for this. It is not short-term profit that counts but the creation of lasting corporate values. To this end, we create and constantly optimize stable and efficient structures within the company.

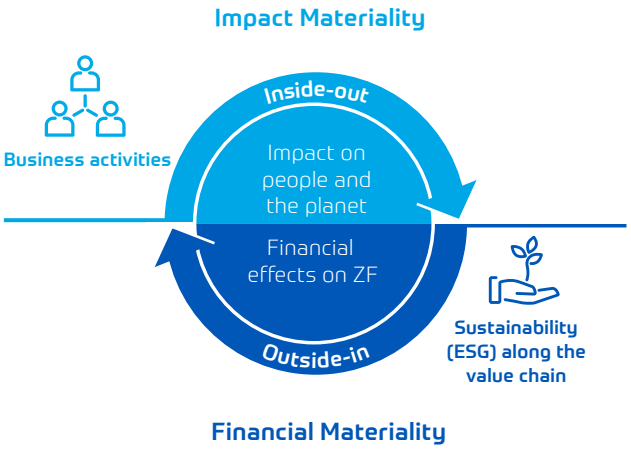
For all material topics we consistently develop strategies, implement measures and monitor the progress over time. Following this approach, the sustainability strategy was further elaborated and implemented during 2023. To integrate the strategy into the daily business, sustainability was not only incorporated into core processes but the overall organization of the Group.

In the year under review, ZF conducted a materiality analysis in accordance with the requirements of the European Corporate Sustainability Reporting Directive (CSRD). For this purpose, a representative selection of internal and external stakeholders was invited to evaluate topics according to the required materiality perspectives as per CSRD:

- Positive and negative impacts (inside-out)
- Financial dimension of so-called non-financial risks and opportunities (outside-in)
- Current situation and future trends

As part of the materiality analysis, ZF also recalculated indicators from the Value Balancing Alliance. Experts from the ZF specialist departments then evaluated these with the results of the stakeholder survey according to the criteria described above and taking into account risk management aspects such as severity and remediability. The materiality analysis result confirmed the overarching “Acting now” topics.

G. 02 Materiality analysis



G. 03 Material topcis

Acting for climate and nature

- Air, water, soil pollution
- Biodiversity & ecosystems
- Circular economy
- Climate adaptation & climate protection
- Energy
- Hazardous substances
- Use of resources
- Water

Acting for all people

- Affected communities
- Consumers & (end) users
- Equality & non-discrimination
- Other work-related rights
- Workers in the value chain
- Working conditions

Acting for lasting values

- Anti-competitive behavior & lobbying
- Business conduct culture
- Corruption & bribery
- Digitalization
- Sustainable Finance

ORGANIZATION AND RESPONSIBILITIES

Due to the strategic character of the Sustainability function at ZF, it reports directly to the Board Function Human Resources, Legal and Compliance. In view of the rapidly grown business relevance of the topic, the Sustainability Ambition Project and the associated steering committee were replaced by the Sustainability Council and the Sustainability Steering Board in 2023. This completes the transition from a project organization to a firmly embedded organization.

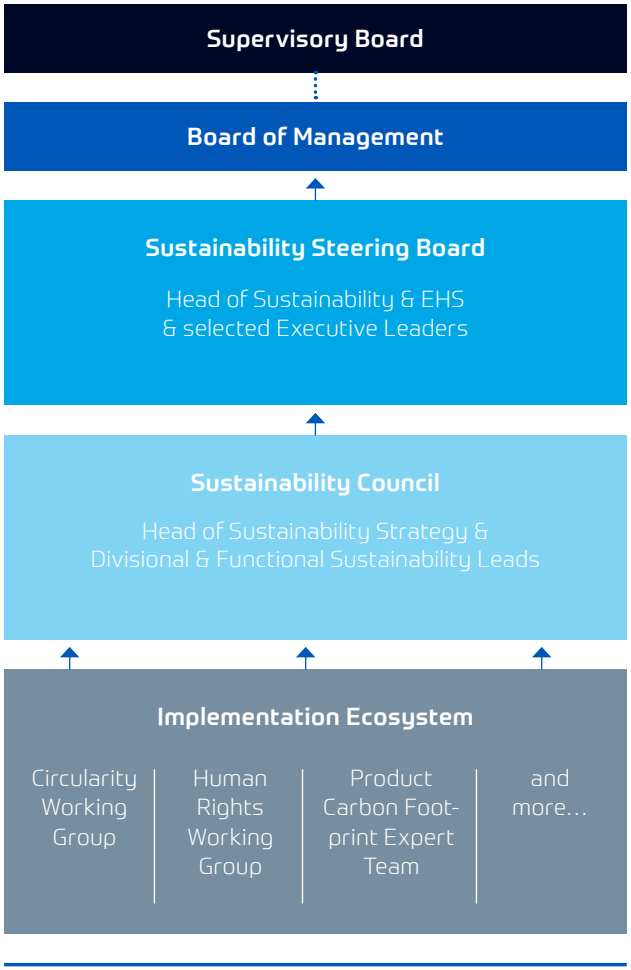
The Sustainability Steering Board is the highest steering committee. It consists of representatives of the senior management from the divisions, regions and functions of ZF and has the following tasks:

- Supporting the Board of Management in monitoring relevant sustainability and corporate social responsibility aspects
- Regularly reviewing the effectiveness of the sustainability strategy as well as the agreed targets and measures
- Ensuring that the sustainability strategy is anchored in relevant processes and structures of the company
- Checking at regular intervals if key topics are up to date

The Sustainability Council is made up of representatives from the divisions and functions. In particular, it is responsible for integrating the strategy into core processes and business activities. For specific topics, the Sustainability Council can set up working groups, campaigns and projects.

In the year under review, ZF also introduced a sustainability organization across all divisions, regions and major domain functions. In addition to developing the Group-wide sustainability strategy, the central Sustainability Department is responsible for non-financial reporting. It is also the contact point for any questions about sustainability and steers the stakeholder dialogue. In addition, the department also assumes responsibility for individual topics, such as decarbonization, the development of the circularity strategy or risk management to maintain human rights due diligence. The Sustainability Department also centrally provides methods for the analysis and control of product-related sustainability. To this end, it develops and supports the implementation of instruments and procedures to evaluate and improve the ecological impact of a product over its entire life cycle.

G. 04 Sustainability organization



Human rights at ZF

Respect for human rights is an integral part of ZF's organizational culture and shared values. Employees and management worldwide are required to comply with the associated Policy Statement and to ensure that their professional activities are in line with the principles set out there as well as with the principles in the ZF Code of Conduct.

To determine the impact on human rights, ZF pursues a holistic Human Rights Due Diligence (HRDD) approach. It is based on the Group-wide Corporate Compliance methodology and thus relies on a risk-based approach taking into account the Group level, production locations and the supply chain.

With the five core elements of the HRDD approach, ZF ensures that it recognizes the impact of its business activities on human rights at an early stage through proactive risk management and avoids potential negative impacts. The company has appointed a Human Rights Officer to monitor the adequacy and effectiveness of risk management and to implement risk-based control measures. She acts unbound by instructions and reports directly to the member of the Board of Management in charge of Human Resources, Legal and Compliance.

G. 05 **Elements of the Human Rights Due Diligence (HRDD) approach**

STAKEHOLDER COMMUNICATION AND MANAGEMENT

Striving for sustainability requires holistic thinking. ZF therefore engages in various exchange formats with different stakeholders to be able to take into account their specific perspectives and to achieve balanced solutions. ZF is convinced that cooperation is the key to successful sustainable development and therefore contributes to this by sharing knowledge with stakeholders and cooperating to develop solutions.

Creating awareness across the Group

In order to promote employee knowledge and an overview of various sustainability topics, ZF has set up an internal online knowledge platform. It bundles Group-wide training programs that are available to all employees as web-based training, webinars or web recordings. Content is regularly updated by the specialist departments. The exchange of knowledge is supplemented by a variety of communication measures, including regular sustainability dialogues with internal experts. This format, which is freely accessible to all employees, enables an open exchange between managers and employees.

ZF activities worldwide are also communicated in the internal sustainability community on the intranet. Employees also use the channel to exchange knowledge.

Supported initiatives

By signing the United Nations Global Compact in 2012, the ZF Group committed itself to acting in a socially responsible manner. Since joining, the company has also become a member of the Global Compact Network Germany and actively participates in exchanges between the member companies. ZF acknowledges the core labor standards of the International Labor Organization (ILO), the contents of the German Corporate Governance Code (DCGK), the OECD Guidelines for Multinational Enterprises, the Universal Declaration of Human Rights and the UN Guiding Principles on Business and Human Rights.

During 2023, topics such as climate protection, respect for human rights and the implementation of the German Supply Chain Due Diligence Act (LkSG) continued to determine ZF's exchange with and activities in the industry. As an active member of the Automotive Industry Dialogue, a multi-stakeholder dialogue in the context of the National Action Plan on Business and Human Rights (NAP), ZF participates in measures and campaigns to help companies improve their compliance with human rights due diligence obligations along their value chains.

On top of this, ZF participates in other local and international campaigns and dialogues in the field of sustainability. These include the European Association of Automotive Suppliers (CLEPA), where ZF is a member of the Energy and Environment Working Group. Furthermore, in the CLEPA Task Force for Taxonomy & CSDDD (Corporate Sustainability Due Diligence Directive) ZF works together with other members to further the evolution of the taxonomy legislation to fairly consider the needs and possibilities of the supplier industry.

Stakeholder communication channels

Stakeholder groups	Media and formats
Employees	Zoom (intranet including various news channels and the sustainability-specific chatbot TERRA, blogs from the CEO, CHRO and other members of the Board of Management), face-to-face and virtual town hall meetings, webinars, skip-level meetings, innovation challenges, pitch events and virtual marketplaces, team communities, ZF BarCamp, New Work, management calls and internal target group mailings, notices, poster campaigns and on-screen information at the plants, family days, ZF website, social media and ZF hilft e.V.
Potential employees and educational institutions	Collaborations with universities and schools, Combined Annual and Sustainability Report, advertisements, ZF website, participation in trade fairs, events, sponsoring, social media and – in the future – employee ambassadors
Customers including end customers	Combined Annual and Sustainability Report, ZF website, brochures, advertisements, face-to-face or virtual customer days, participation in trade fairs, key account management, social media
Suppliers and partners	Combined Annual and Sustainability Report, ZF website, participation in trade fairs, advertisements, supplier days, key purchasing strategy, ZF Global Supplier Summit, social media, webinars
Politicians, associations, interest groups	Combined Annual and Sustainability Report, ZF website, Associations & Politics Department: topic-related discussions, round-table events/webinars, on-site visits, association work, social media
Press and other media	Combined Annual and Sustainability Report, ZF website, press releases, face-to-face and virtual press conferences, on-site and virtual test drives, social media
Communities	Press, ZF website, advertisements, sponsoring, social commitment at the locations, regional events, social media
Investors, analysts and other capital market participants	Combined Annual and Sustainability Report, annual and semi-annual conference calls with analysts and investors, capital market days, face-to-face meetings, trade fairs, ZF IR website

In order to underline its commitment to climate protection, ZF is a member of the Alliance of CEO Climate Leaders of the World Economic Forum. This alliance takes the stand that the private sector must assume responsibility and actively engage in efforts to reduce greenhouse gas emissions, thereby helping to shape the global transition to a low-CO_2e, climate-resilient economy. Furthermore, ZF is a founding member and active partner of the Steel Sector Working Group of the World Economic Forum's First Movers Coalition (FMC). It aims to jumpstart the demand for zero-emission technologies by leveraging collective purchasing power from companies, thereby scaling up critical emerging technologies essential for this net-zero transition.

ZF is also a member of Catena-X and a shareholder of Cofinity-X, the first operating company of Catena-X. There, ZF is active in various working groups with a

focus on sustainability, in particular in the working groups Circular Economy, Product Carbon Footprint and Environmental & Social Standards.

The cross-industry Value Balancing Alliance (VBA) aims to redefine entrepreneurial value creation. The success of a company should not only be measured by its financial performance, but also by its contributions to society, nature and the economy. The developed method translates environmental impacts as well as social and economic influences into comparable monetary values. In the year under review, ZF once again participated in a pilot project to test the current methodology in practice and to exchange experiences with members.

Memberships in associations

ZF and its companies are active in various associations and interest groups, including a wide range of sustainability-focused ones. The following list provides a small representative selection of national and international industry associations:

- Employers' Association Südwestmetall
- German Federal Digital Industry Association (Bundesverband Digitale Wirtschaft (Bitkom e.V.))
- German Federal Association for Materials Management, Purchasing and Logistics (Bundesverband Materialwirtschaft, Einkauf und Logistik e.V. (BME))
- European Association of Automotive Suppliers (CLEPA)
- Mexican National Auto Parts Industry (INA)
- German Association of the Automotive Industry (Verband der Automobilindustrie e.V. (VDA))
- Original Equipment Suppliers Association (OESA)
- German Mechanical Engineering Federation (Verband Deutscher Maschinen- und Anlagenbau e.V. (VDMA))

SUSTAINABLE FINANCE

Sustainable finance stands for the fact that financial actors consider essential environmental, social and corporate governance aspects for their decisions. In order to increase the share of sustainable financing, authorities, financial institutions and credit rating agencies are calling for greater transparency and greater commitment from market participants. Access to capital is thus increasingly dependent on the ability of companies to implement successful sustainability management. ZF is therefore extending its sustainability reporting and consistently implementing its sustainability strategy.

ZF has published a **Green Finance Framework (GFF)** based on the Sustainable Development Goals, the ICMA Green Bond Principles and the LMA Green Loan Principles. The company is constantly developing the framework in accordance with current market standards, the EU taxonomy and the European Green Bond Standard.

In 2022, ZF placed an ESG-linked bonded loan, the terms of which depend on the development of the company's EcoVadis rating. In addition, a revolving credit facility (RCF) is linked to the achievement of ZF's sustainability goal of reducing emissions in all three scopes of greenhouse gas emissions. In 2023, ZF expanded its sustainable finance portfolio with the issuance of further green bonds in euros and U.S. dollars. The financing proceeds from green bonds are used for the development, production and sale of products for battery electric vehicles (clean transportation) and for the development, production and sale of gearboxes for wind turbines (renewable energy). Allocated proceeds, climate effects of the financed projects and further details are published in the annual **Green Finance Report.**

Climate and Nature

KEY FACTS

- > **Emission reduction targets integrated into the long-term incentive of senior management.**
- > **Accelerated increase in renewable energies: 100% green electricity by 2025.**
- > **Strategic ZF Circularity Framework developed further.**

Mobility is an essential element of modern life. At the same time, automotive suppliers carry a particular responsibility because production consumes resources and emissions cause substantial changes to the climate worldwide. Therefore, we have an ambitious climate strategy: to become climate neutral across all emission categories by 2040. At the same time, we pursue the vision of a circular economy, keeping valuable raw materials and resources in the economic cycle. This approach not only reduces resource consumption, emissions and waste volumes, but also lowers material costs. We are thus striving for an economy that operates within planetary boundaries in order not to exceed global limits for resource use, pollutant emissions and other environmental impacts. ZF focuses on these areas according to its materiality analysis.

ORGANIZATION AND RESPONSIBILITIES

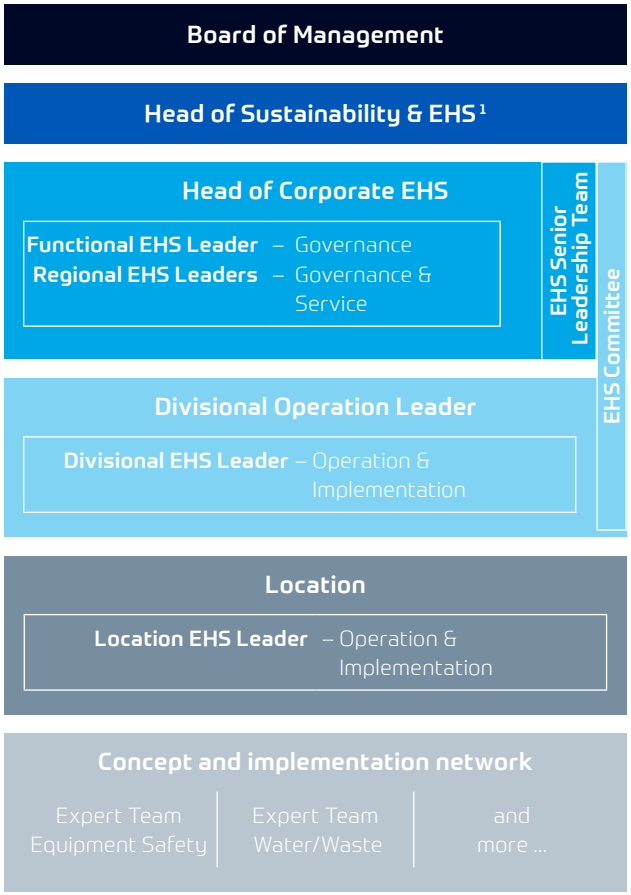
ZF's EHS organization covers all divisions, regions and individual locations. The Corporate Environmental Management Officer is responsible at Group level, and the environmental, occupational safety and health managers (divisional EHS managers) are appointed at division level. At plant level, location EHS managers are responsible for monitoring compliance with the environmental management system and continuously improving it. Regional EHS managers help to comply with the provisions in their region and implement the ZF standards.

Systematic environmental management according to ISO 14001:2015 is the standard for all production and main development locations. The coverage rate in terms of employees is about 90%. External inspections and audits confirm an effective EHS management system and compliance with current legislation by the ZF locations. The half-yearly management reviews are based on the individual reviews of the plants. Together with the responsible member of the Board of Management, the extent to which locations achieve their targets and manage EHS effectively is evaluated. In addition, it is evaluated whether the environmental management system is adequate for fulfilling current customer and management requirements.

Guiding policies and principles

ZF's environmental strategy aims to conserve natural resources and reduce the ecological footprint of the company. The corresponding environmental directive is binding for all locations and includes major fields of

G. 06 Environment, health and safety



1) Environment, Health & Safety

action such as climate protection, environmental impacts of production, environmentally friendly product design and environmental performance improvement. It also comprises specific targets for water, emissions and waste reduction. Its provisions are implemented through a globally binding EHS management system that contains detailed information on action planning, implementation and monitoring.

Compliance with legal and official requirements is the basis of all activities in the field of environment, health and occupational safety (EHS). Due to various local requirements, legal developments are monitored and evaluated and – where necessary – measures are initiated at all locations and levels of the ZF Group. Compliance-relevant processes as well as incidents and violations must be reported. For more information, please refer to the ↘ **Business Conduct** chapter.

All locations follow the "prevention before reaction" and precautionary principle. The evaluation and minimization of potential risks are core elements of ZF's EHS management system. There are regular qualification and training measures to support behavior that is in line with environmental and occupational safety and increase the awareness of employees. All locations regularly conduct assessments of environmental aspects and risk for their respective facilities and processes in a local context – for example, prior to introducing new procedures or substances. To minimize liability and financial risks, environmental due diligence is also conducted as part of acquisition processes, along with internal and external audits. In order to be prepared for emergencies, each location has an emergency organization. Emergency response teams are provided with all the necessary equipment and procedures. Mock emergency drills are carried out on a regular basis. Technical installations for dealing with events such as floods or fires are also part of the company standard.

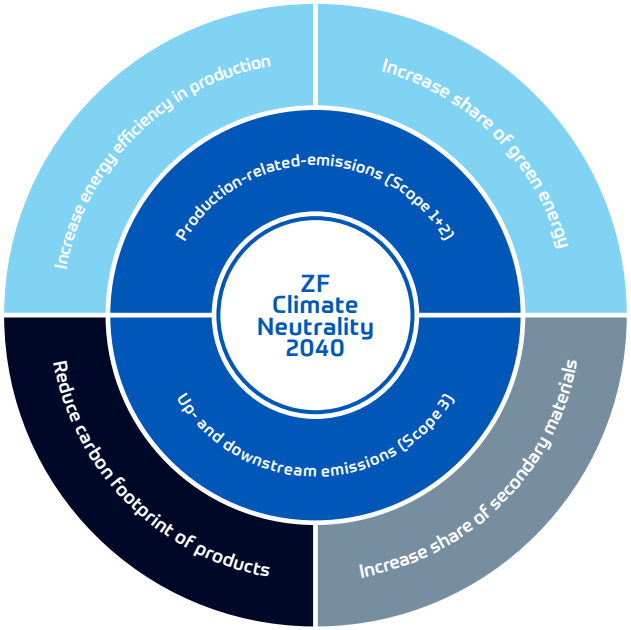
CLIMATE STRATEGY

With its climate strategy, ZF is committed to reducing its absolute Scope 1 and Scope 2 greenhouse gas (GHG) emissions by 80% until 2030 compared to 2019. In Scope 3, the aim is a reduction by 40%, measured against sales, in the same period. Our ambition is to achieve net zero emissions in all three scopes by 2040. In Scope 1 and Scope 2, the focus is on reduction and substitution, which is to be achieved through a reduction of energy consumption, projects to increase energy efficiency and the switch from fossil to renewable energy sources. For Scope 3 emissions, the focus is on a gradual conversion to emission-free products. This requires, among other things, interventions in product design and material selection as well as a comprehensive decarbonization of the value chain.

To support target achievement, the Supervisory Board and the Board of Management decided to integrate the reduction of Scope 1 and Scope 2 emissions into the long-term incentive of ZF's senior management from 2023 onwards. In September 2023, the Board of Management took the decision to simplify and accelerate the implementation of green power. In this context, the target of using 100% renewable energies in all plants was brought forward from 2030 to 2025. This takes account of the increasing social and market requirements and underlines ZF's sustainability ambition.

Our target path towards climate neutrality is guided by the UN Sustainable Development Goals (SDGs) and is defined in accordance with the requirements of the Science Based Targets initiative (SBTi), the CDP (formerly the Carbon Disclosure Project) and the Taskforce on Climate-related Financial Disclosures (TCFD). In January 2022, the SBTi confirmed that ZF's CO_2e emission targets are in line with the goals of the Paris Agreement.

G. 07 Climate strategy and implementation (Scope 1, 2 and 3)



The ZF corporate carbon footprint (CCF) is calculated according to the rules of the GHG Protocol. Therefore, nitrous oxide (N_2O) and methane (CH_4) are included in ZF's CCF and reported as CO_2e. Also included are hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), which are taken into account with their leakage losses. Nitrogen trifluoride (NF_3) and sulfur hexafluoride (SF_6) are not relevant as these gases are not produced during ZF operations.

ZF has been reporting climate data within the CDP reporting scheme on an annual basis since 2016. The data includes all greenhouse gas emissions, listed by

ZF climate targets at a glance

- ZF undertakes to reduce its absolute Scope 1 and 2 GHG emissions by 80% by 2030, with 2019 as the base year.
- ZF undertakes to reduce its Scope 3 GHG emissions by 40% per million euro sales by 2030, with 2019 as the base year.
- ZF undertakes to increase its annual procurement of electricity from renewable sources from 10% in 2019 to 100% by 2025.

type and by country. Since the reporting year 2022, we have also listed the data by division. Information on the current data and the rating can be found at zf.com. Since the CDP Climate Questionnaire is largely aligned with the TCFD recommendations, information on climate change-related risks and opportunities, governance and management was reported. As part of its climate strategy, ZF is constantly refining its management approach and its corresponding reporting.

In 2023, the gas and steam turbine plant at the Saarbrücken site (Germany) was sold. This lead to a reduction in Scope 1 emissions and an increase in Scope 2 emissions, as this energy needs to be purchased externally.

Emissions in CO_2e

in million tons	2023	2022	2019 Baseline
Scope 1	**0.247**	**0.391**	**0.406**
Scope 2			
location-based	1.184	1.079	1.437
market-based	0.805	0.776	1.371
Total (Scope 1+2) [1]	**1.052**	**1.167**	**1.777**
1 Purchased goods and services	15.169	16.557	21.688
2 Capital goods	1.528	0.934	1.485
3 Fuel- and energy-related emissions (not included in Scope 1 or 2)	0.263	0.273	0.222
4 Upstream transportation and distribution	1.082	0.810	1.127
5 Waste	0.132	0.135	0.131
6 Business travel	0.041	0.039	0.113
7 Employee commuting	0.158	0.152	0.149
9 Downstream transportation and distribution	0.398	0.298	0.415
10 Processing of sold products	0.060	0.060	0.060
11 Utilization phase	63.487	63.372	77.235
– direct	7.633	4.563	8.414
– indirect	55.854	58.809	68.821
12 End-of-life treatment of sold products	0.135	0.110	0.071
15 Investments	0.003	0.004	0.022
Total (Scope 3)	**82.456**	**82.744**	**102.719**

1) The total quantity was calculated based on market-based emissions.

Other emissions

in tons	2023	2022	2021
NOx	1,832	1,696	2,233
SOx	2,663	2,330	2,818
Volatile organic compounds (VOC)	396	515	477

Risks and opportunities due to climate change

The worldwide consequences of global warming include more severe or frequent weather extremes such as floods, storms and droughts. Besides these so-called physical risks, transitional risks and opportunities also arise, e.g., higher costs of doing business, carbon price increases or market opportunities through the expansion of renewable energies. A major development in the risks and opportunities analysis is the greater consideration of their impacts on strategy and business processes.

In 2022, ZF conducted a first scenario analysis for the Group in accordance with the TCFD recommendations to systematically assess the risks and opportunities due to climate change. The risk analysis was based on the two global warming scenarios of 1.5°C and 2.7°C, covered the entire value chain of the ZF Group and was projected in the short, medium and long term. This analysis will be further developed and expanded in 2024. In addition, ZF is working on the integration of climate and other risk analyses and evaluations from ESRS and ESG topics into the "Governance, Risk & Compliance" approach. This includes both Enterprise Risk Management (ERM) and the Internal Control System (ICS) for handling process risks. The consideration of identified risks and opportunities in the strategy and other relevant business processes is also currently being evaluated.

For more information regarding the adaptation of ZF's product portfolio to climate change-related impacts, please refer to the ↘ **Resource use and circular economy** chapter. For more information about the general approach to risk management, please refer to the ↘ **Risks and opportunities** chapter.

Supply chain decarbonization

Achieving climate neutrality along the entire value chain is an ambitious target because Scope 3 emissions are not within ZF's direct sphere of influence. Therefore, close cooperation with all supply chain partners is key.

Whenever feasible, ZF makes purchases in those regions where the materials or components are needed. This helps to reduce negative transportation impacts. Of all production materials, 50% (2022: 51%) were procured locally in the year under review. For ZF, "local" means that the supplier is located in the same country as the receiving ZF location. As for non-production materials, 79% (2022: 81%) of the global spend excluding investments was sourced locally.

In terms of upstream emissions, aluminum and steel account for the majority proportion of procurement volumes. An effective reduction of emissions can only be achieved through major technological innovations in the production of these raw materials. These include, for example, the production of steel in electric arc furnaces (EAF) powered by renewable energy and the use of green energy for smelting aluminum.

A key technology for achieving CO_2e reduction is the use of green hydrogen in steel production. In 2023, ZF concluded a purchasing agreement with the start-up H2 Green Steel, which intends to start production of low-emission steel in Sweden in 2025. From 2026 onwards, ZF will receive 250,000 tons of "green steel" annually. This volume accounts for ca. 10% of current steel requirements and will save around 475,000 tons of CO_2e emissions. The steel that ZF purchases from H2 Green Steel enables savings of up to 80% in the carbon footprint compared to a conventional blast furnace. For further information, please refer to the ↘ **Resource use and circular economy** chapter.

In 2023, ZF carried out pilot projects for the decarbonization of purchased parts across the Group. The aim is to gain practical experience in implementing the decarbonization levers defined by ZF and to compare the theoretically calculated potentials with the actual impacts and costs. A successful example is the conversion of a forged part produced in India to EAF steel produced with green electricity, which reduces the product carbon footprint (PCF) of the delivered part by 37%.

An important lever is increasing the use of green electricity in the supply chain. ZF therefore expanded the existing decarbonization campaign in the year under review. The target of achieving 100% renewable energies by 2025 was included in the bid conditions for production material suppliers. So far, suppliers have pledged to achieve the same renewable energies target for more than 60% of the purchasing volume.

In the year under review, as part of its Catena-X membership, ZF participated in defining and testing the requirements for the exchange of PCF data in the supply chain and their implementation in correspond-

ing applications. For PCF data exchange, ZF initially set up internal systems and applications accordingly. Suppliers are to be included in 2024.

Since August 2023, suppliers of production material have been required to submit a PCF with their bid when applying for new business. ZF checks these values as part of the awarding process and develops suggestions for improvement. The mandatory requirement to submit a PCF calculation is accompanied by an extensive training offer to both the suppliers and own employees. At the beginning of 2023, ZF also introduced the Measure Tracking Reporting Tool for tracking the product carbon footprint of suppliers. The tool enables more purposeful collaboration with suppliers regarding their PCF.

ENERGY

Energy consumption is a high priority for an industrial company like ZF and is a core element of the EHS management system. All locations regularly evaluate their energy supply and other energy-related activities. This includes conducting audits, identifying potential for improvement and defining measures to increase energy efficiency and reduce consumption. On this basis, each location sets targets for the following year. External audits complement the EHS management of all German and European locations. They are based on country-specific standards such as EN 16247 or ESOS (UK) to meet the European Directive 2012/27/EU (Energy Efficiency Directive, EED). By the end of 2023, 93 locations gained certification according to ISO 50001, the international standard for energy management systems.

Energy consumption

in MWh	2023	2022	2019 Baseline
Consumption of fuel	**1,172,533**	**1,867,542**	**1,954,370**
fuels from non-renewable sources [1]	1,169,369	1,866,923	1,954,370
thereof natural gas	1,019,886	1,721,067	1,850,571
fuels from renewable sources [2]	3,164	619	–
Consumption of purchased electricity	**2,712,864**	**2,477,129**	**2,558,830**
thereof from mixed sources [3]	1,971,343	1,906,518	2,295,835
thereof from renewable sources [4]	741,521	570,611	262,995
Consumption of self-generated electricity from renewable sources	**12,500**	**5,729**	**742**
Share of green power (%)	28	23	10
Consumption of purchased heat	**150,651**	**169,403**	**161,241**
Energy sold	**–168**	**–228,658**	**–188,888**
Total energy consumption within the organization	**4,048,548**	**4,291,315**	**4,486,295**
thereof renewable sources	759,081	578,271	263,737
thereof non-renewable sources	3,289,467	3,713,044	4,222,558
Energy intensity			
Energy intensity (in MWh per € million of sales)	87	98	123
Reduction of energy consumption	**166,000**	**121,000**	**39,000**

1) Natural gas, gasoline, diesel, fuel oil, liquified petroleum gas (LPG), compressed natural gas (CNG), acetylene, methanol
2) Biomass, biodiesel, bioethanol
3) Standard electricity mix from public grid
4) According to certfied green power contracts

In the course of ZF's Sustainability Ambition Project and the further development of its climate strategy, all subgoals contributing to the reduction of CO_2e emissions were adjusted and updated. To achieve decarbonization of its locations, ZF focuses on two main levers: energy efficiency and the switch to green energy. ZF includes all production, administrative and research locations in its efficiency programs. In 2022, the Group defined the goal that all ZF locations should reduce their energy consumption – relative to sales – by 2% annually. In the year under review, the company raised this target to 3%. A cross- divisional and cross-functional team of Operations, EHS and Real Estate Management steers the energy efficiency

projects and reports regularly to the Board of Management. Each location is expected to introduce and implement standards that contribute to employee awareness and behavior change. All locations plan campaigns to increase efficiency and reduce consumption and implement them depending on the local level of consumption and target achievement.

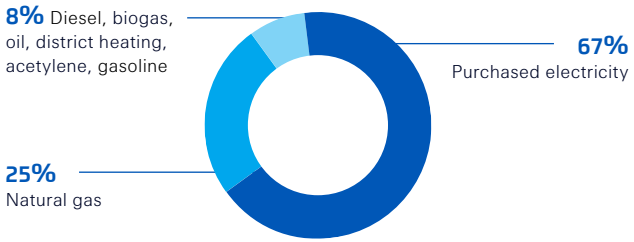
With regard to green energy, ZF aims to supply all plants with 100% renewable power by 2025. To this end, the company has developed a Green Power Guidance Document that defines what ZF accepts as green power. Particular attention is paid to technical green energy solutions that guarantee actual additionality and to the generation of electricity by wind turbines using ZF technologies.

Key energy figures

Energy is mainly used for building and infrastructure management as well as in production. Due to the variety of production processes within the company, the share of energy use varies greatly among locations. Based on overall consumption, 67% of the energy comes from additionally purchased electricity. With a share of 25%, natural gas is mainly used for heating and hardening processes. The remaining 8% comprises energy from diesel, gasoline, oil, district heating, liquid gas, acetylene and biogas.

As part of certified green power contracts, ZF increased the share of renewable sources in total purchased electricity to 27% in 2023 (2022: 23%). The amount of self-generated electricity from renewable sources doubled to 12,500 MWh in 2023.

G. 08 Energy sources used



Compressed air plays an important role in production. It consumes a great deal of electricity and leakages in these compressed air systems cause high energy losses. ZF therefore relies, among other things, on targeted control and adjustment on the production machines. In the year under review, the Bielsko-Biała (Poland) location developed an approach to reduce compressed air requirements by up to 25% without impairing productivity.

In the area of building infrastructure, ZF uses energy efficiency measures such as heat recovery. In addition, some locations implemented weather and production program-dependent controls for ventilation systems in the year under review, which enable optimized and load-dependent air volumes. Besides energy savings, they ensure improved air quality.

Overall, around 1,000 projects (2022: 800) were implemented or initiated in 2023, which led to more than 166 GWh in energy savings (2022: 121 GWh). This corresponds to the electricity consumption of 40,500 average households and an avoidance of 66,700 tons of CO_2e emissions.

Absolute direct CO_2e emissions (Scope 1) decreased from 0.391 million tons in 2022 to 0.247 million tons in 2023. Absolute indirect CO_2e emissions (Scope 2) increased from 0.776 million tons in 2022 to 0.805 million tons in 2023. This increase is a result of the sale of the gas and steam turbine plant at the Saarbrücken site. Electricity demand is now covered by purchasing external electricity.

RESOURCE USE AND CIRCULAR ECONOMY

ZF pursues the vision of a circular economy in which growth is not dependent on the consumption of raw materials. According to the World Economic Forum's Circularity Gap Report, published in 2023, more than 90% of the materials used worldwide are wasted, lost or cannot be reused for years. Less waste not only reduces the necessary extraction of raw materials, but also CO_2e emissions.

In order to keep materials and products at their highest possible value, the company is constantly optimizing existing processes and structures. In addition, ZF develops circular systems to eliminate waste and use finite resources more responsibly. An important aspect is increasing material efficiency. In this systemic approach, ZF considers the entire life cycle of products. Improving repair options and remanufacturing products are important levers to extend the product life cycle.

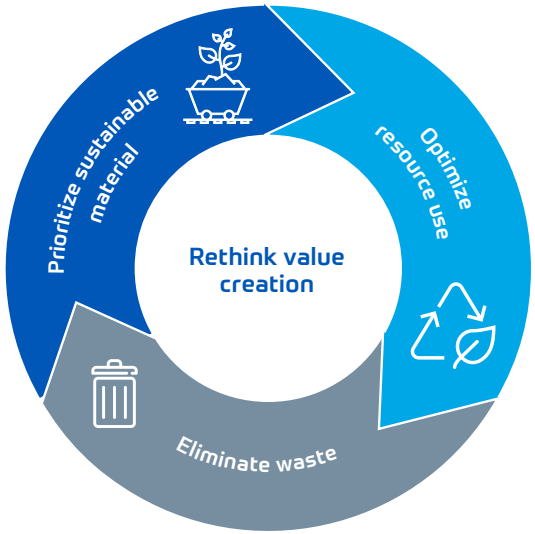
ZF has firmly established the circular economy concept in cooperation with the internal Circularity Team. It develops definitions, metrics and standards and pursues, among other things, the goal of building a common basis and an understanding of circularity in the company.

In the year under review, the ZF Circularity Framework was further developed. In a first step, we defined key principles and identified concepts for how they should be achieved. In a second step, we formulated a strategic approach that was presented to the Board of Management at the end of 2023. Further elaboration and objectives are planned for 2024. The key principles are: The "Rethink value creation" principle is the central building block and foundation of the ZF Circularity Framework. A transition to a circular economy requires the development or improvement of circular business models and the product portfolio, the establishment of new or the intensification of existing partnerships and the creation of a circular ecosystem with different stakeholders. Through partnerships and funding projects such as Catena-X, we are working on a functioning, circular ecosystem that can operate within planetary boundaries. For more information, please refer to the ↘ **Supported initiatives and memberships** chapter.

Sustainable product development

According to a study by the EU Commission, 80% of the environmental impact of a product is determined in the design phase. Therefore, early consideration of sustainability aspects in the development phase is essential. Product Development is working on increasingly using CO_2e-reduced materials and circular economy aspects. For this purpose, R&D appointed sustainability managers for each division. They form the R&D Sustainability Ambition Team, which has a coordinating and prioritizing function. This strengthens the focus on sustainability in all development departments.

G. 09 ZF Circularity Framework principles



In the year under review, ZF also fundamentally revised ZF Company Standard 9005 (ZFN 9005) for sustainable product design and expanded it to include aspects of the circular economy. It includes design criteria such as more sustainable material selection, including recycled content and critical raw materials, modularity, durability, repairability and remanufacturing. Furthermore, ZF launched an internal speaker series of events highlighting key levers and tools available today for sustainable product development.

Sustainable materials

The selection of sustainable materials is of central importance for an optimized use of resources and further waste reduction. Based on the total material volume, ZF has developed a concept to test and evaluate materials produced with new process technologies and higher recycling contents. The results form the basis of a ZF-wide roadmap that includes alternative material concepts and production routes for main material groups. Corresponding sub-projects were initiated to validate the resulting changes in material properties.

Steel and aluminum account for over 50% of ZF's upstream Scope 3 emissions. Reducing this CO_2e share is crucial to achieving the climate target. An important step was therefore the development of a sustainability classification for steel, aluminum and plastics. In the process, a cross-departmental team took into account the scale from A to G from the EU energy efficiency classes. The CO_2e threshold for efficiency class A for

each material was defined in such a way that they are considered close-to-net-zero technologies. This easy-to-understand categorization facilitates the selection of materials and simplifies communication with suppliers and customers. Based on this classification, ZF implemented a CO_2e indication in the ZF Materials Warehouse (ZFMW). The central ZF materials database maps the portfolio of released and preferred ZF construction materials and provides relevant material data. The ZFMW supports the comparison and selection of materials and offers a guided workflow for the material release process.

In the case of steel, the switch from traditional blast furnaces to electric arc furnaces is an important measure. Here, ZF determines the influence of accompanying elements on the material properties. To reduce the carbon footprint with regard to aluminum, it is essential to increase the recycled content in alloys. In the year under review, the company therefore examined the influence of accompanying elements on the performance of aluminum cast alloys. Based on the test results, a new Group standard was created that defines the minimum recycling content for aluminum cast alloys.

Besides metals, polymers are also an important material group for ZF products. They are widely used in electrical plugs, housings, panels, bearings and other components for the automotive industry. Among other things, we investigated processing methods with reduced emission intensity and innovative polymer designs for increased functional integration and reduced part weight. For more information, please refer to the ↘ **Supply chain decarbonization** chapter.

Critical materials and substances of concern

Critical materials and substances of concern (e.g., REACH and GADSL substances) are also an important aspect of ZF's materials strategy. In the case of critical materials in the product, the company works to preserve the value of the materials as much as possible and keep them in the cycle.

To this end, ZF was still involved in the SUSMAGPRO EU project in the year under review. It investigates how rare earth magnets based on neodymium-iron-boron (NdFeB) can be recycled from motors at the end of their life cycle. For the first time, a current volume production traction motor has now been produced with recycled magnets. Thanks to the project insights, ZF was able to identify design features that enable a more efficient extraction of magnetic material during the recycling process. These recycled magnets were tested in the ZF laboratory and are assembled into test motors for servo drives. For further information, please refer to the ↘ **Product quality and safety** chapter.

Remanufacturing products

While ZF is increasing its efforts in all areas of a circular economy, the company has a long history of remanufacturing. The aftermarket activities with 20 remanufacturing locations in 15 countries cover more than 250 product families. Products from Bielefeld (Germany), one of the leading remanufacturing locations at ZF, are certified in accordance with the cradle-to-cradle (C2C) standard. In order to achieve certification, aspects such as material health or product circularity, use of renewable energy, water management and social fairness need to be evaluated. To develop this approach, the ZF Group collaborates with various working groups and universities on energy-saving and environmental protection.

Remanufacturing at ZF

- Over 1.6 million parts sold globally in 2023
- More than 5,500 single products in product range globally
- Up to 90% material saved per "reman" product compared to "newly produced" products

Currently, remanufacturing does not make sense for all product types, from an economic point of view. To improve this share, ZF established a remanufacturing design network with global experts. The team contributes its expertise and experience to challenge new design concepts and initiate new developments. It also provides suggestions for improvement in terms of remanufacturing, develops new customer project solutions and supports financial business evaluations.

Material efficiency and waste

Every year, the ZF Group purchases approximately 399,000 tons of aluminum and 2.7 million tons of steel including cast iron. These quantities do not include the purchase of aluminum and steel, where the supplier is determined by our customers (directed buy). In addition to raw materials, ZF also purchases large volumes of assembled parts and products that consist of a mixture of different materials. Therefore, figures on specific materials are not readily available. ZF also uses recycled materials in production. In terms of weight, long steel products and cast aluminum products constitute up to 90% of recycled materials.

Waste

in tons	2023	2022	2021
Recycling	**557,626**	**523,461**	**533,850**
thereof non-hazardous	526,450	493,123	504,367
thereof hazardous	31,176	30,338	29,483
Disposal	**55,930**	**57,329**	**60,831**
thereof non-hazardous	29,411	31,376	35,666
thereof hazardous	26,520	25,953	25,165
Total	**613,557**	**580,790**	**594,681**

ZF channels a high percentage of waste from production processes back into the external recycling processes. This mainly applies to scrap metal and metal chips, waste oil, paper and cardboard as well as wood. As a result of their material composition and design aspects, ZF products have a high recycling rate, resulting in a contribution to meeting the recycling quotas stipulated in the EU End-of-Life Vehicles Directive.

ZF's environmental management system is aimed at continuously reducing the amount of waste generated. The target for all ZF locations is to reduce the waste for disposal volume by 1% annually relative to sales. The base year for the target is 2019. Reducing hazardous waste is also a goal in waste management. For this purpose, the Group is adapting processes, optimizing procedures and replacing hazardous substances used in operations. The disposal of hazardous waste by ZF is organized locally and movement across national borders is only permitted in the absence of local disposal options, taking into account the Basel Convention.

In 2023, the total amount of waste increased by 5.6%. The specific amount of waste for disposal (tons per € million sales) was again lower in 2023 than in the previous year, and meeting the annual reduction target. The recycling rate was 90%. In 2023, the company was involved in 61 projects for the remediation of contamination dating back at least a decade. Projects were carried out jointly with the relevant local authorities and cost more than €6.9 million (2022: €10.2 million).

WATER

For ZF, water withdrawal for production at all ZF locations is a major environmental issue since the use of freshwater is increasingly restricted due to climate change, for instance. This is another reason why the company is committed to installing water-saving equipment that exceeds statutory requirements. The revised ZF Circularity Framework focuses on closing water circuits, for example in cooling systems.

Some of ZF's production locations, e.g., in Brazil, Mexico, India and China, are in areas with significant water scarcity or with significant water shortage. Permits for water withdrawal for production purposes are occasionally restricted. This may result in a need for increased investment or expenses to cover the technical modernization of production equipment. In 2020, ZF assessed all locations for their water risk. An updated assessment of all locations is currently being prepared. Completion is planned for 2024 in order to take into account definitions and specifications of CSRD reporting.

For production sites in areas of water-stress, the goal is to reduce water withdrawal by 2% annually relative to sales. For all other locations, a 1% reduction is being targeted on an annual basis. The base year for both targets is 2019. All water sources will be considered when assessing target achievement. Progress is monitored and managed in line with ZF's environmental management system at individual locations and at Group level.

The water supply is mainly via freshwater sources. At some locations, water from rivers or groundwater is used for cooling processes without any chemical treatment. ZF also makes use of available water treatment and reuse technologies to reduce freshwater withdrawal with regard to sanitary water. Specific withdrawal is down 30% compared to 2019.

Production processes use recycled water for washing, rinsing and cleaning operations and for the application of cooling lubricants. Relevant processes with the potential risk of releasing hazardous substances include surface treatment, machining with cooling lubricants and painting. Preventive technical measures in place at the locations ensure that hazardous substances cannot seep into the ground and endanger groundwater, even in the event of a release, for example resulting from an incident. There is a Group-wide reporting obligation in the eventuality of a release.

Thanks to the use of water treatment technologies, ZF not only decreases withdrawal of freshwater but also produces less wastewater. Wastewater at ZF is usually discharged into the public sewer system after treatment at local wastewater plants. Direct drainage into surface water only occurs at a few locations where public infrastructure is lacking or where ZF is allowed to use the corresponding surface water for cooling purposes. In these cases, water is treated using state-of-the-art technology and is drained directly with the approval of the authorities. Threshold values are monitored by ZF and the authorities. Wastewater loads are managed at local level, with relevant deviations

from legal requirements and permits being reviewed at Group level through audits and management reviews. In the year under review, no significant environment-impacting spills were reported.

Water

in m³	2023	2022	2021
Absolute water withdrawal	**9,720,705**	**9,687,209**	**9,770,000**
Ground water	937,115	853,062	840,000
Surface water	5,174,675	5,184,005	5,260,000
Water from third parties	3,608,914	3,650,142	3,670,000
Withdrawal in water-stress areas	**79,226**	**79,601**	**67,637**
Ground water	1,251	1,064	990
Surface water	0	0	0
Water from third parties	77,975	78,537	66,647
Water discharge	**8,423,978**	**8,314,945**	**8,310,000**
Surface water	4,869,207	4,861,286	4,990,000
Groundwater	0	0	0
Seawater	0	0	0
Third-party water	3,554,771	3,453,659	3,320,000
Total water consumption	**1,296,727**	**1,372,264**	**1,460,000**
thereof in water-stress areas	41,608	39,903	32,416

BIODIVERSITY AND ECOSYSTEMS

Biodiversity is a prerequisite for living on our planet and thus central to the functioning of ecosystems and human well-being. Despite continued efforts, biodiversity is decreasing globally and this decline will continue unless profound changes are made.

So far, there is no complete picture of the impact of our own business and supply chain on biodiversity. We are at the beginning of activities in this field, comparable to early measures of climate protection that led us to today's ZF climate strategy and roadmap.

ZF is already facing increased reporting obligations on biodiversity, risks and opportunities of biodiversity loss and ecosystem services, as this aspect is part of the EU taxonomy. In addition, we included these aspects in the materiality analysis 2023. To better understand the dependencies and impacts of our business on biodiversity, we have launched activities that integrate aspects of biodiversity into our business.

We recognize the need to increase biodiversity ambitions and prepare our organization to contribute to a regenerative economy. We will also apply this claim to the supply chain and include it in the ZF Business Partner Principles.

Our People

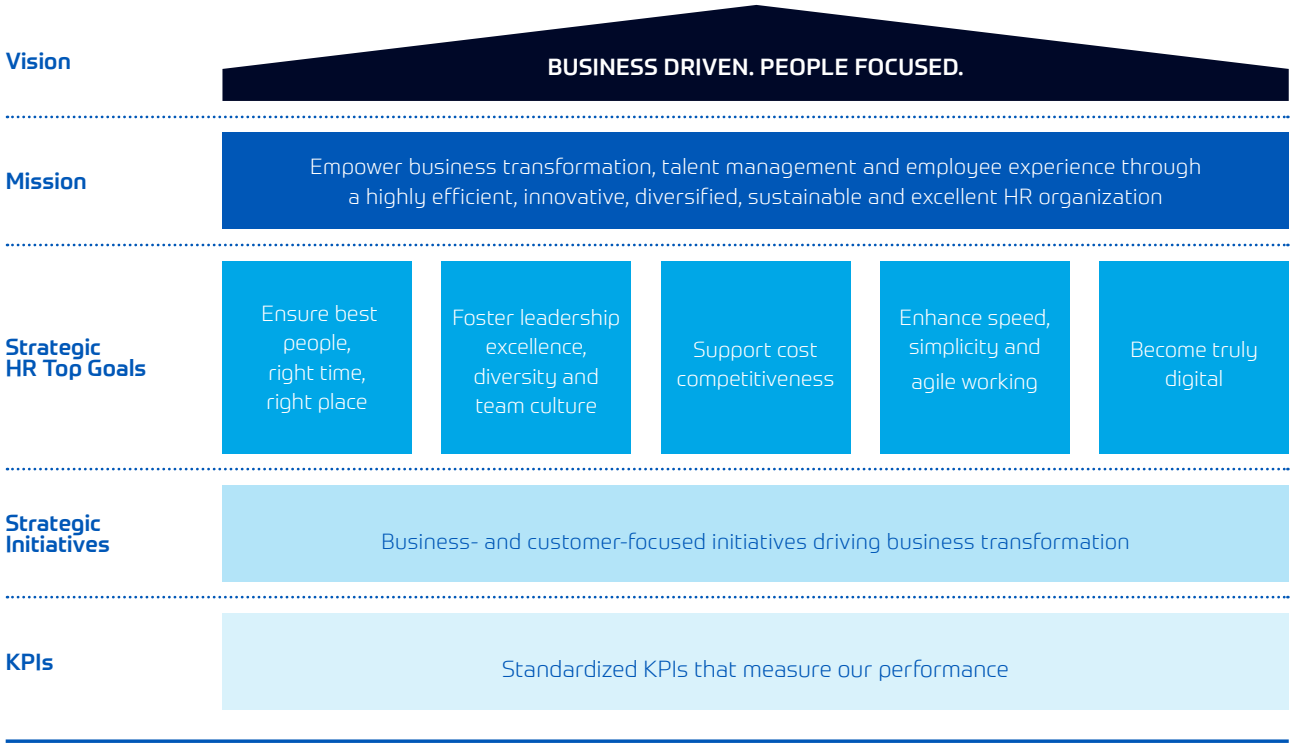
KEY FACTS

- > **Digital learning platform Skills Hub for mega-trends.**
- > **New Global Employee Engagement Survey.**
- > **Group-wide Diversity Week.**

Responsibility and commitment characterize what ZF wants to stand for as an employer. The company lives a culture that strengthens cooperation, leadership and responsibility, and provides a working environment that rewards good performance and teamwork. At the same time, ZF sees itself as a supportive partner of its employees. Fairness means benefits for both employees and ZF as an employer. We are convinced that this approach promotes commitment and ultimately helps improve economic results. It is based on the five principles of the ZF Way – passion, anticipation, diversity, empowerment and accountability. For more information please refer to ↘ **ZF Way - It's About Community - ZF**.

"Acting for People" as an element of ZF's sustainability strategy means that all measures, concepts and strategies are geared not only to the long-term economic success of the company, but also to the people affected. In the year under review, the focus of the HR Strategy was on digitalization and software.

G. 10 HR Strategy



ORGANIZATION AND RESPONSIBILITIES

HR departments are organized according to functions at ZF. Centers of Expertise (CoE) bundle the existing expertise on topics such as further training or diversity and serve as internal contacts. They standardize and develop HR offers and programs. This includes, among others, the annual performance and potential evaluation process, the salary adjustment process as well as the employee and management development landscape.

The individual functions of the organization work closely together. HR Operations with its Shared Service Centers standardizes essential HR processes, thus supporting their digitalization right down to the operational HR units. However, HR work is strongly influenced by country-specific regulations, specifications and market conditions. To be able to take these into account appropriately at all times, ZF has central contacts that are structured according to HR Regions and Countries as well as Site HR. They clarify local HR-relevant, labor law and works constitution issues.

In addition to executive managers, divisions and cross-sectional functions also have their own contact persons (HR Business Partners) for consulting and coaching as well as strategic HR issues such as personnel and location planning. The HR Business Partners and Site HR also supervise the implementation of digitized processes and train colleagues. Due to the close contact with the users, the feedback is used for the continuous improvement of the processes.

G. 11 HR Organization

EMPLOYMENT AND WORKING CONDITIONS

As a company with a long-term strategy and a strong focus on people, ZF is committed to the long-term employment of its staff. At the same time, the number of employees must match the future product portfolio and future customer requirements to ensure that the company remains competitive. In addition to new hires and programs for further development, the Group relies on natural fluctuation, early retirement programs and the flexibility that external staff provides. Termination of existing employment relationships is regarded as a last resort.

As of December 31, 2023, ZF employees worldwide numbered 168,738. By the end of 2023, ZF had hired a total of 34,536 new employees, of whom 12,227 were women, 22,306 were men and 3 were listed as diverse. Almost half of them were hired in North America (42.9%), followed by Europe (33.9%).

To be more flexible and attract the required skilled talent, ZF also employs temporary workers. We make sure that their working conditions are appropriate and fair. For example, external employees are included in all regular employee communication activities, they are subject to the same rules for occupational safety and health and have the same access to plant facilities such as cafeterias. Cooperation with recruitment agencies is regulated Group-wide by standardized supplier agreements, which include strict requirements in line with our Code of Conduct and our business ethics. If recruitment fees apply, they are paid by the company and not the candidate.

In the year under review, some 728 people started an apprenticeship or dual work-study program at ZF in Germany. By the end of 2023, our apprentices and students completing a dual work-study program num-

Employees by region [1]

	2023	2022	2021 [3]
ZF Group	**168,738**	**164,869**	**157,117**
Europe	95,725	93,706	92,393
thereof Germany	54,447	53,265	52,700
North America	35,921	35,307	34,027
South America	5,515	5,592	5,365
Asia-Pacific	30,595	29,454	24,736
Africa	982	810	596
Number of permanent employees [2]	**155,197**	**151,895**	**146,645**
Europe	89,826	88,695	—
thereof Germany	50,768	51,083	—
North America	34,236	33,613	—
South America	5,503	5,539	—
Asia-Pacific	24,732	23,300	—
Africa	900	748	—
Number of fixed-term employees [2]	**13,541**	**12,974**	**10,472**
Europe	5,899	5,011	—
thereof Germany	3,679	2,182	—
North America	1,685	1,694	—
South America	12	53	—
Asia-Pacific	5,863	6,154	—
Africa	82	62	—

	2023	2022	2021 [3]
Number of full-time employees [2]	**163,137**	**158,933**	**151,744**
Europe	91,235	89,191	—
thereof Germany	50,803	49,679	—
North America	34,830	33,903	—
South America	5,507	5,587	—
Asia-Pacific	30,583	29,442	—
Africa	982	810	—
Number of part-time employees [2]	**5,601**	**5,936**	**5,373**
Europe	4,490	4,515	—
thereof Germany	3,644	3,586	—
North America	1,091	1,404	—
South America	8	5	—
Asia-Pacific	12	12	—
Africa	0	0	—

1) Number of employees per headcount
2) Details 2021 cannot be calculated
3) Without ZF Rane Automotive India Private Limited

New hires by gender, age and region

	2023	2022	2021
ZF Group	**34,536**	**40,676**	**29,145**
By gender [1]	**34,536**	**40,676**	—
Female	12,227	14,417	—
Male	22,306	26,249	—
Diverse / unknown	3	10	—
By age group [1]	**34,536**	**40,676**	—
Under 30 years	19,792	23,890	—
30–50 years	13,403	14,984	—
Over 50 years	1,341	1,802	—
By region	**34,536**	**40,676**	**29,145**
Europe	11,694	11,536	9,441
thereof Germany	4,903	4,129	1,505
North America	14,805	17,332	13,126
South America	697	1,031	768
Asia-Pacific	7,106	10,454	5,640
Africa	234	323	170

1) Data 2021 cannot be calculated

bered 2,351 worldwide. Apprentices can choose from 35 different apprentice professions and dual work-study courses.

ZF Germany usually offers regular employment contracts to its apprentices. As a result, ZF hired around 578 former apprentices as new employees in 2023.

More information on career opportunities at ZF is available at **www.zf.com.**

Employees by contract type

	2023	2022	2021 [3]
ZF Group	**168,738**	**164,869**	**157,117**
Female	45,819	44,232	41,749
Male	122,915	120,312	115,352
Diverse / unknown [2]	4	325	16
Number of permanent employees [1]	**155,197**	**151,895**	**146,645**
Female	42,530	40,904	–
Male	112,663	110,666	–
Diverse / unknown [2]	4	325	–
Number of fixed-term employees [1]	**13,541**	**12,974**	**10,472**
Female	3,289	3,328	–
Male	10,252	9,646	–
Diverse / unknown	0	0	–
Number of full-time employees [1]	**163,137**	**158,933**	**151,744**
Female	42,235	40,427	–
Male	120,898	118,181	–
Diverse / unknown [2]	4	325	–

	2023	2022	2021 [3]
Number of part-time employees [1]	**5,601**	**5,936**	**5,373**
Female	3,584	3,805	–
Male	2,017	2,131	–
Diverse / unknown	0	0	–
Number of apprentices, interns and external agency workers			
Apprentices	2,351	2,343	2,454
External agency workers	19,588	17,409	14,660
Interns	1,219	1,180	1,034

1) Details 2021 cannot be calculated
2) Data 2022 was incomplete
3) Without ZF Rane Automotive India Private Limited

Employee turnover

in %	2023	2022	2021
ZF Group	**8.5**	**9.7**	**8.8**
By gender [1]			
Female	12.0	13.3	–
Male	7.1	8.3	–
By age group [1]			
Under 30 years	20.2	23.1	–
30–50 years	7.1	8.2	–
Over 50 years	3.2	3.6	–
By region			
Europe	4.4	4.5	3.8
thereof Germany	1.9	1.9	1.9
North America	21.3	23.7	21.9
South America	3.1	4.5	3.0
Asia-Pacific	7.8	11.9	11.7
Africa	5.0	6.0	6.1

1) Data 2021 cannot be calculated

Relations between employer and employees

ZF respects the right of its employees to form representations, conduct collective bargaining on working conditions and exercise their right to strike in accordance with applicable national and international law. In the event of disagreements, ZF cooperates with the employee representatives for the benefit of the workforce and the company. Being affiliated or unaffiliated with a trade union or employee representative body does not lead to any preference or disadvantage. There is also constant exchange with employees in subsidiaries without employee representative bodies. Approximately 75% of all employees worldwide have employee representatives or are covered by collective agreements. About 5% are executive managers with working conditions that exceed the collective bargaining agreements. Temporary workers or service providers are covered by their employers' collective agreements, under which they may be represented by employee representatives such as works councils.

In Germany in particular, trust-based cooperation under the Works Constitution Act is an integral part of our corporate culture. This applies to all employee representative bodies, such as members of the works council and committees, the European Works Council, the Group Works Council as well as the corresponding employer representatives. Employee representatives

are informed comprehensively about any changes in the company in good time, depending on the legal situation and related agreements. Legal and collective bargaining deadlines are met. Important corporate development issues are discussed and communicated. For more information please refer to the ↘ **Occupational safety and health** chapter.

Employee surveys

After an initial trial last year, the Global Employee Engagement Survey was conducted in spring 2023. The focus was on aspects such as employee satisfaction, identification and affiliation with the company as well as employer attractiveness. At 72 points, the engagement index was close to the survey provider's benchmark of 75. Based on the results, managers and employees discuss various improvement measures for the individual aspects. The follow-up process mainly focuses on the areas of communication, growth, care, inclusive leadership and recognition. Among other things, an internal program for executive managers, recognition programs for employees and programs for mental well-being will be developed in 2024. Progress and experience will be reported regularly. In future, there will be further surveys among all employees to gain a global overview of the engagement status within the company.

In addition, two lifecycle surveys were implemented, which record employee experiences during critical phases such as onboarding or company exit and also suggest improvement measures. With the exit survey, ZF wants to identify reasons for voluntary termination in order to derive measures from it. The onboarding survey aims to improve the onboarding period. A global rollout is planned after the pilot phase in 2023.

Fair remuneration

ZF uses special structures to ensure fair and competitive remuneration throughout the Group. The remuneration of managers is based on a global job evaluation system and a benchmarking of local regulations and market practices of the relevant labor markets. Below the management levels, remuneration is based either on collective agreements or local job classification systems and it is also benchmarked to local markets. Job evaluation, classification systems and collective agreements are to ensure fair treatment of employees, including gender equity regarding remuneration.

ZF offers executive managers a global, short-term incentive plan (Short-Term Incentive, STI). Senior executives are also incentivized under a global, long-term incentive plan (LTI) to promote innovation, motivation and sustainable action for the company. Furthermore, both plans aim to promote decision-making by managers that is consistent with the company's objectives. The selection of performance indicators and targets is transparent and takes place within the framework of a standard process. Since ZF is a foundation-owned corporation, neither employees nor managers receive shares of ZF Friedrichshafen AG. ZF offers incentive programs to a majority of its employees also outside management levels.

All ZF employees with part-time, full-time, permanent or fixed-term employment contracts have access to additional benefits with a focus on health and insurance. These are decided locally and follow local regulations and market practices. Additional benefits for contract workers and agency-based temporary workers are also designed depending on local regulations.

In 2023, the ZF Group pursued its goal of digital transformation by extending the globally harmonized and digital Annual Salary Review (ASR) process for managers and employees to the remaining 13 countries. This process applies to all employees whose remuneration is not based on a collective agreement. So far, it has been rolled out to include approximately 42,000 employees in 38 countries. The program supports aspects of equal pay, equal opportunities and non-discrimination since it enables a central analysis and detection of potential issues, thereby allowing the Group to respond to and remedy them appropriately.

HR DEVELOPMENT

Education and further training of our employees are essential factors for the power of innovation and thus the long-term success of our company, especially in the current transformation phase of our industry. ZF uses a holistic HR development approach: It places its employees at the core of its activities to attract the best talent, to promote education and further training, and thus to be the employer of choice for internal and external talents.

Talent promotion

Talent development strives to attract and retain high-performance talent. Its starting point is the Performance Potential Succession process. The dialogue between employees and the corresponding next highest-level manager starts with discussing performance, possible development measures and the potential to take on a position with more responsibility. This is followed by development conferences to review the results within the respective leadership teams and to discuss and agree on specific further development measures. In 2023, about 44,000 employees participated in this process. Over the next few years, it will be extended to all indirect employees worldwide and further developed in terms of content.

With a strong focus on people and career development, we have set up various talent pools, which are holistic programs for strategically relevant talent groups. The "MobilizeZF" program enables top talents worldwide to put themselves forward for a management position with greater responsibility. In addition, in 2023, we introduced the "Plant Manager Development Program" in two pilot projects in Asia-Pacific and America, which is aimed at employees prepared to manage a ZF plant. "Empower, HerPower", a talent pool aimed at increasing female representation in leadership functions, was launched in 2022, together with "Digital GameChangers", which supports the deveopment of our digital talents. In total, the talent pools have reached about 150 top talents. Since 2023, the assignment of participants to the talent pools has been integrated into the Performance Potential Succession process. All participants have the opportunity to undergo intensive training for the program duration of up to one year, establish new contacts, focus on trend topics and increase their own visibility.

However, talent pools are only one aspect of talent development at ZF. The external talent development program "tranZForm" is ZF's international trainee program for university graduates. In 2023, a new concept was tested for the first time, which prepares participants for a target position in an international context through position-focused projects and specific training courses. Especially the project abroad is a unique opportunity for the trainees to get to know a different culture and working environment. All 30 participants completed the program at the end of the year and then started their professional careers at ZF in their target positions.

Training and development

At ZF, a vast range of training opportunities is available to employees of all functions and levels. The "Apprenticeship 2030" project in Germany ended in 2023. Through a newly designed apprenticeship network, 30 locations can now better bundle competencies and use them for the further development of apprenticeship content. Among other things, a standardized apprenticeship management system was introduced through which apprentices and trainers access jointly developed content and control all apprenticeship processes digitally.

On a global level, the "Skills Hub" platform offers around 92,000 employees with PC access the opportunity to understand career prospects and learn independently. The Skills Hub is a digital place of learning for megatrends such as e-mobility and digitalization. In 2024, the platform will be extended to include the topic of sustainability. In addition to entertaining learning elements, it facilitates interactive exchange with experts. In 2023, over 32,000 employees were learning on the platform. The rate of completed course modules is about 80%.

Leadership training

To adapt to future challenges, the company is continuously adapting its training landscape for managers. Under the label "Next Generation Leadership", a development program for each management level is offered to all newly appointed managers enabling them to meet new challenges in the best possible way. In addition, the Group offers management training on traditional and new leadership topics to provide all managers with a suitable offer. The contents of programs and training courses are coordinated according to the corporate values. In this way, they support the development of a common understanding of leadership and the implementation of the corporate strategy. In the year under review, more than 1,000 executives participated in the various programs.

An important management development tool is 360° feedback. The contents refer to the company values and are intended to provide the feedback recipient with information on the extent to which actions are perceived as compliant with values or where need for change was identified. There were around 350 participants in the year under review.

DIVERSITY AND EQUAL OPPORTUNITIES

ZF is committed to diversity, equity and inclusion (DEI). The company strives for an inclusive culture in which all employees feel they belong, fostering a free exchange of different thoughts, ideas and methods. A diverse workforce is a driver of innovation and one of ZF's most important success factors. Diversity and inclusion influence a wide range of processes, whether in the recruitment of new employees, in existing employment relationships or in career advancement or exits.

Organization and responsibilities

Diversity, equity and inclusion are part of ZF's HR strategy and form one of the five ZF Way principles that guide the company's actions. The Group's DEI activities are based on the four building blocks of the DEI strategy: culture, talent, leadership and sustainability. The global diversity team, representing each ZF region, is tasked with further developing the strategy and implementing global and regional activities and initiatives. It is supported by diversity managers, experts and various employee initiatives worldwide. ZF focuses on the following action fields to meet strategic challenges and contribute to enhancing the Group's competitiveness:

- a balanced gender ratio,
- cultural background and internationality of the workforce,
- a wide range of experience and expertise as well as
- responses to demographic change.

The action fields are systematically analyzed on a regular basis and the results are reported to the Board of Management. One of our targets is to increase the share of female managers to at least 20% by 2030. Due to restrictive external recruitment, the time horizon was extended from 2028 to 2030. The share of female managers at both the first and second managerial levels below the Board of Management is to be increased to at least 20% by mid 2027. To support target achievement, the Supervisory Board and the Board of Management decided in the year under review to link the increase in gender diversity as an indicator to the long-term incentive of ZF's senior management.

Diversity and inclusion activities

In May 2023, ZF organized a "Diversity Week" for the first time, which was designed as a learning journey with various formats for information and exchange. Topics ranged from the general status of diversity in the Group to age and gender diversity as well as human rights. The company presented diversity toolkits for the locations and an "Allyship Guide", providing guidance for allies and advocates of marginalized groups. The activities involved leaders and role models from the company. On-demand training is also available on topics such as "Why Diversity, Equity, Inclusion & Belonging Matter" and "How to Eliminate Bias" to raise awareness of diversity, equity and inclusion across the organization. 10,329 employees completed these two self-paced training courses by the end of 2023.

Living diversity also means that managers and employees should act as ambassadors and lead by example. A diversity community at top management level was set up by ZF in order to ensure the involvement and commitment of leaders and to gain their feedback on new pilot programs. This approach enabled top executives to learn, contribute and share proven DEI practices. Looking forward, ZF wants to attract more executive managers as sponsors for diversity initiatives.

In addition, ZF strives for greater internationality in the management teams in order to reflect the diversity of ZF's business activities and customers. There are, e.g., mentoring programs to specifically promote women and to strengthen the cooperation of employees from different departments, areas of expertise, countries and other backgrounds and to promote new ideas and innovative solutions. In all regions, there are Employee Resource Groups (ERGs) that create know-how and awareness for specific target groups.

ZF also cooperates with external partners. These include: PrOut@Work Foundation, Center for Automotive Diversity & Inclusion Advancement (CADIA), Charta der Vielfalt (Germany), Out & Equal, Disability:IN, Inforum, PrOUT & Equal Workplace Advocates as well as Women in Manufacturing. These partners strengthen ZF's commitment and provide support through resources, best practice examples and networking opportunities.

Besides various activities to support diversity and inclusion, we further expanded the internally and externally available ZF Trustline. In this way, possible violations of ZF values and guidelines regarding diversity, equity and inclusion can be reported. For more information on the topic, please refer to the ↘ **Business Conduct** chapter.

Promoting equal opportunities

ZF strives for equal opportunities and pays attention to candidate and talent diversity as early as during selection processes. For the internal talent pools, the focus is also on a diverse composition of the groups, for example regarding gender, division affiliation and internationality.

In addition to fair remuneration systems, tailored training and various mentoring initiatives, the ability to

harmonize work and family life is an important element in enabling equal opportunities. The ZF locations Friedrichshafen, Passau, Schweinfurt, Saarbrücken and Lemförde have been certified in Germany as family-friendly companies. As part of the "work&family" ("berufundfamilie") audit, family-related targets and measures have been firmly established. In addition to flexible working hours, current measures also include practical solutions in shift operation as well as Group agreements such as "ZF Parental Leave" and "ZF Sabbatical".

For Germany, ZF introduced and piloted the "Shared Leadership" initiative in 2023. It allows two employees to share a management position. The aim is, among other things, to increase the proportion of women in management.

At the end of December 2023, a total of 542 employees were on parental leave in Germany (2022: 509), with 132 of them being male (2022: 133) and 410 female (2022: 376). A total of 242 women (2022: 204) and 2,123 men (2022: 1,648) took parental leave of up to one year in 2023. In the year under review, 2,358 employees (2022: 1,888) returned from parental leave in Germany – those being 336 female (2022: 300) and 2,022 male (2022: 1,588).

Diversity figures

ZF reports and reviews diversity figures on a regular basis to identify need for action. Major diversity figures focus on age, gender and physical abilities. When it comes to age diversity, demographic change takes many different forms in different regions of the world. While western industrialized countries are primarily confronted with the challenges of an aging population, developing and newly industrialized countries have far younger populations. ZF is represented at 331 locations in 40 countries. The age structure of the workforce is thus very heterogeneous and strongly influenced by the respective locations. The percentage of older employees is much higher in Europe, where the average age is 42.54 years, whereas the workforce in other regions tends to be younger on average. In India, for example, the average age is 29.9 years.

Among the various regions, there is also a large spread regarding the proportion of women and men employed at ZF. While 42.5% of employees in North America are female, women make up only 23.6% of the European workforce. Germany shows an even lower percentage, at 14.4%. In 2023, 72.8% (2022: 73.1%) of the total workforce were men and 27.2% (2022: 26.9%) were women.

Since 2006, ZF Friedrichshafen AG has been compliant with the statutory requirements for employees with disabilities and has met the required rate for Germany. Accordingly, ZF also implements the necessary measures to integrate employees with disabilities. These employees are supported by a global EHS (environment, health and safety) team. In 2023, the proportion of employees with disabilities amounted to 5.4% (2022: 5.8%). This level exceeded the minimum 5% stipulated by legislation.

Employees by region and gender

	Women			Men		
in %	**2023**	2022	2021 [1]	**2023**	2022	2021 [1]
ZF Group	**27.2**	**26.9**	**26.6**	**72.8**	**73.1**	**73.4**
Europe	23.6	23.6	23.2	56.4	76.4	76.8
thereof Germany	14.4	14.5	14.4	85.6	85.5	85.6
North America	42.5	41.8	41.0	57.5	58.2	59.0
South America	16.0	14.7	15.0	84.0	85.3	85.0
Asia-Pacific	21.9	21.5	21.6	78.1	78.5	78.4
Africa	43.6	38.0	30.5	56.4	62.0	69.5

1) Figures for 2021 were calculated including employees of diverse/unspecified status.

Diversity by age

	Women			Men		
in %	2023	2022	2021 [1]	2023	2022	2021 [1]
Management						
Under 30 years	0.5	0.7	-	0.2	0.3	-
30–50 years	69.0	68.1	-	51.6	52.1	-
Over 50 years	30.5	31.2	-	48.2	47.6	-
Employees						
Under 30 years	22.4	22.3	-	20.7	20.7	-
30–50 years	56.7	56.7	-	56.5	56.2	-
Over 50 years	20.9	21.0	-	22.8	23.1	-

1) Data 2021 cannot be calculated

OCCUPATIONAL SAFETY AND HEALTH

The safety, health and well-being of all employees are central values of ZF's corporate culture. These aspects are an essential part of the sustainability strategy under the action field "Keeping People Safe". We strive to constantly reduce risks of industrial accidents and occupational diseases. Nobody shall be harmed, within or outside the company.

Organization and responsibilities

At ZF, occupational safety and health are embedded in the Global Domain Function Sustainability and EHS and – together with environmental protection – are in the responsibility of the global Head of EHS. The regional EHS teams are also directly managed by the global EHS manager. Divisional EHS experts coordinate relevant aspects for the respective divisions and/or business units, while local experts at the location implement the requirements of the EHS management system. The directives and frameworks are defined and continuously improved cross-functionally within the Corporate Sustainability & EHS Governance and Standards Function. This function reports directly to the Head of Sustainability and EHS and works closely with the global EHS organization on all levels. Essential activities and developments are reported to the member of the Board of Management in charge of Human Resources, Legal and Compliance as part of the semi-annual management review.

ZF locations can be certified in accordance with the international ISO 45001 standard voluntarily or to meet customers' requests. Certification is primarily carried out in the matrix certification process to ensure uniform implementation of ZF standards. 109 locations (2022: 88) used a matrix certification and 20 locations an individual certification in 2023. Certified locations evaluate the effectiveness of the ISO management system through internal audits and report major deviations to the Global Domain Function in a regular cycle of six months. The results are integrated into a continuous improvement process.

The ZF EHS management system includes a standardized element concerning occupational health. The procedure is aligned with the ISO 45001 standard and covers core medical issues as well as health-related interdisciplinary matters, such as health promotion programs or counseling on social issues. Based on the results of the self-assessments, ZF carried on the continuous improvement program in this context as well.

Locations in which ZF holds a majority share manage activities in alignment with the global EHS management system. It aims to prevent and minimize environmental, health and safety risks. It thus forms the backbone of continuous EHS improvement, aiming to implement the EHS policy's contents regarding EHS legislative compliance, risk minimization and safety improvement. The system also includes all relevant international standards. It promotes collaboration between different business areas and is regularly updated taking into account stakeholder feedback, legislative changes and customer requirements. Progress is assessed through self-assessments and the EHS Corporate Audit Program. The program is carried out with the support of third parties and also includes an evaluation of compliance with local legislation.

Experts in occupational health and safety support and train managers in the implementation of regular risk assessments using methods such as FMEA (failure mode and effects analysis) and applying the hierarchy of controls (substitution, technical, organizational and personal protective measures). The company reduces systematic risks through binding measures and requirements defined in an annual update of the EHS management system. The risk assessment of work-related

hazards is carried out in close cooperation between employee and executive managers within all workplaces and activities, regardless of the kind of employment.

ZF strives to comply with the highest health and occupational safety standards along the entire supply chain. This applies above all to suppliers providing services at the locations. For this purpose, an expert team constantly monitors and improves contractor management. ZF selects contractors based on their proven ability to perform safety-critical activities. Close cooperation between trained ZF coordinators and contractors, such as discussing contractors' risk assessments and control measures, proved to be an important factor in improving the safety of employees. A final evaluation of the external companies ensures that only those companies that perform well in occupational health and safety receive follow-up orders.

For ZF, effective prevention goes beyond compliance with legal requirements and contributes directly to employer attractiveness and employee retention. The company has therefore defined specific targets to protect, preserve and promote the safety, health and well-being of its employees. A key target is to reduce the LTAR (accidents with working days lost per one million working hours) to 2.0 by 2025. Other goals include reducing the severity of accidents and achieving a low ergonomic risk profile for 90% of the workplaces by 2025. Hazard assessments and improvement measures are to be implemented according to global standards, such as those of the National Institute for Occupational Safety and Health (NIOSH) or the Key Indicator Method. Moreover, each location must appoint local occupational health professionals by 2025 to ensure that occupational health expertise is available at all times.

Occupational health and safety committees

The principle of co-determination at the German ZF locations also applies to health and safety at work. The works councils of the locations and the Group Works Council cooperate closely in this regard. Employee representatives in Germany, for example, have a right to co-determination when it comes to certain occupational safety and health regulations. In other countries, various local rules on occupational safety and health are being considered. The ZF EHS management system defines a minimum standard, which in some countries is even stricter than local legislation.

About 75% of ZF employees are covered by national, regional or local collective agreements. Within the company, they are represented either by trade unions, works councils or both. Temporary workers or service providers are subject to their employer's collective agreements, in which they are represented by employee representatives such as works councils, if applicable.

The German Occupational Health and Safety Act stipulates that occupational health and safety committees (ASA) are to be organized at all German locations, in which the works council is also represented. The ASA meets at least once every quarter. It is not a decision-making body but makes proposals and recommendations. The decision-making authority lies with the employer and the works council.

Employee engagement

The EHS management system stipulates that the location management is to actively approach employees and their representatives and encourage them to participate in EHS initiatives and decision-making processes. Management is to define the scope of this participation to meet any applicable legal requirements and involve employees comprehensively in EHS programs, which are encouraged and supported by bodies and teams such as EHS committees and ergonomics teams.

At the beginning of 2022, we launched the "ENGAGE-tobeSAFE" initiative to sustainably improve the accident rate. The initiative consists of three main elements: a global information and awareness campaign, priority-oriented implementation measures as well as EHS management follow-up and control. To reduce the LTAR, all divisional leaders committed to support the program and monitor improvements together with plant management at focal sites on a monthly basis. For locations with significant deviations from the target corridor, a special process was introduced in mid-2023 in which location managers report monthly on measures planned in the short and medium term to improve occupational safety and reduce accidents and inform on their implementation status. In addition, extensive improvement projects involving Corporate and Divisional Occupational Safety were launched at two locations in Germany. This is accompanied by Safety Leadership workshops and site visits by members of the global EHS team.

In 2023, the initiative focused on personal safety in forklift traffic. Through the involvement of all locations, more than 2,000 improvement measures were identified, the implementation of which is monitored by means of central action tracking. A campaign to prevent finger and hand injuries was carried out in the second half of the year. On-the-job videos with safety tips from colleagues and "toolbox talks" on avoiding injury risks complemented the program. The background is that even supposedly minor injuries to the fingers and hands lead on average to more than 20 working days lost.

In addition to the "ENGAGEtobeSAFE" campaign, the Safety Excellence Program was continued in three key areas: leadership in the area of occupational safety and health (Safety Leadership), employee involvement (Behavior-Based Safety) and the continuous improvement of the EHS management system, for example in established programs such as ergonomics and machine safety.

All employees and their representatives are involved in the continuous improvement of occupational safety and health and are subject to regular qualification measures. In the case of near misses and unsafe situations, employees are requested to report those and to participate in activities such as risk assessments, kaizen workshops and suggestion schemes. Employee participation is also subject to internal audits. Statements made in this context are treated confidentially. The anonymous ZF Trustline is also available to report complaints regarding occupational safety and health issues. For more information on the Trustline, please refer to the ↘ **Business Conduct** chapter.

As required by the EHS management system, most locations have developed bonus schemes to recognize improvements in occupational safety achieved by employees. In 2023, ZF also held a global ideas competition and awarded prizes to the best ideas of employees.

Key figures on work-related accidents

To monitor safety performance, we record and analyze work-related accidents resulting in lost time. With our EHS data reporting system, we collect detailed information on incidents, types of injuries and causes. Incidents involving temporary workers are disclosed separately. All incidents are categorized according to SIF potential (serious incidents or fatalities) and record-keeping obligations (e.g., cases of reduced ability to work or injuries that go beyond first aid).

ZF's LTAR for occupational accidents resulting in days lost was 2.4, based on 353 million hours worked. Following an improvement of 7% in the previous year, the accident rate was again reduced significantly, by 14% in 2023, thus reaching the internal target. The Asia-Pacific, NASA, India and Europe regions achieved their target, while the target was exceeded in Africa and Germany. One fatal workplace accident occurred in 2023.

The data shows that 72% of the approximately 490 reporting ZF units achieve a good LTAR performance and are already below the Group's 2025 target (LTAR 2.0). 50% of all locations were accident- free.

Reducing the severity of accidents is another key objective of EHS Operations. The severity level in 2023 was 24, slightly above the internal target of 22. We therefore intensified the root cause analyses of accidents or near misses with a high severity potential in the middle of the year. These in-depth investigations are supported by the new database and the increased creation of A3 reports, which lead to the systematic search for and allocation of measures following the application of Ishikawa and 5-Why analyses.

Rate of accidents (LTAR) by region [1]

in %	2023	2022	2021
ZF Group	**2.4**	**2.8**	**3.0**
EMEA	4.5	5.2	5.2
thereof Germany	6.3	7.1	7.1
thereof Europe (excluding Germany)	2.7	3.1	3.0
North America (including Mexico)	0.9	1.0	1.3
South America	1.7	1.8	2.8
Asia-Pacific	0.3	0.3	0.4
Africa	5.1	3.7	included in Europe

1) Figures include temporary workers, interns and student trainees

Occupational diseases

To maintain and promote the health of our employees, the prevention of occupational diseases is also of central importance. The focus here is also on raising awareness, improving working conditions and introducing preventive measures. Ongoing programs and activities, such as behavior-based safety programs and local health events that aim to improve ergonomics in the workplace and promote health, continue to be of great importance.

In 2023, 101 recognized occupational diseases were reported. Most cases (60%) were diseases of the musculoskeletal system. Due to internationally diverging lists of occupational diseases, ZF uses the recognized "List of occupational diseases" of the International Labour Organization (ILO) as a basis.

Local health management measures

One of our main targets is the appointment of local occupational health professionals by 2025 to ensure that occupational health expertise is available at all ZF sites at all times. By the end of 2023, 231 locations (95%) reported that they had already achieved this target. The qualification requirements for occupational health professionals have been defined at the Group level in order to guarantee uniform quality standards.

In addition, all ZF locations are obliged to implement at least one campaign per year on a health promotion topic defined by Corporate Health Services. In the year under review, these were activities relating to sleep. Implementation was adapted to local needs worldwide and will run until spring 2024. It will be followed by the Group-wide “No sports” campaign. The target group is the hard-to-reach group of people who are less physically active on their own.

Besides the work-related health programs, e.g., active breaks, information provided via the intranet, lectures and company sports groups, we offered a large variety of other activities that were conducted both internally and in cooperation with external providers (e.g., gyms). An offer adapted to the local situation is generally open to all employees.

Supply Chain

KEY FACTS

> **Business Partner Principles revised.**
> **Sustainability requirements extended.**
> **Automated risk analysis tool implemented.**

The supply of materials and components lays the foundation for high-quality products and thus for customer satisfaction. Around 60% of ZF's total value added is generated in the upstream supply chain. Trusting and reliable collaboration with suppliers is therefore of great importance.

For production materials, ZF maintains a worldwide network of approximately 12,000 suppliers, ranging from small family businesses to large corporations. The purchasing volume for production materials increased to €26.2 billion in 2023 (2022: €24.6 billion), including directed buy volumes, for which ZF's customers define which sub-suppliers are to be subcontracted. Furthermore, ZF cooperates globally with about 50,000 suppliers of non-production materials. The purchasing value of non-production materials amounted to around €7.6 billion in 2023 (2022: €7.7 billion).

PROCUREMENT PRACTICES

In addition to costs, time and quality, sustainability and resilience are increasingly important factors in the management of supply chains. Disruptive changes such as climate change or electrification in the automotive sector are contributing to an increasingly volatile business environment. ZF responds with a clear strategy towards an integrated, resilient and sustainable value chain. An important lever is increased digitalization. This includes products and processes such as digital purchasing processes (e.g., for supplier's product carbon footprints (PCFs)) and Supply Chain Management 4.0. To this end, quality, logistics, speed, risk prevention and demand management need to be taken into account as these form the strategic focus topics for sourcing. These aspects are aligned with ZF's overall strategy and its Digitalization Roadmap.

Business Partner Principles

The ZF Business Partner Principles contain ZF's central requirements for value-based cooperation. They include topics such as human rights, labor standards, occupational safety and health, environmental protection, business ethics and compliance. The BPP conform to various principles and conventions, such as the principles of the UN Global Compact, the OECD Guidelines for Multinational Enterprises, the Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights and relevant conventions of the International Labor Organization (ILO).

All suppliers are required to endorse ZF's Business Partner Principles. In particular, business partners are expected to reject any form of slavery, forced labor and child labor. Likewise, ZF expects them to respect the freedom of association and the right to form interest groups, to offer fair and appropriate remuneration and working hours in accordance with applicable law and to promote the qualification of their employees. The BPP also expect suppliers to comply with all applicable laws and to ensure that these values and laws are also respected in their supply chains.

The acceptance of the BPP is mandatory for awards to existing suppliers and for the registration of new suppliers. ZF reserves the right to scrutinize business relations and take appropriate action if deviations or violations are identified. In 2023, the Business Partner Principles were revised. In particular, it was important to ensure that the BPP comply with the requirements of the German Supply Chain Due Diligence Act (LkSG). Furthermore, product-related environmental protection aspects are addressed in the Supplier Quality Directive (QD83) and the Global Logistics Directive. These documents also apply to subcontractors and cover guidelines such as the EU Chemicals Regulation (Registration, Evaluation, Authorization and Restriction of Chemicals or REACH) as well as logistics and packaging specifications.

Sustainability requirements in the supply chain

Sustainability management in the supply chain plays a decisive role for ZF. This applies both to environmental issues such as reducing greenhouse gas emissions and to social issues such as respect for human rights. For this reason, ZF pursues ambitious targets for the com-

pany itself and for suppliers and implemented numerous sustainability measures in the year under review.

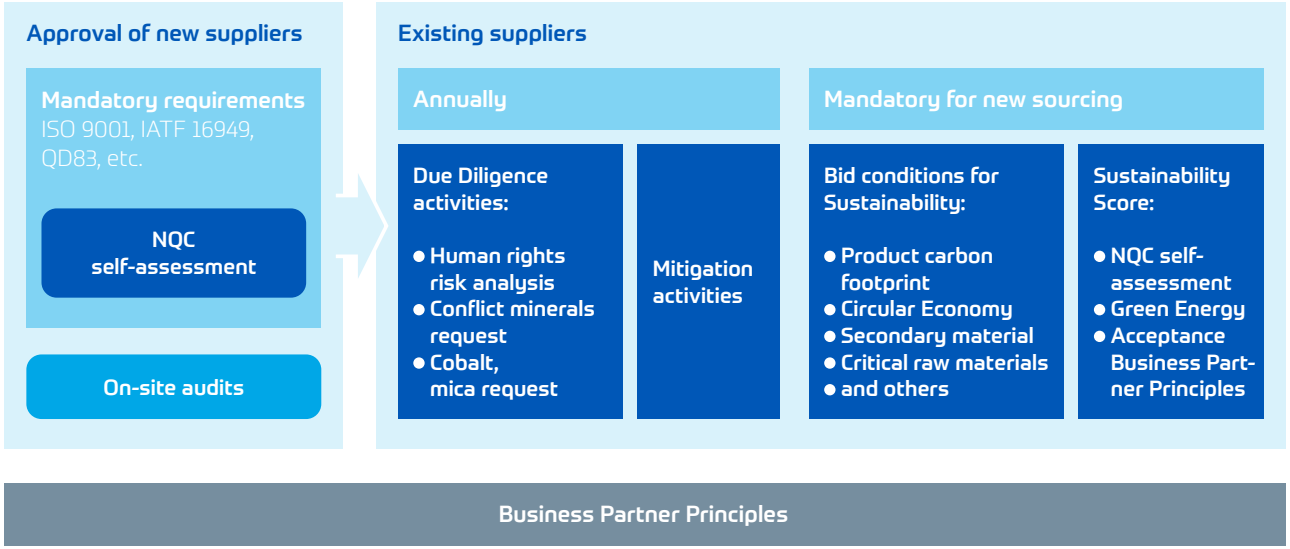
To be able to evaluate the sustainability performance of suppliers, the company has replaced the ZF Sustainability Criterion with the ZF Sustainability Score. This fully digital solution requires compliance with minimum requirements and measures sustainability performance using three key values: the green electricity share in 2025, the result of the NQC sustainability questionnaire and the acceptance of the ZF Business Partner Principles. The Sustainability Score applies to the awarding of new business as well as to the approval of new suppliers. It is a binding element of the Sourcing Decision Board, the highest procurement body in the Group. In 2023, sustainability-related tender conditions were also revised. The update includes extended requirements regarding climate and environment as well as new requirements for social responsibility and responsible sourcing. Since the end of 2023, acceptance of the requirements has been mandatory for production material suppliers to be awarded new business.

ZF manages sustainability-relevant supplier documents and information in a digital supplier portal. Suppliers are expected to keep their information up to date. If this is not the case, suppliers are asked to update expired certificates, for example. The suppliers' sustainability performance is shown via the Sustainability Score introduced in 2023.

Risk management in the supply chain

In preparation for the German Supply Chain Due Diligence Act (LkSG), ZF reviewed and revised the existing approach to human rights risk analysis. As part of this, ZF has introduced all core elements of the Human Rights Due Diligence (HRDD) approach. ZF uses the risk management process to determine the risks of

G. 12 Supplier approval and sourcing of production material



negative impacts on human rights and prioritize them according to their severity:

- Identification of risks based on country-specific human rights risks and risks associated with various raw materials
- Risk assessment and prioritization according to criteria of appropriateness (e.g., on the basis of the probability of occurrence, the severity and our possible causal contribution, measured by purchase quantities)

Based on the risk assessment, ZF defines preventive and remedial measures. In 2023, the company introduced a risk analysis tool that enables risks in global supply chains to be automatically, legally and efficiently identified. For this purpose, the analysis tool uses publicly available data from local news, social media and other databases. This information is supplemented by internally available supplier information. This enables a holistic risk analysis to identify and prioritize suppliers with potential risks as well as the nature and scope of business activities, severity and reversibility of violations. For suppliers with increased risks, ZF initiated preventive mitigation measures such as on-site assessments to minimize these risks.

An important component in the fulfillment of corporate due diligence and legal requirements are instruments that make it possible to check working conditions. For this purpose, ZF joined the initiative for sustainable supply chains in the automotive industry called Responsible Supply Chain Initiative e.V. (RSCI). At its core, the RSCI has developed a standard and a central platform for a standardized sustainability assessment of production locations. The initiative also carries out on-site assessments and tracing. Using the RSCI stan-

dard helps to avoid multiple audits and to recognize third-party audit results.

In addition, notifications and reports on other critical issues in the supply chain, such as child labor, violations of human rights or environmental protection, can be communicated via the ZF Trustline. Our suppliers are made aware of this notification system in the Business Partner Principles, among other means. In 2023, one case was reported to ZF regarding alleged human rights violations by a ZF supplier towards its employees. The allegations were followed up by a joint team from Human Rights, Compliance, Purchasing and the Legal Department through document enquiries and reviews with the supplier but could not be substantiated. Nevertheless, preventive measures were agreed with the ZF supplier and are being followed up to ensure timely completion. For more information on the ZF Trustline, please refer to the ↘ **Business Conduct** chapter.

Promoting sustainability in the supply chain

In view of numerous new requirements, ZF supports both employees and business partners with training courses and various communication formats. In the fall of 2023, the company introduced the Sustainability Campus. The program takes into account various target groups, enabling them to implement ZF's sustainability strategy. External training of the ZF Supplier Academy also includes PCF data calculation as a mandatory requirement. In addition, ZF updated the "Green Electricity Guide for Suppliers" and the "SUS Score" in the procurement and supplier approval process. All training is free of charge. As part of the Global Supplier Summit, the ZF Group honors suppliers who are outstandingly successful in terms of sustainability and cooperation. This year's ZF Global Supplier Summit was themed on sustainability and the Supplier Award 2023 went to the strategic supplier Val Giovanni (Italy). The company was honored for its outstanding commitment to the use of renewable energies in production and its strong voluntary commitment to compliance with human rights due diligence.

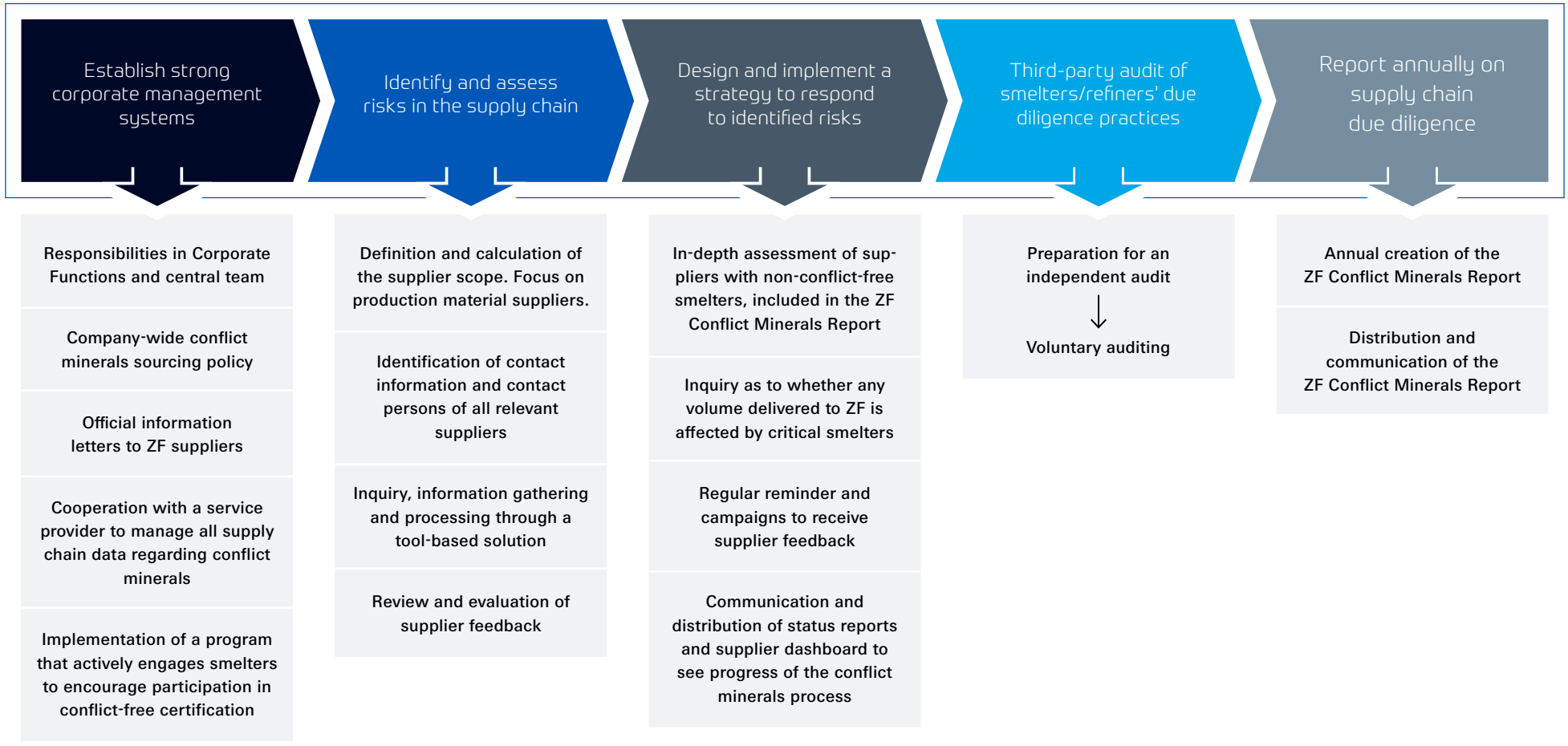
RESPONSIBLE SOURCING OF CRITICAL RAW MATERIALS

The extraction of raw materials comes with environmental and social risks. The mining and trading of conflict minerals may contribute to financing armed conflicts or human rights violations. As ZF is aware of these risks, the company strives to comply with environmental and human rights standards along the entire value chain.

ZF requests all relevant suppliers of production material to disclose the origin of the resources annually using the Conflict Minerals Reporting Template of the Responsible Minerals Initiative (RMI). The selection of relevant suppliers is based on a due diligence process and follows the OECD five-step plan. The annual conflict minerals reporting covers about 1,000 suppliers. Since these minerals are necessary for technical functions in some of the company's products, ZF works to avoid sourcing from potentially critical smelters. All relevant suppliers receive written notification explaining that ZF is committed to eliminating critical smelters from their supply chains. The company also asked all suppliers to conduct their due diligence and remove possible or actual critical smelters from their supply chains. The response rate for the year under review, 2023, was 80% (2022: 76%). In the current reporting year, 91% of tantalum, 87% of tungsten, 73% of tin, and 53% of reported gold smelters originating from Conflict- Affected and High-Risk Areas (CAHRAs, according to Dodd Frank Act) are certified to the Responsible Minerals Assurance Process standard by the Responsible Minerals Initiative (RMI). ZF is pursuing the goal of continuously increasing the share of certified conflict-free smelters.

The company also expanded its due diligence activities for conflict minerals to the supply chain of cobalt and mica. In addition, ZF focuses on sustainable sourcing of rare earth elements (REE). Risk mitigation measures for REEs include reducing or, where possible, eliminating rare-earth elements in products and increasing the proportion of recycled material. For more information on the interdisciplinary multi-stakeholder project SUSMAGPRO, please refer to the ↘ **Resource use and circular economy** chapter.

G. 13 ZF approach in line with the OECD Due Diligence Guidance for Minerals



Product Quality and Safety

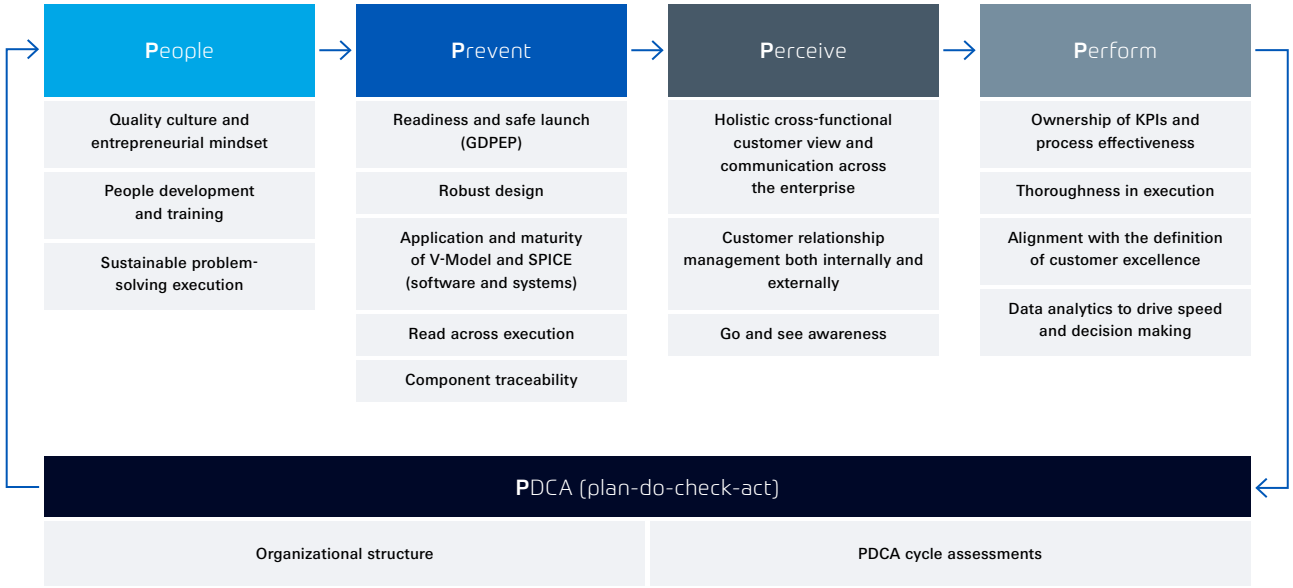
KEY FACTS

- > Cybersecurity competence center established.
- > Security awareness weeks on generative artificial intelligence.
- > Extended consideration of SOTIF standard ISO 21448.

To ensure the highest level of product quality despite increasing product complexity, ZF uses a certified quality management system as well as consistent quality controls and regularly optimizes processes. In addition, the company has a Product Safety and Regulatory Office, which analyses, evaluates and tracks all relevant quality incidents and associated risks. It reports directly to the member of the Board of Management responsible for quality.

Within the framework of the "DNA of Quality" strategy, the Group promotes forward thinking at all levels and in all functions and associated processes. The "DNA of Quality" strategy is derived from the Group strategy and complements the ZF quality management system, which is based on the IATF 16949 framework for automotive quality management. The core consists of five principles which support a zero-defect philosophy: people, prevent, perceive, perform and PDCA ("plan-do-check-act"). Based on these principles, framework plans were created in cooperation with all divisions. These plans include individual excellence targets and related initiatives as well as a "DNA of Quality" assessment to determine the corresponding status of excellence.

G. 14 ZF DNA of Quality – Guiding principles



The implementation of the quality excellence strategy is supported by a training portfolio jointly created by the Quality Function, the HR Department and the ZF internal quality academy. In 2023, measures were intensified for enhancing quality in development, in production and with regard to product warranty. Quality costs could be reduced further compared to the previous year. The audits of the quality strategy "DNA of Quality" also show continuous improvement.

PRODUCT COMPLIANCE

The conformity of our products and services with applicable regulatory requirements is a top priority for ZF along its entire value chain. ZF uses a Product Compliance Management System (PCMS) that supports our technical teams with regard to product-related regulatory topics. This includes structured management of product compliance-specific risks and controls. In addition, access to regulatory information for product developers is continuously ensured. Expert committees can be convened for product-related regulatory issues. PCMS training is available to all employees on a voluntary basis and is compulsory for relevant functions.

ZF Product Stewardship works with Product Development to ensure that ZF products comply with changing legal requirements for materials and substances of concern. It thus also supports the achievement of product-related environmental and sustainability goals as well as other aspects such as environmental and sustainability compatibility in product development. Key elements are the ZF's Global Development and Product Evolution Process (GDPEP) and various internal standards for life cycle and circular aspects (GDPEP DCF 23-0168 in conjunction with ZFN 9005) as well as risk reduction for people and the environment by minimizing hazardous substances in products according to GDPEP ZFN 9005 and ZFN 9003. ZF Company Standard ZFN 9003 also regulates corresponding reporting obligations for all deliveries procured by ZF and products manufactured by ZF.

ZF adopted the substance declarations and prohibitions of the Global Automotive Declarable Substance List (GADSL). It defines requirements for prohibited and/or declarable substances, some of which are also required for ZF products. Substances listed in the GADSL must be identified and reported. The selection of substances of very high concern (SVHCs) from the REACH Regulation Candidate List (CL) with a mass fraction of more than 0.1% is restricted for newly developed ZF products, including purchased parts and carry-over parts for new projects. ZF requires suppliers to use the most suitable substitutes for CL substances.

SAFETY AS A CORE COMPETENCY

Active and passive safety systems can prevent accidents or mitigate their consequences. They monitor the vehicle, issue warnings and, if necessary, intervene in a corrective or protective manner. ZF systems are developed according to current safety standards – in particular the ISO 26262 standard for functional safety in road vehicles. This is also stipulated in the internal directive DCF 23-0070. ZF safety managers carry out various hazard, error and risk analyses. The objective is always to be able to present a reliable safety case so that a vehicle with the tested products installed will receive the required road release. This Group Directive is regularly adapted to the latest developments. We therefore established a functional safety expert team at Group level that organizes the further development of processes and a company-wide exchange of information. Since January 2023, for example, it has taken into account the new SOTIF standard ISO 21448 (Safety of the Intended Functionality). For ZF, these requirements are particularly relevant to highly complex sensors and autonomous driving.

Employees are extensively trained for the development of products with functional safety at an internal training academy. It provides in-depth knowledge of methods and their application for typical products of the Group. In this way, it contributes to strengthening the established safety culture and keeping the responsible developers constantly aware of the topic.

DIGITAL RESPONSIBILITY

At ZF, digital responsibility unites the aspects of product cybersecurity, production IT security, enterprise IT, information security and data protection in the company's business processes. The objective is to ensure the availability, confidentiality and integrity of ZF products, services and infrastructures. The same applies to the protection of data owned by partners, employees and ZF itself. Furthermore, the goal is to prevent external and internal cyberattacks such as information theft, manipulation and sabotage, and to increase the resilience of the supply chain against attacks. To this end, ZF has adopted binding guidelines for every aspect and for all employees. Key technical and organizational control measures include:

Preventive
Secure configuration of hardware and software, Security by Design, managed access to devices, controlled identity life cycle and access management, patch and software management, threat and vulnerability management and creating a security culture through user awareness.

Proactive
Incident and crisis management, monitoring external threat landscape, on-site inspections, testing of service and data, red teaming and penetration tests, crisis management exercises as well as third-party management.

Reactive
Management of incidents and emergency situations.

ZF's Information Security Management System (ISMS) defines rules and procedures for improving information security. It applies throughout the Group. ZF currently holds more than 170 TISAX certifications (Trusted Information Security Assessment Exchange). A TISAX

certification is valid for three years and is regularly renewed by ZF. It thus complies with the ISO 27001 standard, undergoes regular independent testing and is specifically aligned with the security requirements of the automotive industry.

In addition, the ZF Group's Cyber & Information Security Team maintains a close exchange with relevant security authorities, associations and security circles. Through these relationships, the company ensures that security standards at least meet the state of the art.

In the yearly Security Awareness Weeks, ZF enables employees to protect data and react appropriately in situations of risk. In 2023, the focus was on the secure use of generative artificial intelligence (AI) and the detection of phishing. Moreover, an internal campaign raised awareness about confidentiality.

ZF views trustworthy AI as a key element in promoting safety in future autonomous mobility. Therefore, ZF developed an ethics guideline that defines seven key requirements when developing and applying AI technology.

Our Data Protection Management System (DPMS) is designed to ensure that data protection obligations are met, regardless of whom data relates to and whether it is located in the EU or internationally. ZF's DPMS includes, i.a., following activities:

- Implementation of data protection standards in digital ZF products and services
- Inclusion in contracts of stringent provisions regarding technical and organizational security measures where personal data is processed by third party service providers (such as cloud providers)
- Utilization of regular internal audits and continuous quality improvement

The ZF Data Protection Policy regulates the data protection principles for the processing of personal data within the ZF Group. It defines the organization of ZF's data protection and describes the roles and responsibilities along the organizational structure of the Group. Below the member of the Board of Management responsible for data protection, this includes in particular the role of the ZF Chief Data Privacy Officer as well as the roles of the functional and divisional Data Privacy Officers and the corresponding responsible management. In addition, the policy regulates the data protection roles at regional and local level, including for those cases where a data protection officer is required by law for specific ZF companies.

CYBERSECURITY FOR ZF PRODUCTS

Due to the increase in vehicle connectivity and the introduction of autonomous driving functions, cybersecurity has continued to become more important at ZF. Legislation and new standards are additional drivers in this regard. As an example, the applicable UN Regulation No. 155 on cybersecurity and cybersecurity management systems obliges vehicle manufacturers in Europe and other countries to implement a cybersecurity management system by 2024 at the latest. ZF's internal process for product cybersecurity meets the requirements of the ISO/SAE 21434 standard and is integrated into ZF's Global Development and Product Evolution Process (GDPEP).

ZF's security policy also focuses on cybersecurity in product development. The product development goal is to implement technology measures that prevent cyberattacks or make the perpetration of such attacks significantly more difficult. For this purpose, ZF conducts, among other activities, threat, risk and vulnerability analyses. Depending on the result, appropriate measures are implemented.

These include for example:

- Control unit software signatures check to ensure that they originate from authorized sources
- Authentication of diagnosis access to the control units, e.g., in auto repair shops, by product development employees or for the analysis of return parts
- Access-proof storage of key and certificate material within the products
- Authentication of vehicle-internal data communication (ZF also uses microprocessors featuring co-processors with a specific focus on cryptography)

The effectiveness of these measures is confirmed by comprehensive security testing of our products. Electronic ZF products usually support software updates that enable troubleshooting in the field. When the vehicle architecture allows it, our products are increasingly capable of carrying out online updates in order to avoid auto repair shop visits. Cryptographic protection is particularly important here to ensure that only authorized software is used in the control units.

At the beginning of 2023, ZF established a Center of Competence for Cybersecurity, bundling the development tasks for cybersecurity internally. It offers development and testing services to both ZF divisions and customers, assumes operational tasks in a large number of projects and participates in internationally funded research projects. Through its membership in the Automotive Information Sharing and Analysis Center (Auto-ISAC), ZF regularly receives new information about hacker attacks on products and technologies that are relevant to the company. In the event that third parties identify possible weaknesses in our products,

ZF has set up an e-mail address that can be used to notify the Product Security Incident Response Team.

In addition to the product evolution process, ZF has established a continuous event monitoring and incident response process in order to be able to respond quickly and in a legally compliant manner to possible attacks on systems. Our central team of cybersecurity assessors examines the cybersecurity cases required for product release and can independently confirm their compliance with ISO/SAE 21434. Already in 2022, ZF was rated as well positioned compared to other companies in the industry with regard to product cybersecurity by several audits of external companies. As a result, we received the ENX "Vehicle Cybersecurity" label throughout the company in 2023. It is valid until mid-2025 and confirms to ZF a certified management system according to ISO/SAE 21434, UN R-155 and ISO PAS 5112.

In addition, ZF established an extensive internal training program on product cybersecurity processes and technologies which is continuously expanded and integrated into further training systems. Related topics such as technology subject to export controls, including cryptography, are also part of it.

Business Conduct

KEY FACTS

- > **ComplianceHelpdesk extended to include human rights due diligence.**
- > **Business Partner Integrity Management System rolled out.**
- > **Continuous development of the control system for tax compliance.**

The ZF Group has earned the recognition and trust of its customers through its responsible corporate governance and high-quality products and services. The aim is to further increase the company's commitment and the high esteem it has earned. We regard compliance as the foundation of successful corporate governance and therefore as a core value of our corporate culture. It supports reliable and respectful engagement with all stakeholders and thus forms the basis for lasting cooperation in an atmosphere of trust.

As a globally active company, ZF constantly works to ensure compliance with relevant laws, regulations and guidelines. This applies especially to the current substantial rise in regulations in the fields of climate protection and human rights. We promote honest, law-abiding and responsible behavior of employees throughout the Group. This includes the respect of human rights, which is monitored in ZF's own operations and within its supply chain.

ORGANIZATION AND RESPONSIBILITIES

The Compliance Organization was set up to reflect the organizational structure of the ZF Group. The ZF Compliance Management System (CMS) is based on three pillars: prevention, detection and response. The main objective of the CMS is to ensure compliance with internal and external regulations. It focuses on preventing and investigating potential violations by employees and business partners in the areas of:

- Antitrust
- Anti-money laundering
- Corruption/bribery, including the handling of gifts and entertainment
- Conflicts of interest
- Data privacy
- Foreign trade
- Human rights

ZF has a comprehensive and well-documented compliance risk assessment process that covers several risk areas, including potentially anti-competitive practices. Risk assessment is carried out at regular intervals. The risk assessment process includes a specific analysis of the probability of occurrence of the risk and the impact of potential risk realization for each of the risk areas covered. Based on the results of this evaluation, appropriate corrective measures and controls are introduced.

Three times per year the ZF Board of Management and the Audit Committee of the Supervisory Board are informed of all compliance-related risks via the Governance, Risk and Compliance (GRC) Report, including the progress made in refining the ZF Group Compliance Management System, details of significant completed investigations, known infringements of the law, sanctions imposed and implemented corrective/preventative measures. All significant ongoing investigations are also reported to these bodies. Moreover, each substantiated investigation is reported to the member of the Board of Management in charge. In 2023, 31 (2022: 59) compliance allegations were investigated, of which 15 (2022: 24) were substantiated. Measures such as terminations, written warnings and process improvements were derived and implemented.

ZF Compliance Organization

Prevent	Detect and respond
● Risk analysis	● Reporting violations
● Regulations	● Investigation
● Communication	● Sanctioning misconduct
● Training	● Actions monitoring
● ComplianceHelpdesk	● Continuous improvement
● Business partner due diligence	

As part of the continuous improvement of the CMS, the Compliance Department was again staffed up during the reporting period. The effectiveness of the CMS, including the adequacy of internal guidelines and processes, is regularly examined and its performance monitored continuously. ZF Corporate Audit reviewed the CMS in 2023. Depending on the risk-oriented audit plan such audits are repeated regularly, both internally by ZF Corporate Audit and by external service providers. The goal of the ZF Group for consolidated joint ventures is the implementation of ZF's own or a comparable CMS. To further develop its Compliance Management System, ZF also includes results from ESG ratings.

Guiding policies and principles

Compliance regulations and guidelines, such as the ZF Code of Conduct, are made available to all employees via the intranet and to external stakeholders via www.zf.com. In 2023, a revised compliance declaration was introduced, which new employees in particular must sign. It explicitly refers to existing compliance guidelines and the Code of Conduct and informs employees about the importance of these documents.

The ZF Code of Conduct defines mandatory principles for correct and ethical behavior. It covers topics such as fair competition, human rights, anti-corruption activities, economic and social responsibility, product compliance, occupational safety and health, data privacy and transparency. It is a core element of the ZF Compliance Management System (CMS) and is available in 27 languages. Furthermore, employees receive information on how to ask questions about the ZF Code of Conduct and how to report possible violations.

In addition to the ZF Code of Conduct, ZF has regulations and work instructions in place that primarily cover the following areas:

- Lawful and responsible behavior
- Ban on corruption
- Business partner integrity
- Handling favors, gifts and entertainment
- Correct behavior in competition
- Conflicts of interest
- Contacting the Corporate Compliance Office and reporting incidents
- Responsibilities, tasks and authority of the compliance organization
- Money laundering

The corresponding documents define and explain topics such as conflicts of interest or corruption. They clearly state that conflicts of interest are to be avoided and explain how this can be achieved. There is, for instance, a policy that prohibits sponsoring and donations that favor the following:

- Politicians and political parties, with the exception of donations made through political action committees (PACs) in the United States (these are in strict compliance with applicable law). Also, the distribution of such donations must reflect neutrality regarding parties and candidates. Payments to private accounts or in cash are prohibited.
- Individuals or organizations that are not charitable.
- Organizations that discriminate third parties on the basis of skin color, gender, age, nationality, origin, religion, sexual orientation, disability or other legally prohibited grounds.

Compliance tools

ZF uses its ComplianceHelpdesk as a tool for systematically clarifying and documenting questions relating to compliance. ZF employees can contact it whenever they are faced with a compliance-related issue in their day-to-day business activities. In 2023, the topic of human rights was integrated, offering a first orientation with regard to human rights due diligence.

The ZF CMS is complemented by the ZF Trustline, an electronic notification system for reporting suspected misconduct. Such incidents include potential violations of competition and antitrust law, cases of corruption and bribery, conflicts of interest, violations of product and regulatory requirements as well as requirements regarding anti-money laundering, data privacy as well as export laws, environment, health and safety regulations, fraud and financial reporting concerns, employment-related matters, violations of human rights and other material violations of policies or law. The system is available to all employees, business partners and other persons worldwide and can be used anonymously. More than 14 languages are supported. A process description was also published on www.zf.com. In addition, the company is working on a regulation that defines core principles such as whistleblower protection or the prohibition of retaliation for the use of the ZF notification system. This regulation should be available to all employees and also to external parties.

In 2023, 309 (2022: 255) notifications were received by the case management system, which comprises the ZF Trustline and other reporting channels. Of these, 204 cases (2022: 162) were reported via the ZF Trustline and 105 cases (2022: 93) via other internal channels. In total, 116 cases (2022: 45) were evaluated by the Corporate Compliance Function and resulted in 32 (2022: 29) compliance investigations. 193 cases (2022: 210) were received by the Corporate Compliance Function and, after evaluation, submitted to the corresponding ZF department for processing. As part of a quarterly review, the Corporate Compliance Function ensured that these cases were handled properly and that measures were derived as required.

Compliance-relevant notifications

	2023	2022	2021
Fraud	24	21	15
Bribery/Corruption	14	8	14
Conflicts of interest	24	7	11
Other	54	9	19
Total	**116**	**45**	**59**

Business partners can pose a compliance risk if their actions or failure to act can be attributed to ZF. All business functions of the Group must therefore take appropriate measures – preferably before business relations with a partner are initiated – to ensure that business partners are adequately assessed and instructed.

For this purpose, ZF developed a Business Partner Integrity Management System to support the identification and mitigation of legal and other compliance risks. This is based on an integrated workflow that allows risk-based due diligence of ZF's business partners in an efficient, detailed and documented manner. It also allows them to be permanently monitored and has been designed to establish a clear definition of internal roles and responsibilities and to provide extensive coverage of risk areas, such as anti-money laundering, anti-bribery/corruption, human rights, personnel security, antitrust or sanctions, among others. The Business Partner Integrity Management System was introduced in November 2022. After a pilot phase, all new suppliers have been reviewed since April 2023. One particular focus is on reviewing new suppliers of non-production materials and services. At the same time, we are following a rollout plan to gradually integrate existing suppliers, other commodities and customers, and are expecting full inclusion of all ZF business partners by June 2024. This rollout is supported by the respective communications to all company levels and training for internal stakeholders.

Compliance communication and training

Regular internal communication on compliance issues should raise awareness of the topic among employees and inform them about values and the company's expectations. A range of communication measures and formats ensure that compliance is firmly anchored within ZF's corporate culture. All employees, including the Board of Management, have constant access to a large variety of compliance topics and training measures through the intranet, the Compliance communities and other channels. As the main communication channel, the intranet also offers employees information on compliance contacts and access to important documents.

Due to the large employee base, ZF puts a strong focus on topic- and target group-oriented online training units. The objective of these courses is to firmly anchor compliance in employees' minds, create and enhance awareness, provide useful guidance and thereby prevent wrongdoing. The training conveys knowledge and promotes employees' ability to act in critical situations. By the end of 2023, the following courses were completed (with regard to the target groups) via the myHRSuite (MHRS) online learning management system:

- ZF Code of Conduct: 12,870 participants
- Conflicts of Interest: 11,175 participants
- Ethical Leadership: 3,447 participants
- Recognizing and avoiding bribery: 1,351 participants
- Business Integrity and Fraud: 2,072 participants
- General Antitrust Law - Principles and Practices: 1,912 participants
- Antitrust Law (sales): 1,303 participants
- Information Security for Employees: 34,982 participants
- Export Controls Made Easy: 59,141 participants

Due to the numerous trainings in the previous year, there were significantly fewer participants in the year under review. Exceptions are the new courses "Information Security for Employees" and "Export Controls Made Easy". The MHRS enables all employees to independently track their training progress. For mandatory training, an escalation process was established in cooperation with the HR Department. Employees can also use the intranet independently and on a voluntary basis to obtain information on many topics. Training in other formats, such as in-person training on key topics, is provided in a targeted manner based on region, job function and risk category.

COMPLIANCE WITH TAX REGULATIONS

The ZF Group's tax strategy was developed as part of ZF's corporate responsibility and in line with the company's overall corporate strategy. The tax strategy is aimed at meeting the following criteria:

- Compliance with tax regulations to ensure that tax returns are filed correctly and on time
- Ensuring that taxes are paid in the countries where value is added, thereby avoiding aggressive tax planning
- Ensuring that tax information used for corporate decisions and intended for the publication of financial data is correct and relevant
- Introducing appropriate measures to minimize tax risks and avoid unexpected tax payments
- Upholding ZF's positive reputation as a responsible company that respects tax laws
- Preventing inefficiencies from a tax perspective, such as double taxation

ZF is committed to an open and transparent exchange of information with tax authorities. It advocates fair and practical legislation and supports the work of industrial associations and international organizations in the field of tax law. The company thus contributes towards ensuring transparent and responsible taxation.

Organization and responsibilities

The basis for effective tax management is a clear definition of roles and responsibilities with regard to tax processes, measures and structures. The ZF Group Tax Directive (PS 23-0284) regulates the responsibilities, organization, competence and tasks of the Tax Function.

ZF's Tax Function is set up along the lines of an organizational matrix structure and is tailored to the operational needs of the business organizations, such as corporate functions and divisions. It ensures a clear assignment of tasks, rights and responsibilities within each region. Roles and responsibilities have been defined primarily for the following areas:

- Definition of the tax strategy
- Tax risk management
- Policy-making competence
- Requirement for involvement of the Tax Department
- Requirement for participation of or prior approval by the Tax Function
- Responsibility for tax-relevant elements in ZF's business processes
- Implementation and further development of the TAX CMS Lifecycle Process

The tasks of the Tax Function have been regulated primarily in the following areas:

- Tax reporting
- Direct and indirect taxes
- Tax process management
- Transfer pricing and documentation
- Corporate tax policy
- Regional tax-related tasks

Within the Board of Management of the ZF Group, the responsibility for taxes lies with Finance, IT, M&A, and is managed by the Chief Financial Officer (CFO). The Group Tax Function, directly reporting to the Head of Finance, IT, M&A or the Group's CFO, is responsible for compliance with the tax strategy. Tax compliance measures are executed by centralized local tax functions. These are either part of the tax function of a larger region or are organized at the local finance function

G. 15 Taxes – Values & Principles

level. General definitions are embedded in ZF's respective management policies in order to make sure that all Group entities adhere to these principles.

At ZF, taxes due are determined according to local tax laws and internal transfer prices within the ZF Group are set in accordance with the arm's-length principle. Remuneration for intra-Group transactions is generally based on the fair market value of the individual transaction.

Tax risk management

ZF seeks to minimize tax risks. The ZF tax risk management and the tax control framework are consistent with and embedded in the Group's Enterprise Risk Management and internal control framework. Tax risks are actively and continuously identified, assessed, monitored and managed. This ensures that they remain in line with the overarching objective of the Tax Function to guarantee Group-wide tax compliance.

Effective tax risk management and tax compliance are ensured by the following measures:

- Tax guideline concept integrated in ZF's policy management structure
- Continuous monitoring and improvement of the tax control framework via an established TAX CMS lifecycle process
- Verification of compliance with tax rules in the context of the confirmation and issue reporting process integrated in the Group's internal control system
- A structured approach to monitoring and assessing potential tax risks
- Digital notification system ZF Trustline available to internal and external stakeholders. For more information, please refer to the ↘ **Business Conduct** chapter.

Country-by-country reporting of tax and other key figures

In compliance with the base erosion and profit-shifting (BEPS) actions of the OECD, ZF annually prepares a country-by-country report (CbCR) for the entire ZF Group for the German tax authorities. In turn, the authorities share ZF's CbCR with countries that have signed a corresponding agreement permitting this data exchange. ZF's CbCR is therefore available to all countries whose tax authorities have agreed to the OECD standards.

Ongoing tax payments by region

in € million	2023	2022	2021
Europe	64	62	67
North America	55	26	32
Asia-Pacific	207	212	200
Other	2	26	17
Total	**328**	**326**	**316**

Group Management Report

75 — Basic Principles of the ZF Group
82 — Economic Report
91 — Opportunities and Risks
100 — Forecast Report

Basic Principles of the ZF Group

OPERATING ACTIVITIES AND STRUCTURE

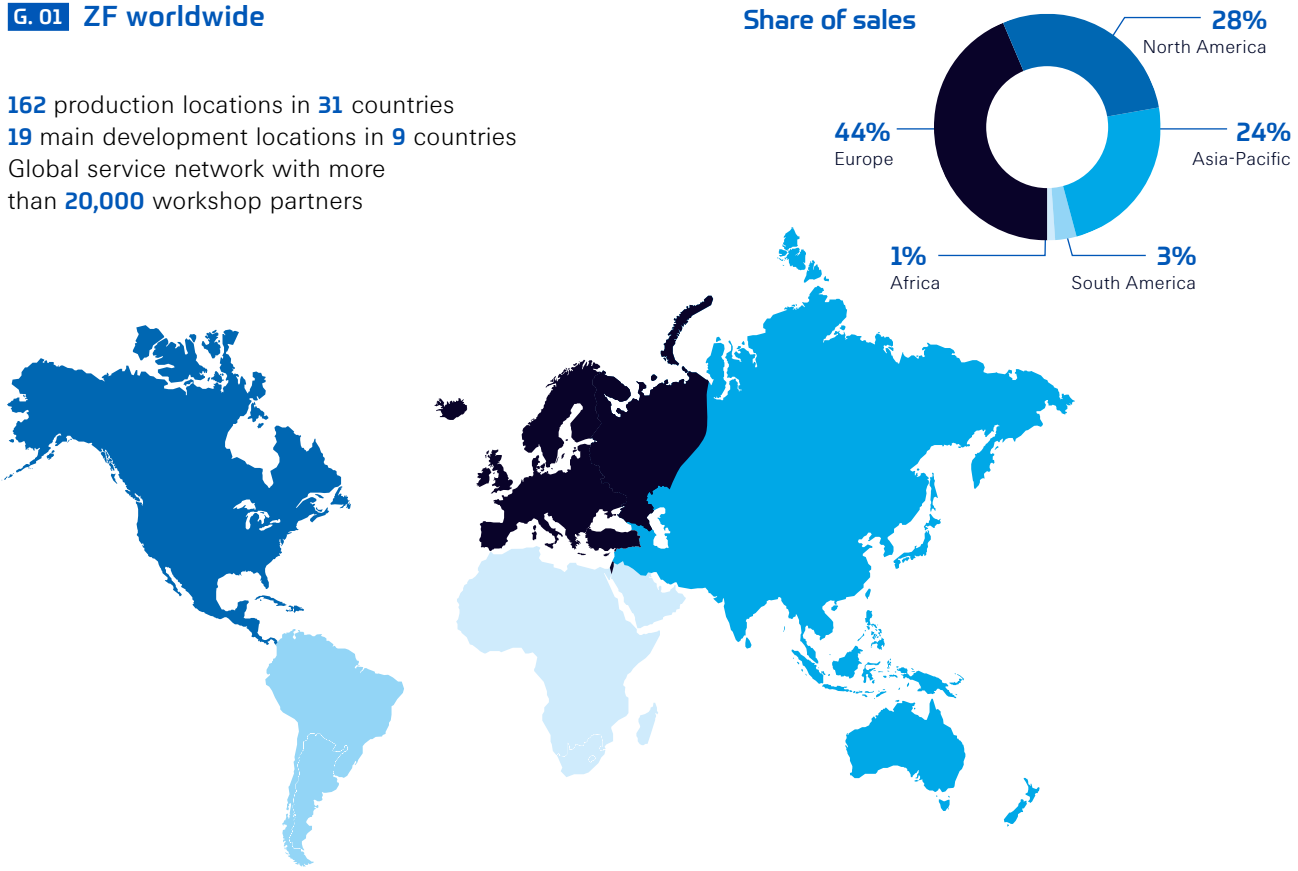
- **Internationally positioned: ZF is a technology company with 162 production locations worldwide.**
- **Focus on the future: ZF electrifies vehicles and contributes to reducing emissions, protecting the climate and making mobility safer.**
- **The company is strengthening its position in the chassis business by bundling activities from 2024.**

Global technology solutions provider focused on mobility

ZF is a global technology company manufacturing advanced mobility products and systems for passenger cars, commercial vehicles and industrial technology. Our comprehensive product range is aimed primarily at vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. ZF electrifies a wide range of vehicle types. With its products, the company contributes to reducing emissions, protecting the climate as well as enhancing safe mobility. Alongside the automotive sectors – passenger cars and commercial vehicles – we also serve market segments such as construction and agricultural machinery, wind power, marine propulsion, rail drives, special drives and test systems. We sell our aftermarket products under the brands of ZF, Lemförder, Sachs, TRW, WABCO and Boge.

G. 01 ZF worldwide

162 production locations in **31** countries
19 main development locations in **9** countries
Global service network with more than **20,000** workshop partners



	Total	Europe	North America	Asia-Pacific	South America	Africa
Production locations	**162**	75	35	40	8	4
Employees	**168,738**	95,725	35,921	30,595	5,515	982
Sales in € million	**46,627**	20,289	13,122	11,262	1,386	568

At the end of 2023, ZF employees worldwide numbered 168,738. The ZF Group is represented with 162 production locations in 31 countries.

Our main sales markets are Europe, North America and the Region of Asia-Pacific, with China as the core market and India as a growth market.

Corporate structure

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

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

In the ZF Group, business activities by product segments are organized by divisions. The divisions Active Safety Systems, Car Chassis Technology, Electrified Powertrain Technology, Electronics and ADAS as well as the Passive Safety Systems Division operate in the passenger car and light commercial vehicle sector. The product portfolio includes innovative driveline and chassis technology for passenger cars with conventional drives as well as for hybrid and electric vehicles. In addition, ZF offers both components and systems for active and passive safety technology.

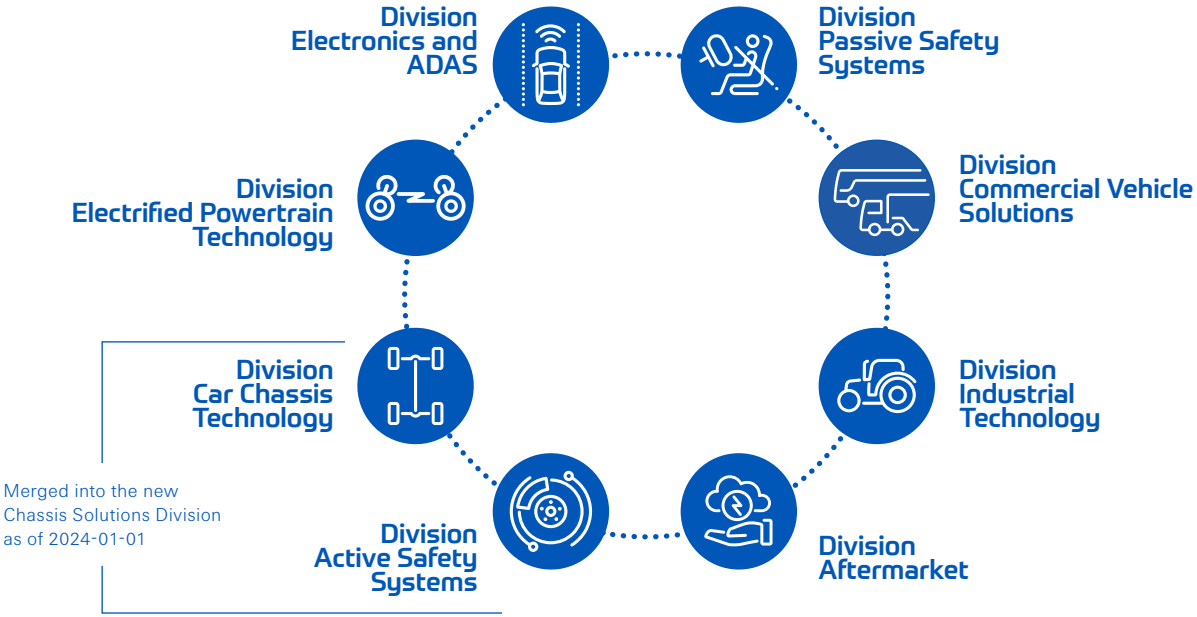
On January 1, 2024, ZF strengthened its position in the chassis business by bundling its activities of Active Safety Systems and Car Chassis Technology in the new Chassis Solutions Division. The new unit bundles ZF's entire chassis, steering and brake expertise which means it offers all hardware components to control a vehicle's vertical, longitudinal and lateral dynamics – as well as the associated networking of hardware and software.

Our Commercial Vehicle Solutions Division is a systems supplier primarily for truck, bus and trailer manufacturers as well as fleet operators.

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

The Aftermarket Division makes our OEM expertise available to the aftermarket, drawing on a global service network of more than 20,000 workshop partners. The services include service offers for fleets, exchange units, maintenance and remanufacturing. Intelligent connectivity solutions for digital mobility management over the entire life cycle of a vehicle complement the range of services. In order to optimally prepare our workshop partners for the mobility of the future, we also provide them with our technical know-how in the context of workshop concepts.

G. 02 Divisions



CORPORATE MANAGEMENT

Board of Management

ZF Friedrichshafen AG and the ZF Group are managed by the Board of Management. The Board of Management runs the business independently and determines the strategic orientation of the company. The strategy is implemented in close coordination with the Supervisory Board. The Supervisory Board monitors the activities of the Board of Management and receives regular management updates concerning business performance, strategy and opportunities and risks.

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

At the end of the 2023 fiscal year, the Board of Management consisted of six members: Chief Executive Officer Dr. Holger Klein, Dr. Lea Corzilius, Dr. Martin Fischer, Michael Frick, Prof. Dr. Peter Laier and Stephan von Schuckmann.

In August 2023, the Supervisory Board appointed Dr. Lea Corzilius to succeed Sabine Jaskula, whose appointment ended on July 31, 2023.

Supervisory Board

The Board of Management is overseen by the Supervisory Board, whose members are appointed with equal representation. At the end of the fiscal year, the Supervisory Board comprised 20 members under the leadership of Dr. Heinrich Hiesinger.

The Supervisory Board is supported by an Executive Committee and an Audit Committee, which are both composed of members of the Supervisory Board.

Corporate Governance

The Board of Management and the Supervisory Board are committed to managing and monitoring the company responsibly in accordance with the principles of good corporate governance. These are a prerequisite for sustainable business success and the fundamental standard on which our day-to-day management behavior is based. For the Group, acting according to the principles of responsible corporate management geared to sustainable value creation is an all-encompassing requirement across all areas of the company. Corporate Governance is implemented by means of an integrated Governance, Risk and Compliance (GRC) approach. The aim of the integrated GRC approach is to synchronize and promote the activities and cooperation of the core governance functions. In addition to Group Risk Management, this system includes the Compliance organization, the Internal Control System, and as an independent supervisory body, Corporate Audit. The departments report regularly to the Board of Management and Audit Committee in a joint GRC report.

Enterprise Risk Management

The Group-wide standardized Enterprise Risk Management (ERM) of ZF Friedrichshafen AG ensures the monitoring and management of risks in the divisions, functions and regions. Our risk situation is now more transparent in all dimensions of our matrix organization. We document, monitor and manage risks with the help of various tools, taking account of both strategic and operational risks and aggregating the overall risk landscape.

Compliance

Compliance is an integral part of our corporate culture and forms the basis for the trust that customers, business partners and the public put in us. The Board of Management and all employees of the ZF Group are obliged to behave responsibly and to comply with applicable regulations. We expect such behavior also from our business partners along the entire value-added chain.

ZF's Code of Conduct lays down principles of correct, legally compliant and ethical behavior that are mandatory for all ZF employees. In addition, the Business Partner Code of Conduct forms the foundation of partnership-based cooperation. Together, they represent the basic requirements for integrity and summarize the ZF Group's understanding of values.

ZF's Compliance Management System ensures lawful action by the bodies, executive managers and employees at all corporate locations. The focus is on measures preventing corruption, fraud and money laundering risks.

Internal Control System

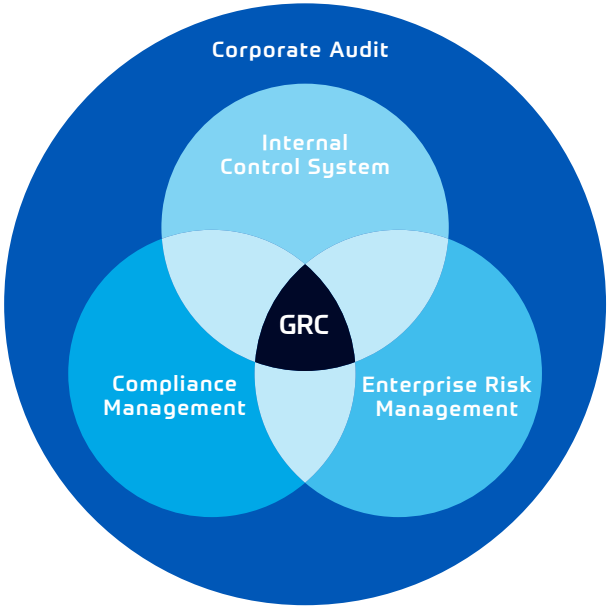
ZF's Internal Control System (ICS) is intended to ensure the organization's target achievement with regard to relevant business processes, reliable reporting of financial as well as non-financial key figures and compliance. Our standardized ICS approach is based on the tenets of transparency, the principle of dual control and the separation of duties. It applies throughout the company and is implemented throughout the Group. The direct reference of the ICS to the ZF risk catalog enables us to measure and further develop the control coverage in a targeted manner. Monitoring measures to ensure the adequacy and effectiveness of controls include decentralized activities in reporting

units, divisions, regions and corporate functions as well as audit procedures on the part of central Risk & Control Management. In addition, Corporate Audit checks ICS controls in a risk-oriented manner as part of business process audits. In the 2023 fiscal year, the non-accounting-related ICS in particular was further developed. The Board of Management does not have any information indicating a lack of appropriateness and effectiveness of the ICS as of December 31, 2023.

Corporate Audit

Corporate Audit supports the ZF Group in achieving its objectives by following a systematic and independent audit approach to evaluate and improve the effectiveness and efficiency of risk management, control and other governance processes related to the ZF risk catalog. The audits and audit-related consulting services are provided on the basis of risk-based audit planning approved by the Board of Management. Corporate Audit monitors the timely implementation of measures agreed on the basis of identified risks.

G. 03 **Integrated Governance, Risk & Compliance (GRC)**



Equality and equal opportunities

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

With due consideration for German legislation governing equal representation of women and men in managerial positions in the private and public sectors, the following targets have been defined and are to be met by June 30, 2027:

- The target of 20% female Supervisory Board members is achieved with the current composition.
- The target of 10% female members of the Board of Management has also been met with the appointment of Dr. Lea Corzilius for Corporate Human Resources, Legal and Compliance.
- At the first managerial level below the Board of Management as well as the second managerial level, the proportion of women is to increase to at least 20%.

↘ For further information, refer to the Sustainability chapter.

INNOVATION

> **Realigned innovation portfolio with a focus on efficient use of energy, modern key technologies and software development.**
> **R&D expenditure of €3.5 billion.**
> **27,377 employees worldwide work in innovation, technology and engineering.**

In order to achieve the strategic goals, ZF is investing in the following key technologies and innovations that strengthen our position in the commercial vehicle and industrial technology segments, but also help to increase earnings in the passenger car segment:

- Efficient use of energy:
  We are working on efficient drives for all types of vehicles as well as efficient energy management. Therefore, we are researching and developing opportunities to improve the conversion of energy, including systematic algorithms for an optimized driving strategy.

- Modern key technologies:
  In this cluster, we focus on the fundamental technologies that enable complex, cutting-edge vehicle functions, for example high-resolution sensors, artificial intelligence and powerful central computers.

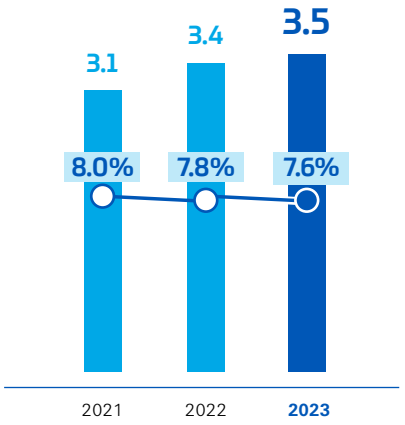
- Software center:
  In order to maintain the top-notch quality and efficiency of our software development, our software center is constantly advancing processes, methods and tools according to the latest standards. In addition, we use the latest software technologies and powerful platforms to strengthen our product developments.

Focused technology transformation

In 2023, the reorientation of our innovation portfolio focused on technologies for growth in the existing technology fields. Examples of important innovation projects include tools for digitalizing the development process, for example the virtual release of products, technologies for efficient energy management in the electric powertrain and key technologies for future vehicle generations, such as sensor, actuator and High Performance Computing (HPC) technologies.

To strengthen its expertise in middleware, ZF has prepared the entry into the Qorix joint venture with KPIT. The combination of ZF's systems expertise and KPIT's software competencies ought to better cover the requirements for integrating sensor and actuator functions in particular.

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

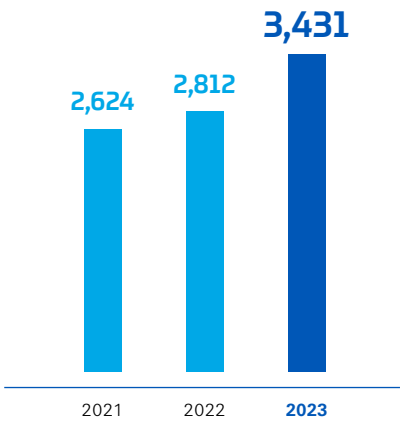


Together with nine other partners, ZF has founded Cofinity-X to accelerate the operation and introduction of Catena-X applications in the automotive value chain. Catena-X offers us a broad spectrum for required and future-oriented fields of application.

T. 01 Research and development figures

	2023	2022	Change
R&D expenditure in € million	3,543	3,425	+3.4%
R&D expenditure ratio in %	7.6	7.8	−0.2% pts.
Number of invention disclosures	3,431	2,812	+22.0%
Number of R&D employees	27,377	26,140	+4.7%

G. 05 Invention disclosures



For example, it helps the participating companies to ensure the supply of materials, to promote the digitalization of their production beyond company boundaries and to comply with social, climate protection and human rights standards within the entire value chain. The new operating company now gives us the opportunity for the first time to offer cross-company digital solutions via an open and freely accessible marketplace.

R&D expenditure remains at a high level

In fiscal year 2023, ZF invested €3.5 billion (2022: €3.4 billion) in research and development. This corresponds to a sales share of 7.6% (2022: 7.8%). Research and development expenditure is defined as research and development costs in accordance with the statement of profit or loss, plus capitalized development costs, less their depreciation.

By the end of the past fiscal year, the Group employed 27,377 people in research and development (2022: 26,140). 6,217 employees (2022: 5,570) work in the Group's basic research and divisional project development departments. Worldwide, ZF has 19 main development locations in nine countries.

Patent applications

In the year under review, a total of 3,431 invention disclosures (2022: 2,812) were filed by the Group. The filings led to 2,081 (2022: 2,066) new patent applications.

Electrified, connected, smart & efficient

In the area of electric mobility, the focus is on electric drives with ZF's own electric motors, 800-volt silicon carbide power electronics and reduction gears for the premium to high-volume segments. With its synergy effects, our function-oriented platform development is the core of our software and electronics solutions. It guarantees that our customers are served quickly without having to make major adjustments. In addition, the development is expanding the central thermal management system, TherMaS. This system features a central unit and intelligent software to control all thermal processes for the drive, battery and passenger compartment in electric cars. It reduces the losses in the overall system and increases the performance of the drive.

Alongside electric mobility, ZF's by-wire products – as networked and electronically controllable braking, steering and damping systems – are examples of further future high-volume products. ZF knows the ins and outs of longitudinal, lateral and vertical vehicle control and sees great potential for the future in networked chassis components. Against this background, ZF is merging the Car Chassis Technology and Active Safety Systems divisions into the new Chassis Solutions Division.

In the field of passive vehicle safety, ZF presented the new transverse center airbag, which improves side-impact protection especially in subcompact cars. It serves in particular to better protect occupants when a collision with another vehicle takes place on the passenger side.

In the Commercial Vehicle Solutions Division, ZF presented its latest advances in bus technology at the 2023 Busworld exhibition in Brussels (Belgium). This event was also the venue for the world premiere of the next generation of low-floor electric portal axles for city buses. The fully integrated, modular CeTrax 2 dual electric central drive system for intercity buses and coaches has a continuous output of 380 kW and an integrated three-speed transmission. This increases efficiency at high cruising speeds and improves climbing ability.

ZF presented its new AxTrax 2 electric axle platform for the first time at the Advanced Clean Transportation (ACT) Expo. The integrated and modular electric drive system for light, medium and heavy commercial vehicles is ZF's latest e-mobility solution that supports the industry's transformation towards a more sustainable future. Series production of AxTrax 2 is scheduled to begin in Europe in late 2024 and in the USA in 2025.

ZF Bus Connect (digital fleet management solution) presented its new "EcoLife Health Check" module, which is dedicated to increasing vehicle availability. It marks ZF's entry into remote diagnosis for bus fleets. Health Check uses data from the transmission system (engine speed, gear step, oil temperature, oil pressures, etc.) to provide information on the actual state of the transmission. Since the data is collected online, the examined bus no longer needs to be called back to the depot for analysis.

ZF's Aftermarket Division once again underscores its goal of significantly optimizing vehicle operating times – in this case in the rail sector. In collaboration with Transmission Dynamics, it has developed the Smart Oil Plug, a wireless, sensor-based solution that enables the transmission condition and behavior in rail vehicles to be monitored and analyzed in real time. The aim is to improve maintenance and reduce downtime for most of the traction units.

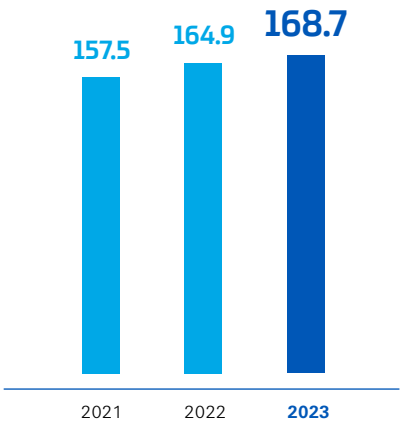
EMPLOYEES

> Number of employees increased by 2.3%.
> Growth mainly in research and development as well as in the region of Asia.

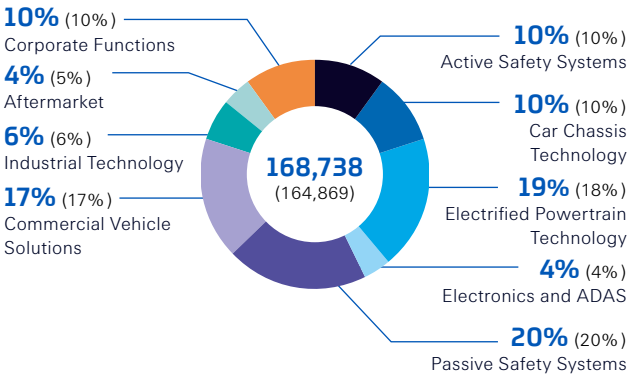
As of December 31, 2023, ZF had a global workforce of 168,738 employees (2022: 164,869). More than half of the employees (95,725) work in Europe, most of them in Germany (54,447).

Especially research and development as well as the region of Asia recorded above-average growth.

G. 06 Employees
in thousands

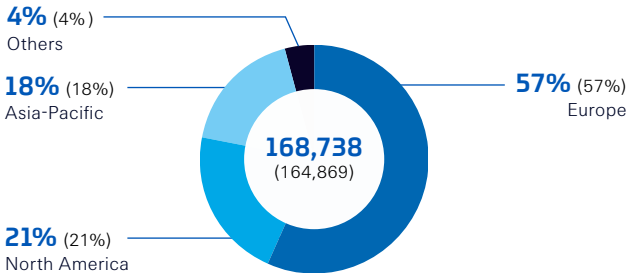


G. 07 Employees by division



Previous year's values in brackets

G. 08 Employees by region



Previous year's values in brackets

↘ For further information, refer to the Sustainability chapter.

Economic Report

MARKET AND INDUSTRY ENVIRONMENT

- **The burden of high inflation rates and high energy costs continued to be felt in many regions, preventing a sweeping recovery of the global economy.**
- **Heterogeneous development of ZF's industries – double-digit growth rates in the passenger car, commercial vehicle and wind power sectors. Negative growth rates, on the other hand, in agricultural and construction machinery production.**

Economic recovery remained weak

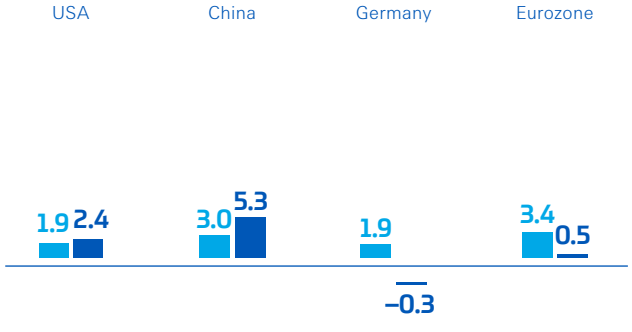
Growth in the global economy slowed further in the past fiscal year, reaching the 3% mark. Nevertheless, the global economy has performed slightly better than expected at the beginning of the year, when there was a risk of a global recession with a focus on Europe and partly the USA. Overall, global economic momentum declined over the course of the year; in many regions, high inflation rates continue to weigh on consumer spending, construction investment and real estate demand, as well as on investment projects by many companies. The tightening of monetary policy of many central banks with higher interest rates and more restrictive lending is likely to have peaked in the course of 2023, but corresponding recovery trends for consumption and investment are still quite muted.

Among other indicators, domestic demand in the USA has developed surprisingly positively, providing impetus to economic growth. China was only able to achieve comparatively weak domestic demand, also caused by the critical real estate sector and weakening consumer confidence. However, this was positively countered by easing the zero-Covid policy. By contrast, Europe and Germany in particular were at the bottom of the growth table by global comparison. Brazil and India achieved respectable growth rates of the gross domestic product of +3% and more than +6%, respectively.

In the past fiscal year, development continued to be strongly influenced by multiple negative factors. In addition to overarching geopolitical tensions, the acts of war in Ukraine and, since fall, in the Middle East had a massive impact on the economic mood. Furthermore, the global supply chain problems, tense raw material markets and energy prices, which were lower compared to the peak values from 2022 but still high in the long run, continued to be stress factors, with a weakening negative effect on the general economic development. Under these conditions, the global economy once again failed to recover strongly after the period of weakness caused by the pandemic.

G. 09 GDP development

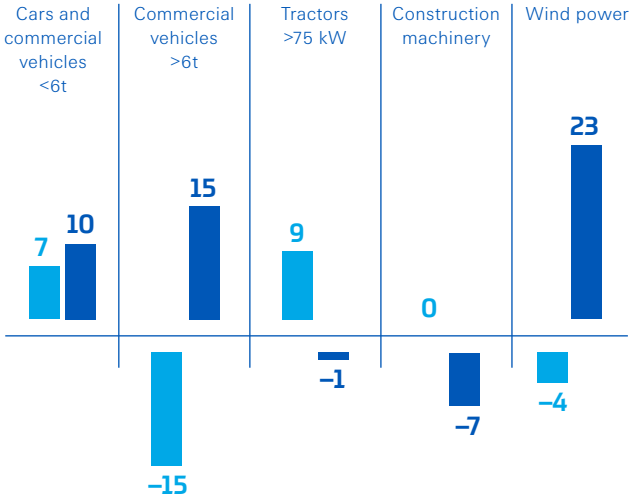
in %



Sources: Ifo, IWF, OECD, FERI (as of Feb 2024)

G. 10 Development of ZF's industries

in %



Sources: Ifo, IWF, OECD, FERI (as of Feb 2024)

Highs and lows in ZF's industries

Due to the aftermath of the pandemic, only gradually decreasing resource bottlenecks and supply chain problems, continued comparatively high energy prices and strong uncertainty caused by geopolitical tensions and dangerous wars and crises, ZF's industry sectors have developed very heterogeneously.

Production of passenger cars and light commercial vehicles up to 6 tons increased significantly by +10% worldwide in 2023 to over 90 million vehicles. Although production was still around 4 million below the peak of almost 95 million units in 2017, growth was achieved for the third year in a row after the pandemic shock in 2020 (2021: +3%, 2022: +7%). This was a much better result than expected at the beginning of 2023, when many experts had still feared stagnation or even a decline in global vehicle production. The pent-up demand for replacement from the weak previous years has partially led to noticeable increases in demand. In Europe in particular, the output volume increased by more than +12%, while Germany even increased production by more than +18%. North America achieved an increase of +10%. Japan with +16% and South Korea with +12% were also able to increase production in the double-digit range. In India, production increased by +6% and China, the world's largest market, grew by +11%.

Worldwide production of heavy commercial vehicles over 6 tons (trucks and buses) developed even better. Production in this sector increased by +15%. The main growth driver was China, the world's largest commercial vehicle market with a third of the global volume: After two very weak years (2021 at −20% and 2022 at −48%), an upward correction to a "normal level" was achieved through an increase of almost +40%. In Europe, too, the market developed much better than expected, with +14% more commercial vehicles rolling off the production lines than in the previous year. The originally forecast recession in the USA did not materialize thanks to the significantly improved economic situation. In this region, +7% more vehicles could be brought into the market. On the other hand, the market in South America was weak: After the high growth rates of the two previous years (+59% and +10%), normalization took place at −32%.

In the industrial sectors of ZF, the agricultural machinery industry, and here in particular the segment of large tractors, recorded a slight decline of −1% worldwide. The decisive factor was a sharp decline of −10% in China (after +25% in the two previous years, respectively). This was not fully offset by production growth of +3% in Europe and +4% in North America. Construction machinery production came under considerable pressure, suffering a decline in global production of −7%. While North America and India were each able to achieve growth of +5% on account of the good economic circumstances, the industry in Europe weakened by −2%. In China, the volume collapsed by as much as −20% due to weak construction investments. The expansion of wind power fared much better, mainly driven by Asia. Globally, installed gigawatt capacity increased by +23%. With an increase in installed gigawatts of +40%, China was the driver of growth, now boasting almost two-thirds of global capacity. In contrast, the USA reported a further decline of −14%, South America recovered with an increase of +17% and Europe saw a slight decline of −3%.

OVERALL DEVELOPMENT OF THE GROUP

> **In 2023, the Group focused on prioritizing and realigning business segments.**
> **Despite continued difficult general conditions, the financial targets were achieved in the past fiscal year.**

Overview of the business trend and Board of Management overall statement on business performance

In the 2023 fiscal year, the global economy and our industry in particular once again faced major challenges. Some issues, including energy prices, supply chain problems, raw material uncertainty and high inflation rates have continued. The recessive climate in Europe, rising costs of capital and, at the same time, the increasing need for investment in new technologies due to the transformation of the automotive industry add to the uncertainties. Furthermore, there is the challenge of optimally managing inventory, balancing delivery stability and capital commitment, in order to meet customer requirements and achieve financial targets.

In the past fiscal year, the ZF Group achieved the sales forecast from the beginning of the year of more than €45 billion in a market environment that remained difficult for the automotive supplier industry. In total, sales increased by 6.5% from €43.8 billion to €46.6 billion. Adjusted for exchange rate effects, sales increased by approximately 9%.

The adjusted EBIT margin of 5.1% (2022: 4.7%) is within the forecast range of between 4.7% and 5.2%. Adjusted EBIT improved to €2.4 billion (2022: €2.0 billion) despite high production start-up costs due to capacities expanded especially for electric mobility.

The adjusted free cash flow amounted to €1.4 billion and was within the forecast range of between €1.0 billion and €1.5 billion.

Against the backdrop of transformation in the automotive industry and inflation-related cost increases, ZF focused on realignment and prioritization. ZF was looking for suitable partners for the development of future-oriented business areas. Through the strategic partnership with technology company Foxconn, ZF is consistently pursuing the path of opening up new strategic options with external partners. Also part of this strategy is the carve-out process of our Passive Safety Systems Division. The aim is to give the successful division more strategic options for its future development, thereby enabling faster and stronger growth and at the same time continuously improving profitability. One possibility is the entry of external investors who improve access to additional growth capital.

A focus was also placed on actively shaping the maturity profile of the financial liabilities of the ZF Group. In fiscal year 2023, ZF repaid debts of approx. €2.4 billion. On the refinancing side, ZF successfully placed approximately €2.9 billion on the capital market, mostly in the form of bonds. Net debt was reduced by approximately 0.4 billion to approximately €10.0 billion.

Equity fell compared to the previous year mainly due to negative currency and valuation effects. The equity ratio decreased to 19.7% (2022: 22.1%).

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 more than €3.6 billion and an unused credit line at Group level of €3.5 billion.

Against the backdrop of a stable liquidity and financing basis as well as a positive business performance, the Board of Management is confident with regard to the future economic situation of the ZF Group.

RESULTS OF OPERATIONS, NET ASSETS AND FINANCIAL POSITION

Results of operations

> Group sales increased despite difficult market conditions.
> Adjusted EBIT margin improved compared to the prior year, but continues to suffer due to new product launches.

Group sales grew by 6.5%

In fiscal year 2023, the ZF Group achieved sales of €46,627 million (2022: €43,801 million), which corresponds to an increase in sales of roughly €2.8 billion or 6.5% over the previous year. Adjusted for negative exchange rate effects, this results in an organic sales growth of around 9%. This figure also includes inflation-related price effects as well as retrospective price adjustments.

Sales development in the divisions

All divisions contributed to sales growth.

The Active Safety Systems Division achieved an increase in sales of 6.3% to €6,887 million (2022: €6,479 million). The Global Steering and Foundation Brakes business units were major contributors to the increase in sales. With a substantial presence in North America, the division is more strongly affected by the U.S. dollar. Adjusted for exchange rate effects, growth was about 9% over the previous year.

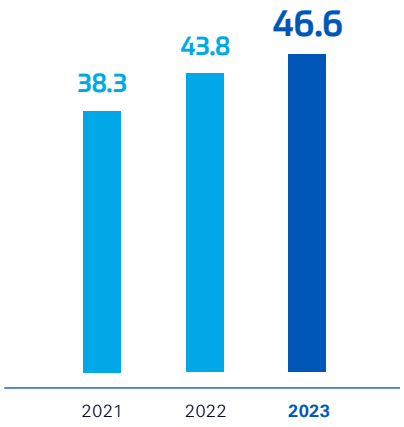
Sales in the Car Chassis Technology Division amounted to €8,464 million (2022: €8,100 million). This corresponds to a sales increase of 4.5% compared to the prior year. Within the division, the Chassis Actuators

T. 02 Statement of profit or loss

in € million	2023	%	2022	%
Sales	46,627	100%	43,801	100%
Cost of sales	–39,115	–83.9%	–36,904	–84.3%
Gross profit on sales	**7,512**	**16.1%**	**6,897**	**15.7%**
Research and development costs	–2,881	–6.2%	–2,790	–6.4%
Selling and administrative expenses	–3,327	–7.1%	–3,115	–7.1%
Other income and expenses	115	0.2%	132	0.3%
Net result from participations	86	0.2%	–15	0.0%
EBIT	**1,505**	**3.2%**	**1,109**	**2.5%**
Net financial result	–742	–1.6%	– 547	–1.2%
Net profit or loss before tax	**763**	**1.6%**	**562**	**1.3%**
Income taxes	–637		–186	
Net profit or loss after tax	**126**	**0.3%**	**376**	**0.9%**

G. 11 Sales development

in € billion

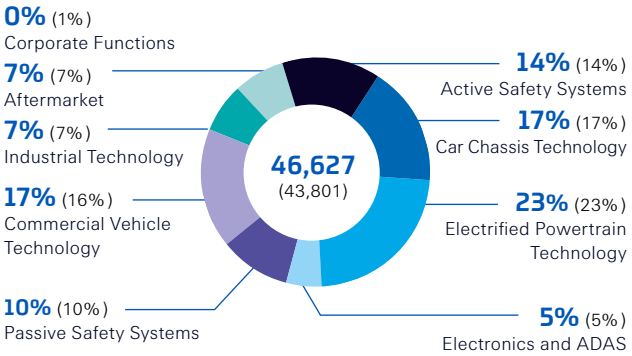


and Chassis Components business units were the primary sales drivers. Above all, strong sales in China led to a negative exchange rate effect of approx. 4%. Adjusted for exchange rate effects, sales increased by approx. 9%.

The Electrified Powertrain Technology Division increased sales by 5.6% from €10,839 million in the prior year to €11,449 million. In particular, the Powertrain eModules & eMotors and Electrified Powertrain Systems business units recorded significant sales growth.

With sales of €2,699 million (2022: €2,433 million), the Electronics and ADAS Division achieved sales growth of 10.9%.

G. 12 Sales by division



Previous year's figures in brackets/Total sales in € million

The Passive Safety Systems Division generated sales of €4,713 million (2022: €4,541 million), which is an increase of 3.8%. The positive development was mainly driven by increased sales of seat belt systems and inflatable restraint systems in Europe.

Sales of the Commercial Vehicle Solutions Division amounted to €8,678 million (2022: €7,513 million). This corresponds to an increase in sales of 15.5%. Adjusted for negative exchange rate effects of approx. 4%, organic sales growth amounted to around 20%. Compared to the overall market, which grew by 15% in the commercial vehicle business, the division thus significantly outperformed the market.

In fiscal year 2023, sales of the Industrial Technology Division amounted to €3,539 million, which corresponds to an increase of 3.3% (2022: €3,427 million). Contrary to the market, the Off-Highway Systems and Marine and Special Driveline Technology business units achieved sales growth.

T. 03 Sales development by division

in € million	2023	2022	Change
Active Safety Systems	6,887	6,479	408
Car Chassis Technology	8,464	8,100	364
Electrified Powertrain Technology	11,449	10,839	610
Electronics and ADAS	2,699	2,433	266
Passive Safety Systems	4,713	4,541	172
Commercial Vehicle Solutions	8,678	7,513	1,165
Industrial Technology	3,539	3,427	112
Aftermarket	3,345	3,178	167
Corporate Functions	111	397	–286
Consolidation	–3,258	–3,106	–152
Total	**46,627**	**43,801**	**2,826**

T. 04 Sales development by region

in € million	2023	2022	Change
Europe	20,289	18,717	1,572
North America	13,122	12,487	635
Asia-Pacific	11,262	10,689	573
South America	1,386	1,432	–46
Africa	568	476	92
Total	**46,627**	**43,801**	**2,826**

In the past fiscal year 2023, sales of the Aftermarket Division also increased by 5.3% to €3,345 million (2022: €3,178 million). Taking into account negative exchange rate effects, the division recorded organic growth of approximately 10%.

Regional sales distribution

Europe remained the strongest-selling region at 43.5% (2022: 42.7%). North America's sales share decreased slightly from 28.5% to 28.1%. The share of sales in the Asia-Pacific region remained nearly unchanged at 24.2% (2022: 24.4%). The Region of South America has a sales share of 3.0%, and the Region of Africa of 1.2%.

Gross margin at 16.1%

Gross profit on sales amounted to €7,512 million (2022: €6,897 million), which is equivalent to a gross margin of 16.1% (2022: 15.7%). The absolute increase is mainly attributable to higher sales. Declining inflation and the associated decrease in the cost of production material led to a slight improvement in gross profit. However, production start-up costs and the expansion of capacity for e-mobility in particular continued to weigh on the gross margin. Research and development costs amounted to €2,881 million (2022: €2,790 million), representing 6.2% of sales after 6.4% in the prior year. The focus was on the consistent implementation of the corporate strategy in terms of strengthening the future technologies of electrification, safety systems and autonomous mobility against the backdrop of the transformation in the automotive industry.

Compared to the previous year, sales and administrative expenses increased slightly from €3,115 million to €3,327 million, corresponding to an unchanged 7.1% of sales.

Adjusted EBIT margin at 5.1%

EBIT totaled €1,505 million in the past fiscal year (2022: €1,109 million). Adjusted for the amortization from the purchase price allocation for company acquisitions in the amount of €634 million, restructuring expenses in the amount of €90 million as well as the negative balance from M&A activities and one-off effects in the amount of €138 million, the adjusted EBIT margin amounts to 5.1% (2022: 4.7%).

While organic sales growth had a positive impact on the margin, the continued high level of R&D expenditure to further advance our strategy as well as the preproduction and start-up costs for new products had a negative impact on the Group profit. Nevertheless, we were at the upper end of the forecast between 4.7% and 5.2%. Adjusted EBIT is defined as EBIT corrected for net effects from the purchase price allocation, including amortization and depreciation, as well as M&A activities and other special items that are considered exceptional or non-recurring in nature.

In the past fiscal year, the net financial result amounted to –€742 million after totaling –€547 million in 2022. The main reasons for the deterioration were the increased financing costs.

Income tax expenses in 2023 were negatively affected by one-time tax expenses and amounted to –€637 million (2022: –€186 million).

Net assets and financial position

> **Sustainable financing based on the ZF Green Finance Framework further expanded.**
> **Positive adjusted free cash flow of €1,382 million.**
> **Net debt decreased to €9,982 million.**

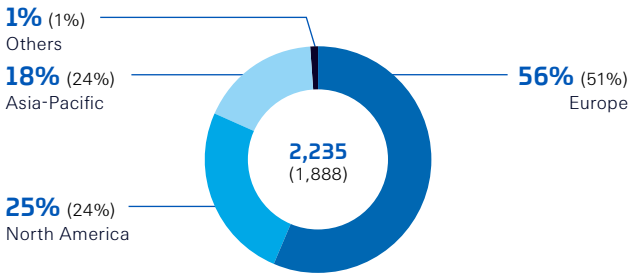
Increase in total assets

Compared to the prior year, total assets increased slightly by €226 million to €39,170 million (2022: €38,944 million).

Current assets, including assets held for sale, increased to €16,601 million (2022: €15,711 million), mainly due to the increase in cash and cash equivalents as a result of the positive free cash flow.

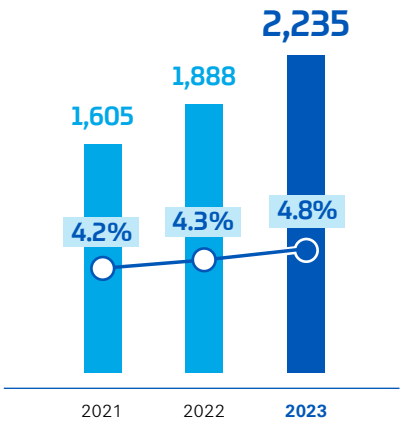
Non-current assets amounted to €22,569 million after €23,233 million in the previous year. Intangible assets in particular have declined as a result of amortization.

G. 13 Investments by region



Previous year's figures in brackets/Total sales in € million

G. 14 Investments and investment ratio
in € million / share of Group sales in %



Investments increased by 18%

Investments amounting to €2,235 million, an increase of 18% compared to the previous year, were made in the new technology fields of electric mobility and autonomous driving as well as established fields such as transmission applications (including hybridization), chassis systems, electronics, damper modules, brakes, steering systems and other safety technology.

Of the capital expenditure, 53.7% was spent on payments in advance and construction in progress, 29.7% on technical equipment and machines, 8.0% on land and buildings and 8.6% on other equipment, factory and office equipment.

Sustainable financing further expanded

Current and non-current financial liabilities amounted to a total of €13,795 million as of December 31, 2023 (2022: €13,036 million). Without considering the change of derivative financial instruments, there was an increase in gross debt year-on-year of €729 million to €13,683 million.

In February 2023, ZF issued a fixed-interest green euro bond of €650 million with a maturity period of 3.5 years under the Debt Issuance Program (DIP).

In April 2023, we successfully re-entered the U.S. bond market with a volume of USD 1.2 billion. The bonds issued are divided into two fixed-interest tranches with a volume of USD 600 million each and have maturity periods of five and seven years.

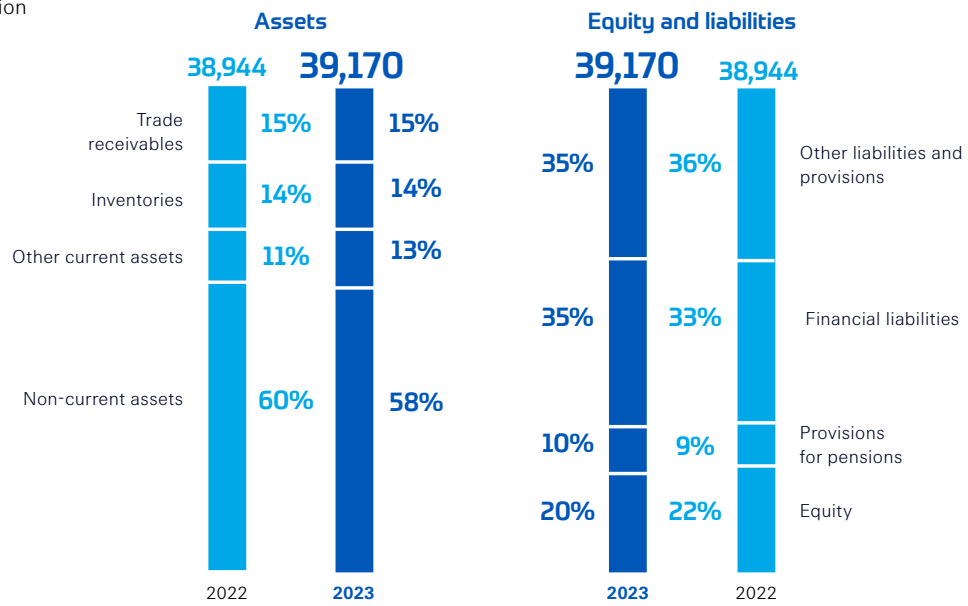
Another green euro bond was placed on the market in September 2023 with a single fixed-rate tranche of €650 million and a maturity period of 5.5 years.

The basis for all three transactions is the ZF Green Finance Framework, which was introduced in April 2021. The proceeds are used for the development, production and sale of products for battery electric vehicles (clean transportation) and for the development, production and sale of gearboxes for wind turbines (renewable energy).

In the 2023 fiscal year, debts totaling approximately €2.4 billion were repaid. This includes a €1.1 billion bond tranche from the financing of the TRW acquisition and €500 million from the financing of the acquisition of WABCO.

G. 15 **Consolidated statement of financial position**

in € million



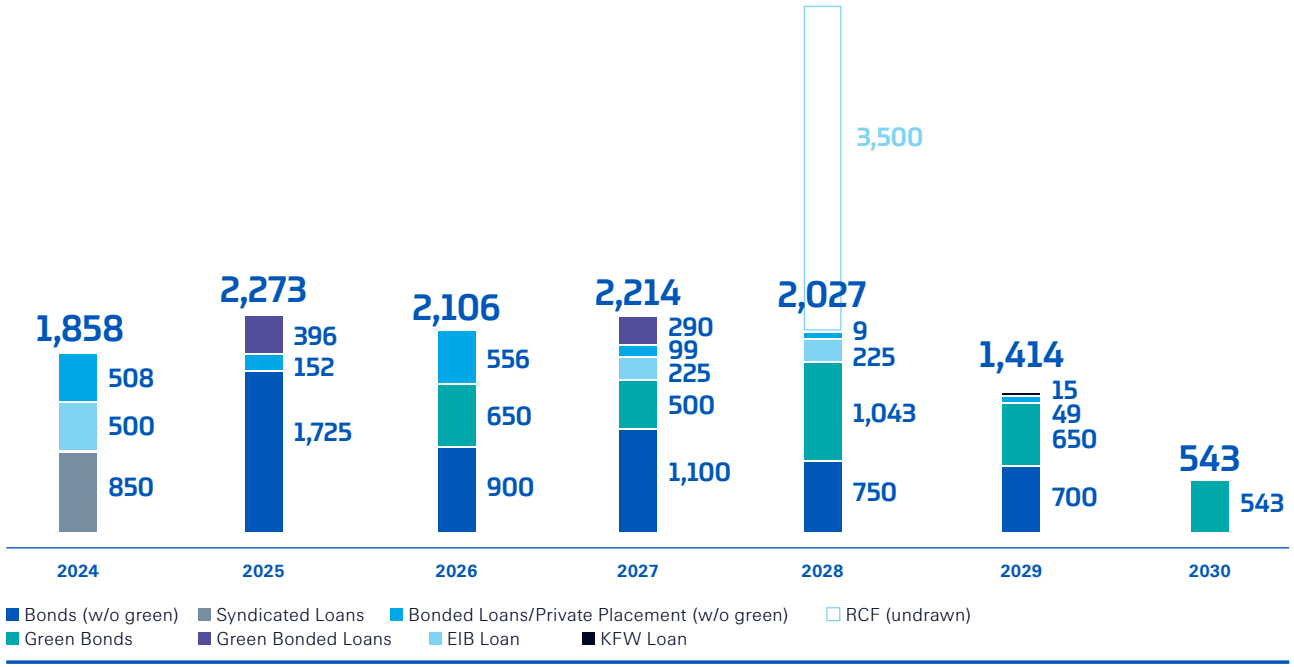
The remaining financial liabilities largely result from financing the acquisition of TRW in 2015 and the WABCO acquisition in 2020.

The syndicated loan that was refinanced in 2022 and had a remaining amount of €3.5 billion in the form of a revolving credit facility was unused as of the reporting date. The credit line was refinanced in 2022 with an increase in volume from €3.0 billion to €3.5 billion. Another contractually agreed extension option was exercised in the year under review, so that the credit line now has a residual term until July 2028. As part of the refinancing, the syndicated loan was provided with an ESG component.

Against the backdrop of the corporate goal of achieving financial independence, ZF aspires to be assigned a stable investment grade rating. As of the reporting date, ZF had company and bond ratings of Ba1 with a stable outlook from Moody's and BB+ from Standard & Poor's, also with a stable outlook. Both rating agencies had given ZF a stable outlook in 2022.

While trade payables decreased year-on-year to €6,634 million (2022: €7,024 million), provisions for pensions increased to €3,857 million (2022: €3,551 million) as a result of the increase in interest rates, especially in Germany.

G. 16 **Maturity profile**
in € million



As of the reporting date, Group equity, including non-controlling interests, amounted to €7,719 million (2022: €8,595 million). The decrease mainly resulted from actuarial losses due to the adjustment of the discount rates to be applied for the valuation of pensions. In addition, the negative result from foreign currency translation had an equity-reducing effect. In the year under review, a dividend of €41 million was paid to the shareholders of ZF Friedrichshafen AG. Taking into account the increase in total assets, the equity ratio was 19.7% (2022: 22.1%).

Adjusted free cash flow at €1,382 million

Taking into account the effects of exchange rate changes at the end of the year, the cash position of the year under review is €3,637 million (2022: €2,530 million).

The cash flow from operating activities improved to €3,253 million (2022: €2,189 million). The increase is mainly due to higher earnings before income tax and increased contract liabilities. The net working capital change in particular had an opposing effect.

The cash flow from investing activities amounted to –€1,853 million (2022: –€1,612 million). The decline is mainly due to higher investments.

As a result, the free cash flow amounts to €1,400 million compared to €577 million in the previous year. The free cash flow, adjusted for cash inflows and outflows in connection with M&A activities and securities, is €1,382 million (2022: €544 million) and thus within the range of €1.0 billion to €1.5 billion forecast at the beginning of the year.

The cash flow from financing activities amounted to –€207 million in the past fiscal year (2022: –€391 million) and is significantly influenced by interest payouts. The balance from repayments and new borrowings of financial debt totaled €545 million (2022: €162 million).

The net financial position improved by €396 million and amounted to –€9,982 million (2022: –€10,378 million) as of the reporting date. It consists of current and non-current financial liabilities excluding derivative financial instruments, less cash and cash equivalents as well as securities recorded as financial assets.

T. 05 Consolidated statement of cash flows

in € million	2023	2022
Cash flow from operating activities	3,253	2,189
Cash flow from investing activities	–1,853	–1,612
Free cash flow	**1,400**	**577**
Cash flow from financing activities	–207	–391
Net change in cash	**1,193**	186
Cash position at the beginning of the fiscal year	2,530	2,332
Other changes in cash and cash equivalents	–86	12
Cash position at the end of the fiscal year	**3,637**	**2,530**

Opportunities and Risks

- > **Risks are managed within the framework of our Enterprise Risk Management (ERM) system where they arise.**
- > **Geopolitical conflicts could also cause problems in 2024 and jeopardize previously stable supply chains.**
- > **Our priorities "Sustainable and Digital" provide us with new sales opportunities.**
- > **We do not see any risks that jeopardize the company's continued existence, either alone or in combination with other risks.**

The Board of Management bears overall responsibility for the risk management system. At least every three months, it informs the Audit Committee and the Supervisory Board comprehensively about the opportunities and risks of the ZF Group and the respective control measures initiated and planned. The Group risk report is part of the integrated Governance, Risk & Compliance (GRC) report.

At Group level, the cross-functional Risk Committee, chaired by the Chief Financial Officer, is tasked with evaluating ZF's risk situation – regularly or ad hoc if necessary – and ensuring its active management. The continuous further development of corporate governance aspects within the framework of the GRC approach is another essential task of the Risk Committee.

ORGANIZATION OF THE OPPORTUNITY AND RISK MANAGEMENT SYSTEM

ZF defines risks as any internally or externally occurring events or developments that may result in a negative deviation from the business plan, whereas opportunities may result in a positive target deviation.

Through established processes and responsibilities, our risk management system involves all pillars of the ZF Group matrix organization, consisting of corporate functions, divisions and regions. The objective is to identify and analyze opportunities and risks early on and to take measures to manage risks and seize opportunities.

As a governance and assurance function at Group level, Group Risk Management provides structures and methods for the implementation of the ERM process. The existing ERM Directive is addressed to all employees.

G. 17 Risk management at ZF

Within the scope of its control obligation, the Audit Committee deals with the effectiveness of the risk management system at least every six months. Among other things, Corporate Audit is responsible for regularly checking and evaluating the efficiency of the risk management system, including the implementation of the underlying ERM Directive. Within the context of the annual or consolidated financial statements audit, the auditor appointed by the Supervisory Board also assesses whether the Board of Management has set up suitable measures for the establishment of a monitoring system in order to detect early on whether there is any development that may threaten the existence of the company. Insights from these regular audits are integrated into the continuous further development of the ERM, including the ZF risk culture and our risk strategy.

At least every three months and ad hoc, if required, the operational and strategic risks within the matrix organization are identified, assessed and reported. Risk identification is supported by the Group-wide ZF risk catalog, which is subject to regular review by the GRC managers in the corporate functions, divisions and regions.

Risks are chiefly assessed using quantitative criteria, differentiated according to their gross (before risk treatment) and net risk value (after risk treatment), and the indication of a probability of occurrence range (%). The possibility of qualitative risk assessment using our GRC consequence matrix enables us to also consider and manage not (yet) quantifiable or difficult-to-quantify risks in our risk landscape. Significant risks for the Group are identified for Group reporting by means of thresholds defined by the Board of Management with regard to expected extent of damage and probability of occurrence. We include opportunities if they have a direct material link to a risk.

To manage a risk, the responsible managers or risk owners then derive measures which are also documented and tracked in the Group's reporting. Interdependencies between individual risks and aggregation effects are taken into account. ZF's risk landscape aggregated using the Monte Carlo method is compared with the risk-bearing capacity of ZF.

KEY RISKS COMMENTARY

Based on our current assessment, the risks we classed as significant to the future development of the company are described below. Risk reporting generally covers a whole year. Risks that are subject to regular reporting essentially arise in the areas of research and development (including quality) as well as finance (with taxes) and cybersecurity (including information security). Although we currently see no relevant risks in the "People & Organization" risk category, we nevertheless provide more detail considering its strategic importance.

Market and customer

As a global player we essentially face location-, country- and region-specific risks arising, among other things, from economic and geopolitical changes as well as pandemic developments, which affect both sales and procurement.

In the short and medium term, the slowly declining inflation rates, high interest rate levels, volatile legislation and the associated, sometimes uncertain circumstances in particular can have a negative impact on the demand for our products and services. This makes it more difficult for us to predict our sales volumes and there is a risk that our production facilities are underutilized. Should the markets, however, grow faster than predicted, there could be capacity bottlenecks with the result that customer demands cannot be fully met. Our logistics early-warning system and customer-oriented production planning based on continuous communication enable us to respond flexibly to fluctuations in demand.

The automotive industry is an important customer group for ZF. The extensive discussions about an end date for the combustion engine, driving bans that have been announced or already imposed at local, regional and national levels as well as stricter regulations on exhaust emissions and consumption values are major factors of uncertainty for the entire automotive industry, especially in Europe and Asia. This leads to changes in consumer behavior. We expect the share of hybrid and battery electric vehicles to continue to increase, which will have a negative impact on the sales of combustion vehicles and their components. ZF adapts existing products and components to new vehicles and no longer pursues new developments that are exclusively suitable for pure combustion engine vehicles. Mergers of OEMs can lead to increased margin pressure due to transparency regarding prices and costs as well as the bundling of purchasing volumes. We also observe redistributions among customers and competitors. Global volume shifts, e.g., to Asian OEMs and suppliers, could weaken ZF's position in the global automotive market. Through market research activities and the continuous monitoring of sales markets, we strive to identify changes in market structures at an early stage and thereby proactively combat the associated sales risks. Localization analyses in specific markets provide us with a focused approach to new business ventures.

Risks may also ensue from the ramp-up of new products and the breakthrough of disruptive technologies.

As a supplier, we are facing high investment requirements and massive cost pressure, which, while coping with scarce resources, calls for stringent cost management to compensate for price reductions. Failure to do so could result in major challenges regarding prices and costs, which then could significantly affect the profitability of customer projects. Our portfolio management approach allows us to focus on technologies that reinforce our leading position now and in the future. Here, we can draw on a network of partnerships and participations. As a general principle, targeted diversification measures are also taken to reduce our dependence on the automotive business.

ZF sees continued protectionist trends in individual countries trying to protect and/or improve their competitiveness on the global markets, such as the expansion of firm market access barriers. The increasing number of competitors, especially from Asia, may have a significant effect on our sales prices, above all in Europe, the USA and China – sales markets we consider particularly relevant.

In addition to activities in the traditional markets, we want to continue to proactively position ourselves in growth markets and previously underrepresented markets. Changing political conditions, structural deficits and the economic downturn in some countries may lead to declining sales and payment defaults. ZF compensates for market slowdowns in individual regions by shifting volumes to other markets.

Purchasing, suppliers and supply chain

Procurement markets remained under pressure in 2023. Rising geopolitical tensions and violent conflicts between individual countries and regions may lead to strains for the ZF Group. We continue to expect political, social and economic impacts on our business activities due to the Russian war of aggression in Ukraine. While the escalation of the Middle East conflict in Israel has not yet had any noticeable impact on our suppliers, the ongoing attacks by the Houthi rebels on international merchant ships in the Red Sea are partly causing considerable delays in the supply chain and increasing freight costs due to longer transit routes between Asia and Europe via South Africa. Cross-divisional task forces and working groups are closely monitoring the situation in these crisis countries and regions. They derive appropriate measures to ensure that deliveries are continued, our employees stay safe, business activities remain compliant and that international sanctions are observed, if necessary. We also see potential economic and security-related conflicts between the USA and China, including potential reciprocal sanctions that threaten the international movement of goods. Scenario analyses allow us to evaluate any potential aggravation of the situation in East Asia and, if necessary, we will derive measures to maintain robust supply chains and avoid critical dependencies.

According to ZF's purchasing strategy, raw materials and components are to be procured from a variety of different suppliers in different regions. Nevertheless, we cannot always avoid being dependent on individual suppliers. Delays in delivery and supply shortages (e.g., due to natural disasters, cyber attacks on suppliers, capacity bottlenecks with forwarding agents, financial imbalances of suppliers and even insolvency) as well as the consequences of strikes or insufficient quality can lead to production and delivery interruptions at ZF. Prices and costs have gone up in recent years. Since there are only limited possibilities to pass on these price increases, this poses a particular burden on medium-sized companies in Europe. We have noticed a higher number of supplier insolvencies in the ZF portfolio. In terms of production materials, we are mainly focusing on casting and forging suppliers.

Our Supplier Risk Management systematically works to avoid interruptions in deliveries due to financial instability or market introduction, quality and logistics problems at suppliers and to reduce our procurement risk position to a minimum by identifying supply alternatives. In order to reduce the risk of successful cyber attacks, suppliers of production and non-production material who have access to confidential and sensitive ZF information are obliged to provide evidence of an effective information security management system in accordance with the TISAX standard. In the area of casting, it is our aim to limit the risk of business interruptions by implementing a new, comprehensive ZF casting strategy. Experts of Financial Risk Management also check and coordinate support services for critical suppliers. The number of insolvencies of ZF suppliers is still below that of our competitors.

We see that the inflation peak for raw material and non-production materials, such as energy, has been reached and prices have partially returned to pre-crisis

levels. However, we do not expect a noticeable decline across all commodities until 2024.

ZF responds to these challenges of the procurement side by continuously monitoring the markets, in particular the raw material and energy markets, by staying in close contact with customers and suppliers, and by adapting the supply chains. A suitable bottleneck control system, e.g., in the case of electronic parts and semiconductors, is intended to reduce and ideally prevent negative effects. Increasing costs for products and components, including additional or higher customs duties, must be compensated for by improving productivity, establishing synergies or distributing costs to the upstream and downstream supply chains. If this does not succeed, there may be price-related declines in demand and losses in profitability.

Research and development including quality

Our business with OEM customers in the automotive industry in particular is subject to market developments and technical trends to which we must respond quickly and with innovations. This entails operational and strategic development and technology risks. Opportunities and risks also arise from the increasing awareness of the markets for sustainable and ecological aspects as well as stricter or upcoming new regulations to limit potentially negative effects of our business activities and products on the environment (i.a., by reducing greenhouse gas emissions within the scope of the EU climate targets for 2030 and by reducing the use of harmful substances through the new European REACH Regulation). We are continuously reducing our dependence on combustion technology-related products. On the one hand, this is due to the fact that a significant part of our product portfolio is used in vehicles both with combustion engines and with electric drives, and our sales of these products are developing in line with the market which is experiencing a higher penetration of electric mobility. On the other hand, we are continuously growing with electric mobility-related products. Our order volume for components and systems of electric mobility alone now amounts to more than €30 billion. Nevertheless, the advancing electrification in the field of passenger car and commercial vehicle drives as well as other technological changes could jeopardize our market position if we do not quickly and successfully expand our expertise accordingly.

Both product development and product optimization processes generally involve a variety of risks. These include possible time delays, which in the worst case jeopardize our customers' SOP (start of production), as well as cost overruns, especially in long-term development projects. Furthermore, risks arise from possible intellectual property violations as well as (cyber) risks within the context of networked products and the increased use of the Artificial Intelligence of Things (AIoT) and cloud solutions.

Despite the currently tense economic environment, we are keeping research and development expenditure at a high level as a response to development and technology risks. In addition, we rely on the establishment of strategic partnerships and the targeted investment in companies and start-ups with innovative technology and business model solutions, with the help of ZF Ventures GmbH among other things. In order to efficiently leverage Group-wide development synergies, we pursue a modular approach and operate across divisions via agile competence centers, tech centers and system houses. This allows us to provide both external and internal customers with system solutions for any application according to their needs and market requirements.

We take responsibility for our products and thus for their impact on society, our business partners and the environment. Non-compliant internal or external components or functions can lead to time and cost-intensive corrective measures as well as recalls, resulting in losses regarding customer and market acceptance. This is especially true in light of the fact that many of our products are important components that contribute to the overall safety, durability and performance of our customers' final products. For products that do not comply with customer specifications or (supposedly) exhibit malfunctions, ZF may face warranty and product liability claims which cause considerable costs due to investigations or proceedings.

We strive for the highest quality. This goal is anchored in the Group-wide ZF DNA of Quality. ZF uses a certified quality management system according to IATF 16949 with standardized and consistent quality controls as well as regularly optimized process workflows in order to maintain our product quality at the highest level despite the increasing product complexity. The close cooperation between the Corporate Quality team, Quality Assurance of the divisions and Corporate Research and Development is to ensure that quality problems are identified as early as possible and the associated risks can be promptly addressed and mitigated. In addition, ZF has established the Product Safety and Regulatory Office and operates a comprehensive Product Compliance

Management System as a consistent approach for recording, interpreting and fulfilling technical legal and regulatory requirements that apply or are relevant to ZF products throughout the company.

Cybersecurity including information security

We are highly dependent on IT systems and networks for our business and production processes as well as products and services. Since these systems and the products themselves are becoming more and more networked, they are fundamentally exposed to risks of cyber attacks and other disruptions or failures. This can cause considerable harm to our company. Our comprehensive cybersecurity strategy aims at protecting people and their assets, business and personal information and data as well as ZF's physical and intangible assets. Our integrated Information Security Management System (ISMS) based on ISO 27001 covers not only IT but also development, production, staff security, compliance, physical safety as well as legal and customer requirements. This ISMS is regularly checked by independent authorities.

Through technical and organizational measures, we protect data streams and processing in our infrastructure, both on-premise (operated on site) and off-premise (e.g., in the cloud). Our security culture is a central element of ZF's resilience. For this reason, we regularly carry out mandatory awareness-raising measures worldwide, such as our Security Awareness Weeks, and we train our employees correspondingly. Partners and suppliers handling ZF information are committed to comply with our security policy and to provide proof of an effective ISMS. We use internal and external sources of information to monitor the global cybersecurity situation.

Alarm processes and crisis management are in place for security incidents, enabling us to react immediately to emergency situations with corresponding contingency plans and identified crisis response teams. The functioning of these processes is checked regularly. A cross-divisional Cybersecurity Advisory and Decision Panel monitors and manages ZF's cyber risk situation (inter alia, Production IT Security or Enterprise IT Security) across all risk categories.

We see significant risks above all in the product cybersecurity area. In product development, particular focus is therefore given to the implementation of the ISO/SAE 21434 international standard on cybersecurity in vehicles. Our cybersecurity development processes meet this standard and thus form a cybersecurity management system that enables our customers to homologate their vehicles according to UNECE R 155. A central team of cybersecurity assessors has been set up to support product releases. In addition, a Red Team monitors the automotive-specific threat situation and initiates reactions to possible security incidents. In parallel, a Blue Team is working centrally on advance development for emerging technologies. The product cybersecurity management system was successfully certified according to the VCSA (Vehicle Cyber Security Audit) standard in 2023.

People and organization

We face more stringent and additional requirements in the ESG and sustainability context, which have wide-ranging implications for our business processes, models and reporting. We have defined sustainability as a binding target in our corporate strategy. We will implement new processes and make appropriate investments that are required to improve our sustainability performance and prepare for increased customer expectations as well as new regulations, such as the supply chain legislation or new standards for chemicals.

The worldwide consequences of climate change include more frequent and intense extreme weather events such as floods, cyclones and droughts, which have so far only affected our locations in individual cases. Natural disasters can lead to various burdens along our entire value chain and affect us directly (e.g., our own plants) or indirectly (e.g., local or regional economic activity). Moreover, people, the environment or the property of third parties could be harmed. We have established an EHS management system (environmental, health and safety) to counter the corresponding risks. We also use real-time analysis systems to obtain (risk) information about global safety-related events such as natural disasters, geopolitical developments and conflict situations. In this way, we can initiate appropriate measures proactively and reactively. Natural hazards and corresponding findings from the analyses are also taken into account in various resilience activities in the Group, e.g., to strengthen production and supply chain resilience, including the procurement process.

↘ **Further risks and implications are presented in the Sustainability chapter.**

Finance

As part of central financial risk management, we monitor and control liquidity, foreign currency, interest rate and counterparty risks as well as credit risks in order to safeguard our financial stability. Provisions regarding the individual risk types have been put in place which determine how to assess and manage the particular

risk. Where required, we hedge financial risks using appropriate instruments. Wherever possible and expedient, we use derivative financial instruments to manage interest and currency risks in particular. We also use hedge accounting if the prerequisites are met. ZF controls and hedges currency risks with a standardized model to hedge underlying transactions in foreign currencies and a uniform system landscape.

Higher interest rates in the relevant currencies euro and U.S. dollar as well as possible further interest rate increases combined with higher credit spreads lead to higher (re-)financing costs for ongoing variable financing. As a possible consequence, our factoring and reverse factoring programs could lose their attractiveness. By opening up alternative sources of finance with attractive conditions we intend to proactively mitigate potential burdens. Variable-rate liabilities are partially hedged against rising interest rates by means of interest rate derivatives as of the balance sheet date.

Active cash and cost management helps us to stabilize our liquidity. A revolving credit of €3.5 billion is still fully available as a liquidity reserve. Central cash pooling, with sufficient cash and committed credit lines with matching maturities, guarantees the necessary financial flexibility.

Among other obligations, our credit agreements contain a financial covenant which has to be complied with at all times. A breach of this financial covenant would mean that, in the event of a respective claim, the creditor could demand immediate repayment of the loan or terminate the credit line. It was possible to maintain the financial covenant at all times in 2023.

In order to reduce counterparty risks within finance, we only transact with banks that have first-class financial stability and within stipulated limits. The credit rating of our suppliers and customers is continually checked.

In particular, there are risks to recognize impairments on financial assets. In addition, we are generally exposed to the risk of necessary value adjustments from acquisitions. If company participations or business units do not develop sustainably in accordance with the underlying business plan, we could be forced to make significant balance sheet depreciations.

In the course of audits, tax laws and relevant contracts or events could be interpreted and assessed in a different manner by local tax authorities than by ZF. This poses the risk of a claim for back taxes based on an adjustment to the tax base. Furthermore, tax law initiatives can influence future tax expenses or tax payments.

ZF is subject to high pension obligations, particularly in Germany and Great Britain. These pension obligations are covered to a varying extent completely or in part by plan assets. We invest the plan assets in a variety of asset classes that are exposed to corresponding fluctuations in value. A change in key parameters, such as the discount rate or other factors dependent on macroeconomic or regulatory developments, could lead to negative effects on ZF's earnings and equity.

Legal and compliance risks

Due to the complexity of our business model with economic activities on all continents, we are generally exposed to the risk of legal disputes in areas such as product liability, competition law, export regulations, environmental protection and taxation. Particularly in the USA, we are involved in proceedings whose outcome may have a substantial negative impact on our earnings. Accounting provisions for legal risks are made in accordance with the applicable accounting regulations.

In addition, it cannot be completely ruled out that individual employees significantly harm the company intentionally or unintentionally by violating applicable law in connection with their work activities, e.g., due to ignorance of complex antitrust regulations. This may result in payment or other obligations as well as damage to our reputation. In the event of investigations, we cooperate fully with the relevant authorities. However, ZF has created corresponding structures in order to ensure as far as possible that the different country-specific legal provisions are complied with and to control and minimize legal risks. Key elements are our global Compliance Organization, the ZF Code of Conduct, the anonymous notification system for internal and external compliance notifications, and a comprehensive mandatory training concept. In addition, regular compliance risk assessments at the division and regional levels were added to compliance risk management in order to identify any compliance risks early on and to initiate appropriate countermeasures. Our membership in the Responsible Supply Chain Initiative e.V. (RSCI) also supports our efforts to fulfill our due diligence obligations in supply chains and thus contributes to reducing risks in the area of human rights.

KEY OPPORTUNITIES COMMENTARY

Industry and company-specific opportunities

In the partly disruptive industries in which we operate, we continuously see new opportunities that we take into account for our plans and forecasts, provided they have a sufficient probability of occurrence. We use systematic scenario analyses to record long-term market and technology trends. Using trend and environmental analyses and maintaining close contact with customers, we are continuously working on identifying where there is potential to improve our products' design, production efficiency, effect on humans and the environment, as well as market performance and our cost structure.

The worldwide interest in hydrogen energy and fuel cell technology opens up new growth areas. Our Wind Power business unit is also benefiting from steady market growth.

The chassis business is an important component of the ZF product range. Therefore, we have decided to merge our two divisions Active Safety Systems, with its leading technologies for braking and steering systems including x-by-wire systems, and Car Chassis Technology, with its expertise, among other things in the field of (semi-)active damping, into one strong Chassis Solutions Division from January 1, 2024. As a result, ZF can offer its customers a chassis portfolio with innovative hardware and software solutions that serve the major automotive megatrends, such as the software-defined vehicle.

Sustainability

We rely on an integral approach to achieve climate neutrality. This creates many opportunities for us: from the development of environmentally friendly technologies, the increased application of renewable energies, the use of green steel or the remanufacturing of products. Sustainability is not just a buzzword for us. Proof of this is the internally awarded ZF Excellence Award in the Sustainability category. The award recognizes outstanding projects throughout the company that, for example, reduce our environmental footprint or improve working conditions.

Vehicle manufacturers are increasingly required to reduce fleet consumption in their mix of vehicles and drive systems. With our further growing portfolio of systems and components for plug-in hybrids and electric vehicles, we are already providing solutions for passenger cars and commercial vehicles that support customers in complying with the legal framework regarding emissions.

Our customers have also set themselves ambitious sustainability goals. These go beyond their own carbon footprint and that of their suppliers. Another focus is placed on the energy and water consumed during production and use as well as the materials used and their origin. The new magnet-free electric motor from ZF, which was presented at the IAA 2023, is just one example of how ZF innovations contribute to our customers' resilience and encourage decarbonization: This motor requires no rare earths and its production creates up to 50% less CO_2 emissions than the production of customary electric motors.

Consistently sustainable entrepreneurial action, including by strengthening the activities for an improved circular economy, also offers opportunities to attract and retain employees. It has been proven that sustainability-oriented companies are more attractive employers; apart from that, commitment in this regard increases job satisfaction. Our sustainability performance also has a direct impact on how the ESG rating agencies evaluate ZF. Therefore, it is an important element of our financing strategy with banks and investors.

↘ **Further opportunities and the respectively derived strategies are presented in the Sustainability chapter.**

Research & Development

ZF is systematically reducing its dependency on internal combustion engines. At the "Auto Shanghai" international trade fair in April 2023, a wide range of customers saw our presentation of latest technologies and solutions in the fields of autonomous, intelligent and safe mobility, including electric mobility. The "ZF Sustainability Circle" and the associated new sales opportunities for ZF were presented for the first time: It shows how our wind turbine gearboxes are involved in the generation of green electricity, how we affirm our commitment in the spare parts market as well as in remanufacturing and recycling, and how we contribute to reducing emissions with these products.

The demand for active driver assistance functions up to automated driving remains high. Several OEMs plan to offer new vehicle models with (partially) automated functions. The increasing volume of cameras, sensors, high-performance computers and new software creates new sales opportunities for ZF.

The wind power industry is also an important industry for us as a global supplier of innovative and durable gearboxes. To meet the increasing demand for wind energy, the turbines are becoming larger and more powerful. In order to ensure the reliability of the wind power driveline, ZF laid the foundation stone for the world's most powerful test bench for the wind industry in Lommel (Belgium) at the beginning of 2023. With this investment, we intend to expand our future product portfolio worldwide.

A strategic partnership with Foxconn, the world's largest electronics producer, enables us to further expand market opportunities in the passenger car chassis business, especially in the assembly of chassis systems and modules. In this way, we want to open up new customer groups and expand our presence in growth markets.

The establishment of the Qorix joint venture with KPIT will provide us with new market opportunities for standardized, scalable middleware for the mobility industry. At the same time, we can focus more on differentiating software functions and develop integrated solutions from hardware and software vehicle systems. As an example, cubiX – ZF's software that can be used to control all chassis functions – went into volume production at the beginning of 2023.

Digitalization

Digitalization offers us numerous opportunities along our entire value chain. For this reason, our transformation also focuses on the digitalization and networking of actuators and sensors necessary for software-defined vehicles and their chassis and drive systems. Among other things, ZF is involved in the Eclipse Foundation, which has set itself the goal of promoting ecosystem application areas that promote the open source approach. Together with customers, competitors and software companies, we are accelerating the development of standards and basic principles of the software-defined vehicle, following the "code first" approach.

Generative AI, or "Gen AI" for short, is a sub-domain of artificial intelligence (AI) that also offers numerous new opportunities for ZF to gain competitive advantages and expand our skills in order to become more productive, efficient and effective, e.g., more differentiated and innovative. ZF has been working on AI solutions for some time already. IT, cyber and information security, legal department and digitalization formed a joint working group and defined strategies, usage rules and framework conditions for all ZF employees regarding the use of generative AI, in particular the chatbot ChatGPT.

Digitalization is becoming increasingly important in production, too. Our cloud-based Digital Manufacturing Platform offers a high level of transparency for all process data in order to further increase the efficiency and flexibility of the plants. Meanwhile, we have connected several plants and their machines in all regions and turned them into a real smart factory. Specific advantages are the availability of various measured values, such as process parameters, as well as faster, automated data acquisition, e.g., for downtimes and their causes. As a result, quicker intervention is possible in the event of malfunctions.

ZF is also expanding its digital business models beyond the automotive sector. A successful example with continuously increasing numbers of customers and applications is ZF Rescue Connect from the Industrial Technology Division. ZF Rescue Connect connects and digitalizes all emergency and rescue forces in Europe in order to contribute to faster and better help for patients.

Catena-X is an industry-driven approach that sets legal, technical and security standards to overcome today's restrictions on data exchange. 180 automotive companies have committed themselves to Catena-X in 2023. For ZF, the Catena X use cases promote digitalization and offer solutions to specific business challenges, such as providing the carbon footprint for products, receiving field data from vehicles, or strengthening supply chains.

OVERALL STATEMENT ON THE OPPORTUNITY AND RISK SITUATION

The ZF Group works to counter the above risks using a decentralized risk management system that is embedded in an integrated GRC approach and covers divisions, corporate functions and regions. Risks are managed where they arise; in this way, we ensure that the true process experts and those who have the knowledge act in the corresponding risk category and that the risks are managed competently. The Opportunities Report represents a consolidated observation of significant opportunities in the period under review. Wherever cost-effective and within our sphere of influence, we do our best to develop these opportunities.

Based on currently available information as well as the individual risks illustrated in the financial statement and set out in this report, we can identify no additional risks which may substantially influence the ZF Group's results of operations, net assets and financial position in fiscal year 2024. The Group's financial situation is stable; the need for financial means is covered by existing liquidity and available credit lines.

Given our market position and the precautions we have taken, we are confident in our ability to control these risks and meet the resulting challenges. When analyzing the overall picture of significant opportunities and risks, no risks can be identified which could jeopardize the company's continued existence, either alone or in combination with other risks.

Forecast Report

INDUSTRY ENVIRONMENT TRENDS

> **In 2024, a recovery of the global economy is not yet in sight.**
> **Almost all ZF industries expect lower production volumes in the coming fiscal year.**

No sustainable economic recovery in sight

The outlook for fiscal year 2024 remains cautious. Inflation is only declining gradually and is still above the central banks' target in many regions, so it is unlikely that interest rates will drop significantly soon. The resulting assumption is that purchasing power and investment activities will remain weak. In Europe and Germany in particular, performance is likely to turn out weak again. Here, consumer price inflation is even higher than, for example, in the USA. This has correspondingly negative effects on private consumption, which is also burdened by the lower real income at hand.

In the USA, there is a risk of a weaker economic development compared to the previous year: In 2023, the U.S. economy had shown itself to be relatively robust despite high interest rates, which also resulted from reducing the private demand that had built up during the pandemic. This effect is now phasing out and the more difficult financing conditions are likely to become visible with negative effects on economic growth.

In China, consumer confidence remains relatively weak and there are still serious problems in the real estate sector. General conditions do not necessarily speak for large-scale measures in fiscal policy. Accordingly, the growth potential for the overall economy appears limited and is expected to be below the value from 2023.

In 2024, the global economy will in total again presumably expand below the long-term trend at just +2.8%, down from +3% in the previous year. Growth in the euro zone is expected to remain weak at +0.7% after +0.5% in 2023, while the USA is expected to grow by just below +2% after +2.4% in the previous year. China is assumed to post weaker growth of +4.5%, down from +5.3% in 2023. If the difficult geopolitical circumstances do not improve more significantly, it will also not be possible to predict a much better outlook in the medium term.

Situation in ZF's industries still tense

In 2024, the difficult general conditions do not allow for overly optimistic forecasts. Prospects are still characterized by a weak economic environment with continued high inflation, unresolved geopolitical tensions and ongoing wars. In addition, many industries are facing massive transformation pressure – also resulting from the climate crisis – with a focus on the passenger car industry. All this leads to a cautious, conservative assessment of the growth prospects for the ZF industries (source: ZF-internal assessment).

For the global production of passenger cars and light commercial vehicles up to 6 tons, a slowdown of up to –3% is to be feared against the background of the subdued economic development, which means around 3 million fewer vehicles worldwide than in 2023. This applies across almost all regions. Except in North and South America as well as India, where a sideways movement could occur, experts are expecting production cuts of between –3% and –9% in Europe, China, Japan and South Korea.

The outlook for the commercial vehicle industry is also weak. Following the strong increase in the previous year, there is a slight decline in the global production of heavy commercial vehicles which is expected to come out at –2% in 2024. Especially in Europe and the USA, markets are rated weaker: Europe with –6% and, in the wake of the feeble economic outlook, the USA with –8%. China should be able to maintain the level of 2023 despite the slightly weaker overall economy and continued high infrastructure spending. The situation in India is similar. After the sharp decline in the last year, South America has the potential to reach the level of previous years with growth of +20%.

Similar trends as with commercial vehicles can be observed in the agricultural and construction machinery sectors. Tractor production is coming under pressure with a difficult environment in Europe with –8% and in the USA with –3%, while the other regions are at roughly the same level as last year. As a result,

production of these machines is expected to decline by −4% worldwide. Also in terms of construction machinery, there are indications of a decline of around −5% in both Europe and India. All other regions could return to the previous year's figures. This reduces global construction machinery production by −2%. On the other hand, the wind energy industry is showing positive results, with new installations worldwide showing growth potential of +15%. Europe and China should be able to grow by up to +13% and the USA has, after strong slumps in previous years, the chance to gain over +40%.

This shows that 2024 is once again a year that will present manufacturers and suppliers with massive challenges across all industries that ZF supplies.

DEVELOPMENT OF THE GROUP

> **We are advancing the transformation of ZF with more speed and focus.**
> **To achieve a better quality of results, ZF will further adapt organizational and corporate structures to market developments.**

Forecast

Given stable exchange rates and taking into account planned corporate transactions, ZF expects Group sales of more than €45 billion in 2024. This corresponds to organic growth of 5%.

In terms of passenger cars and light commercial vehicles, we expect a slight overall decline in sales compared to the previous year due to planned company transactions. This primarily affects the new Chassis Solutions Division. On the other hand, we expect sales to increase in the Electrified Powertrain Technology Division with products for e-mobility and in the Passive Safety Systems Division in the Asia-Pacific and North America regions.

For the Commercial Vehicle Solutions Division, we expect higher Group sales in the Asia-Pacific and North America regions. Sales are increased, among other things, by launching new products in the field of e-mobility.

The Industrial Technology Division expects an increase in sales, especially in the Wind Power, Off-Highway as well as Marine and Special Driveline Technology business units.

In the aftermarket, we also expect slightly higher sales in the spare parts and service business.

With the expected development of the sales and procurement markets in conjunction with a corresponding control of the cost structures, we consider an adjusted EBIT margin between 4.9% and 5.4% to be attainable.

For this fiscal year, we assume that the free cash flow adjusted for company transactions will exceed €800 million. The estimate is based on the planned development of operational business, the continuation of consistent working capital management and scheduled investments.

For the fiscal year 2024, we expect a slight increase in the number of employees. Here, we have considered planned company transactions, especially in Asia-Pacific – resulting from the expansion of business in China – as well as North America.

T. 06 Financial forecast

	FORECAST 2024	REPORTED 2023
Sales in € billion	>45 (5% organic growth)	46.6
Adjusted EBIT margin in %	4.9 - 5.4	5.1
Adjusted free cash flow in € billion	>0.8	1.4

The general conditions in 2024 remain challenging. Effects on the forecast with regard to uncertainties, in particular due to geopolitical crises, cannot be ruled out.

We are advancing the transformation of ZF with more speed and focus. The increasing presence in global growth markets, investments in high-yield products and technologies as well as an efficient organizational structure are top priorities on our agenda.

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

Friedrichshafen, March 4, 2024

ZF Friedrichshafen AG
The Board of Management

Consolidated Financial Statements

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Consolidated Statement of Profit or Loss

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2023

in € million	Notes	2023	2022
Sales	1	46,627	43,801
Cost of sales	2	39,115	36,904
Gross profit on sales		**7,512**	**6,897**
Research and development costs	9	2,881	2,790
Selling expenses		1,741	1,673
General administrative expenses		1,586	1,442
Other operating income	3	945	828
Other operating expenses	4	830	696
Result from associates	5	74	–18
Other net result from participations	5	12	3
EBIT		**1,505**	**1,109**
Financial income	6	1,201	1,147
Financial expenses	7	1,943	1,694
Net profit or loss before tax		**763**	**562**
Income taxes	8	637	186
Net profit or loss after tax		**126**	**376**
thereof shareholders of ZF Friedrichshafen AG		–31	227
thereof non-controlling interests		157	149

Consolidated Statement of Comprehensive Income

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2023

in € million	Notes	2023	2022
Net profit or loss after tax		**126**	**376**
Line items that will be reclassified in the consolidated statement of profit or loss			
Foreign currency translation differences			
Losses (2022: gains) arising during the year		–458	175
Mark-to-market of cash flow hedges			
Gains arising during the year		141	16
Reclassification adjustments for gains/losses included in profit or loss		–57	22
Income taxes		–4	–13
		–378	**200**
Line items that will not be reclassified in the consolidated statement of profit or loss			
Mark-to-market of securities		–9	10
Actuarial losses (2022: gains) from pension obligations		–398	1,609
Income taxes		–56	–515
		–463	**1,104**
Other comprehensive income after tax	**25**	**–841**	**1,304**
Total comprehensive income		**–715**	**1,680**
thereof shareholders of ZF Friedrichshafen AG		–843	1,545
thereof non-controlling interests		128	135

Consolidated Statement of Financial Position

ZF FRIEDRICHSHAFEN AG AS OF DECEMBER 31, 2023

Assets in € million	Notes	Dec. 31, 2023	Dec. 31, 2022
Current assets			
Cash and cash equivalents		3,637	2,518
Financial assets	10	213	156
Trade receivables	11	5,817	5,967
Contract assets	12	538	421
Other assets	13	788	847
Income tax receivables		42	37
Inventories	14	5,566	5,597
		16,601	**15,543**
Assets held for sale and disposal groups		0	168
		16,601	**15,711**
Non-current assets			
Financial assets	10	579	590
Associates	15	122	116
Contract assets	12	462	431
Other assets	13	196	277
Intangible assets	16	11,536	12,396
Property, plant and equipment	17	8,868	8,456
Deferred taxes	8	806	967
		22,569	**23,233**
		39,170	**38,944**

Liabilities and equity in € million	Notes	Dec. 31, 2023	Dec. 31, 2022
Current liabilities			
Financial liabilities	20	2,553	2,238
Trade payables		6,628	7,010
Contract liabilities	21	1,742	1,581
Other liabilities	22	1,803	1,761
Income tax provisions		601	438
Other provisions	23	878	849
		14,205	**13,877**
Liabilities of disposal groups		0	90
		14,205	**13,967**
Non-current liabilities			
Financial liabilities	20	11,242	10,798
Trade payables		6	14
Contract liabilities	21	561	434
Other liabilities	22	182	155
Income tax liabilities		0	46
Provisions for pensions	24	3,857	3,551
Other provisions	23	821	757
Deferred taxes	8	577	627
		17,246	**16,382**
Equity			
Subscribed capital	25	500	500
Capital reserve	25	386	386
Retained Earnings[1)]	25	6,280	7,167
Equity attributable to shareholders of ZF Friedrichshafen AG		**7,166**	**8,053**
Non-controlling interests		553	542
	25	**7,719**	**8,595**
		39,170	**38,944**

1) Assets held for sale and disposal groups account for €0 million (2022: €1 million)

Consolidated Statement of Cash Flows

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2023

in € million	Notes	2023	2022
Net profit or loss before income tax		763	562
Depreciation and amortization/impairments		2,354	2,334
Results from first-time consolidation and deconsolidation		87	−62
Net result from participations and net financial result		656	562
Results from the disposal of intangible assets and property, plant and equipment		−6	−15
Other non-cash changes		0	−36
Income taxes paid		−433	−420
Changes in non-current provisions made through profit or loss		−23	−67
Increase in inventories		−66	−616
Increase in trade receivables		0	−355
Increase in other assets		−95	−392
Decrease (2022: increase) in trade payables		−262	1,154
Increase (2022: decrease) in other liabilities		278	−460
Cash flow from operating activities		**3,253**	**2,189**
Expenditures for investments in			
intangible assets		−78	−81
property, plant and equipment		−2,061	−1,705
associates and other participations		−14	−14
financial receivables		−11	−21
securities		−106	−135
Proceeds from the disposal of			
intangible assets		10	4
property, plant and equipment		68	56
associates and other participations		115	0
financial receivables		11	13
securities		89	162
Cash inflow from the sale of consolidated companies	28	19	128
Cash outflow from financial guarantees		0	−109
Dividends received		2	42

in € million	Notes	2023	2022
Interest received		103	48
Cash flow from investing activities		**–1,853**	**–1,612**
Dividends paid to ZF Friedrichshafen AG shareholders		−41	−119
Dividends paid to non-controlling interests		−117	−84
Repayments of borrowings	29	−2,387	−1,419
Proceeds from borrowings	29	2,932	1,581
Interest paid and transaction costs		−594	−350
Cash flow from financing activities		**–207**	**–391**
Net change in cash position		**1,193**	**186**
Cash position at the beginning of the fiscal year		2,530	2,332
Effects of exchange rate changes on cash position		−86	12
Cash position as of the closing date	27	**3,637**	**2,530**

Consolidated Statement of Changes in Equity

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2023

in € million	Subscribed capital	Capital reserve	Retained earnings: Other retained earnings	Retained earnings: Foreign currency translation differences	Retained earnings: Mark-to-market of securities	Retained earnings: Mark-to-market of cash flow hedges	Retained earnings: Actuarial gains and losses	Equity attributable to shareholders of ZF Friedrichshafen AG	Non-controlling interests	Group equity
Jan. 1, 2022	**500**	**386**	**7,457**	**–231**	**–3**	**–5**	**–1,477**	**6,627**	**496**	**7,123**
Net profit or loss after tax			227					227	149	376
Other comprehensive income after tax				184	12	30	1,092	1,318	–14	1,304
Total comprehensive income	**0**	**0**	**227**	**184**	**12**	**30**	**1,092**	**1,545**	**135**	**1,680**
Changes in the basis of consolidation								0	–5	–5
Dividends paid			–119					–119	–84	–203
Other changes			2				–2	0		0
Dec. 31, 2022	**500**	**386**	**7,567**	**–47**	**9**	**25**	**–387**	**8,053**	**542**	**8,595**
Jan. 1, 2023	**500**	**386**	**7,567**	**–47**	**9**	**25**	**–387**	**8,053**	**542**	**8,595**
Net profit or loss after tax			–31					–31	157	126
Other comprehensive income after tax				–416	–9	67	–454	–812	–29	–841
Total comprehensive income	**0**	**0**	**–31**	**–416**	**–9**	**67**	**–454**	**–843**	**128**	**–715**
Changes in the basis of consolidation				–3				–3		–3
Dividends paid			–41					–41	–117	–158
Dec. 31, 2023	**500**	**386**	**7,495**	**–466**	**0**	**92**	**–841**	**7,166**	**553**	**7,719**

Notes to the Consolidated Financial Statements

OF ZF FRIEDRICHSHAFEN AG FOR 2023

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 04, 2024, and forwarded them to the Supervisory Board.

The consolidated financial statements, which were prepared as of December 31, 2023, as well as the Group management report will be announced in the Business Register.

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, as adopted by the EU, and the additional requirements of German commercial law pursuant to Sec. 315e (3) in conjunction with Sec. 315e (1) HGB (German Commercial Code).

In the fiscal year 2023, the following amended standards were applied for the first time:

- Amendments to IAS 12 "International Tax Reform – Pillar Two Model Rules"
- Amendments to IFRS 17 "Initial Application of IFRS 17 and IFRS 9 – Comparative Information"
- Amendments to IAS 12 "Deferred Taxes Relating to Assets and Liabilities arising from a Single Transaction"
- Amendments to IAS 1 "Disclosure of Accounting Policies"
- Amendments to IAS 8 "Definition of Accounting Estimates"
- IFRS 17 "nsurance Contracts"

The amendments to IAS 12 „International Tax Reform – Pillar Two Model Rules" regulate a temporary exception to the recognition of deferred taxes resulting from the introduction of global minimum taxation. The changes also introduce extended disclosure requirements. The amendments to this standard were implemented in

the current 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.

Further standards and interpretations issued or revised by the IASB were not yet applied by ZF in fiscal year 2023 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 or standard amendments earlier.

Standard/ Interpretation	Title	Applicable pursuant to IFRS as of	Endorsement by EU	Expected impact
IAS 21	Amendments to IAS 21 "Lack of Exchangeability"	Jan. 1, 2025	No	None
IAS 1	Amendments to IAS 1 "Classification of Liabilities as Current or Non-Current and Non-Current Liabilities with Covenants"	Jan. 1, 2024	Yes	None
IAS 7 and IFRS 7	Amendments to IAS 7 and IFRS 7 "Supplier Finance Agreements"	Jan. 1, 2024	No	Under review
IAS 16	Amendments to IFRS 16 "Lease Liability in a Sale and Leaseback"	Jan. 1, 2024	Yes	None

The amendments to IAS 1 "Classification of Liabilities as Current or Non-Current and Non-Current Liabilities with Covenants" essentially contain clarifications relating to the classification of liabilities as current or non-current and in particular affect rights to defer settlement. Since the clarification corresponds to the previous procedure of the consolidated ZF Group, the amendments are not expected to affect the consolidated financial statements.

The amendments to IAS 7 and IFRS 7 "Supplier Finance Agreements" introduce additional disclosure requirements for such agreements. In addition, the amendments contain clarifications regarding the characteristics of supplier finance agreements. It is currently being investigated which effects the application of the amendments to IAS 7 and IFRS 7 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, 55 German and 305 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. 01, 2023	First-time consolidations	Legal changes	Deconsolidations	Dec. 31, 2023
Subsidiaries	348	27	–7	–8	360
of which German	41	15	0	–1	55
of which international	307	12	–7	–7	305
Joint ventures	4	0	0	–1	3
Associates	14	4	0	–1	17

Company disposals

With the contract dated March 15, 2023, 60% of the shares in Ing. Tsetinis Beratungs GmbH, headquartered in Kuchl (Austria), were sold to a third party. The purpose of the company is management consultancy. The disposal led to a deconsolidation income of €41 million that was recognized under other operating income. The remaining 40% of the shares have been included in the consolidated financial statements according to the at-equity method. The revaluation of the at-equity participation resulted in an income of €24 million, which was recognized in the result from associates.

As a result of the Russia-Ukraine war, two Russian subsidiaries WABCO Vostok LLC and WABCO RUS LLC, each headquartered in Moscow (Russia), were deconsolidated in January due to the loss of control. The resulting deconsolidation loss of €4 million is included in other operating expenses. Effective May 19, 2023, the shares in both companies were sold.

With the contract dated October 11, 2023, the shares in ZF Bouthéon SAS, headquartered in Andrézieux-Bouthéon (France), were sold to a third party. The company with around 350 employees produces transmissions for the commercial vehicle sector. The disposal led to a deconsolidation expense of €45 million that was recognized under other operating expenses.

In March 2022, an agreement was reached with AEQUITA SE & Co. KGaA on the sale of the Electronic Interfaces product line. The Electronic Interfaces product line develops and produces shift lever systems, actuators and haptic control systems for the automotive industry with approximately 750 employees in Germany, China, Mexico and the USA. The sale of the Electronic Interfaces product line headquartered in Diepholz (Germany) was completed with effect from November 30, 2023. The disposal led to a deconsolidation loss of €76 million that was recognized under other operating expenses.

The assets held for sale and disposal groups or liabilities of disposal groups in the consolidated statement of financial position in the previous year primarily affect the assets and liabilities of the Electronic Interfaces product line as well as the shares in the joint venture CSG TRW Chassis Systems Co., Ltd., which was also sold in the second half of the year.

Consolidation principles

The consolidation of investments in subsidiaries is carried out according to the purchase method. When control is 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 operating 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, 2023, 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 which has not yet been consolidated are revalued at 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 operating income or expenses, respectively. Remaining interests are recognized at fair value under associates.

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 receiva-

bles or liabilities denominated in foreign currency exist toward a foreign operation, the settlement of which is neither planned nor likely in the foreseeable future, the translation differences are recognized 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, 2023	Dec. 31, 2022	**2023**	2022
U.S. dollar	1.1050	1.0666	1.0811	1.0533
British pound	0.8691	0.8869	0.8699	0.8530
Chinese renminbi	7.8509	7.3582	7.6571	7.0847
Brazilian real	5.3618	5.6386	5.4025	5.4424
Mexican peso	18.7231	20.8560	19.1953	21.1982

Accounting policies

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

Recognition of expenses and income

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

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

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

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

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

Borrowing costs are recognized 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. If the criteria for hedge accounting are met, they are accounted for as fair value hedges, cash flow hedges or hedges of a net investment in a foreign business.

If hedge accounting is not applicable, the derivative financial instruments are measured at their fair values and changes in fair value are recognized through profit or loss in the net financial result.

Fair value hedges are used to hedge risks of changes in the value of items recognized in the statement of financial position. If the criteria are met, the results from fair value adjustment on 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 designated as well as not designated 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.

In the case of hedges of a net investment in a foreign operation, the changes in the value of the designated hedging instrument are recognized in the foreign currency translation differences item in other comprehensive income of the statement of comprehensive income, analogous to the hedged item. The cumulative currency effects of the hedging instrument are not reclassified into the consolidated statement of profit or loss until the net investment in a foreign operation is sold or liquidated.

The profit and loss derived from hedging in connection with hedging operating transactions is recognized under other income and expenses or as part of acquisition costs. 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 can be 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 or, for trade receivables, on the transaction price, while subsequent measurement is based on amortized cost. This measurement category primarily includes trade receivables held to maturity as well as financial receivables and cash and cash equivalents.

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 fair value including transaction costs, while subsequent measurement is based on 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 measurement and subsequent measurement are based on fair value. Among other things, this measurement category includes securities, investments in participations, derivative financial instruments as well as a share of other receivables.

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.

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

Cash and cash equivalents are normally not reviewed in more detail as to a potentially existing credit risk.

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

Risk category	Risk	Probability of default	Definition of category
Risk category 1	Low risk	0.10–0.175%	Customers have a small credit risk and a strong ability to meet their payment obligations.
Risk category 2	Medium risk	0.375–1.50%	Customers have a medium credit risk and a good ability to meet their payment obligations.
Risk category 3	High risk	3.00–8.25%	Customers have an increased credit risk and a sufficient ability to meet their payment obligations.
Risk category 4	Not creditworthy / insolvent	14.00%	Customers have a high credit risk. It can be expected that the customers cannot meet their payment obligations in whole or in part.

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

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

Contracts to buy or sell non-financial items that ZF entered into and continues to hold for the purpose of the receipt or delivery of a non-financial item in accordance with the expected purchasing, sale or usage requirements, are not part of the scope of IFRS 9. Instead, these contracts are accounted for as pending business in accordance with IAS 37.

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 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. Furthermore, this item contains contingent receivables arising from price agreements with customers.

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, and income and expenses related to such shares are recognized separately in the consolidated statement of profit or loss. Income and expenses that are directly recognized in the equity of the associate or joint venture are recognized in the consolidated ZF Group without effect on profit or loss as well.

Intangible assets

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

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

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

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

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

Property, plant and equipment

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

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

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

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

Right-of-use assets are capitalized and a corresponding lease liability is recognized at the inception of a lease in which ZF acts as the lessee. The lease liability is recognized at the present value of the future lease payments and discounted using the interest rate implicit in the lease. Normally, this rate cannot be readily determined. In these cases, ZF's incremental borrowing rate for matching maturities and currencies is used. This rate is derived from observable credit spreads and swap rates. Lease liabilities are measured at the updated carrying amount using the effective interest method.

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

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

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

Government grants

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

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

Assets held for sale and disposal groups

Assets and liabilities are reported as disposal groups when these are to be disposed of by sale together as a group in a single transaction which is highly probable, and the group is available for immediate sale in its current state. 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. In the event of depreciation, expenses are recognized in other operating expenses.

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. Based on an upstream strategic planning with a seven-year planning horizon and downstream one-year budget planning, this extended projection period formed the basis for determining the value in use according to the discounted cash flow method. The extended planning horizon is better suited to reflect the long-term development of ZF's business and its strategic prospects against the backdrop of the transformational changes in the automotive industry – which require longer projection periods, in particular for research and development as well as investment planning – and the longer product life cycles, especially in the commercial vehicle sector. The capital cost rates of the consolidated ZF Group, which are determined on the basis of the WACC (Weighted Average Cost of Capital) method, are used to discount the cash flows. The forecast for cash flows is based on the current operational and strategic planning of the consolidated ZF Group, in which general economic data from external macroeconomic research as well as financial surveys is also taken into consideration. The assumptions made consider the country-specific rates of inflation for the period investigated. Cost of materials is forecast based on the individual premises at the level of each cash-generating unit. The development of personnel expenses is also forecast individually on the basis of the collective agreements in effect. Based on these cash flow predictions, the value in use of the cash-generating units is determined assuming a discount factor before tax of 12% (2022: 12%) and a sustainable growth rate of 1% (2022: 1%). For perpetuity going beyond the planning horizon, the cash flows are extrapolated taking into account the respective sustainable expected margin of the individual cash-generating units.

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

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

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

Goodwill from business combinations is allocated to those groups of cash-generating units that derive benefit from the business combinations. In the consolidated ZF Group, these are the respective divisions. 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 measurement and subsequent measurement are based on 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 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 dispenses with applying the fair value option.

Reverse factoring agreements were concluded for part of the trade payables. These agreements did not lead to any substantial modifications to the terms of the contract, which is why they are still disclosed under trade payables.

Contract liabilities

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

Provisions for pensions

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

Other provisions

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

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

Personnel-related obligations mainly relate to semi-retirement obligations, obligations in connection with restructuring measures as well as long-service awards.

The provisions for semi-retirement obligations comprise individual or pay-scale-related top-up benefits for pension insurance as well as the wages and salaries to be paid until the end of the release phase. They are accrued on a pro-rata basis when the obligation arises and according to the respective nature of the commitment, taking into account a minimum period of employment. The major portion of the semi-retirement obligations is protected against insolvency using a trust model. The assets, which are solely used for satisfying the semi-retirement obligations and which are restricted from the access of all other creditors, are offset against provisions (plan assets). They are recognized at fair value. If the plan assets exceed the amount of provisions, such excess is reported under non-current financial assets. The return on plan assets is offset against expenses from the interest cost of provisions and reported in the statement of profit or loss together with interest.

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

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

Current provisions are expected to be utilized in the course of the following fiscal year. 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 current 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 current tax refunds against current tax liabilities and if they apply to the income taxes of the same tax subject levied by the same tax authority.

Judgments and uncertainties in connection with estimates

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

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

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

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

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

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

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

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

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

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

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

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

The determination of income tax assets and liabilities (Note 8) is subject to assumptions and estimates relating to the tax assessment of circumstances. Within the scope of current or future audits, tax laws and relevant facts or circumstances could be interpreted and assessed in a different manner by tax authorities than by ZF.

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

The actuarial measurement of provisions for pensions (Note 24) requires several assumptions depending on the nature of the commitment. The assumptions regarding discount rates, future pension and salary increases as well as demographic developments have a major influence on the valuation. In addition to the aforementioned assumptions, the amount of deferred remuneration by the participating employees as well as their future selection with regard to payment options is also an essential estimate for the measurement of the capital-related defined benefit obligations in Germany.

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

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

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

ZF Friedrichshafen AG and its subsidiaries are exposed to various claims arising from legal disputes (Note 32), in particular in connection with warranty cases as well as antitrust proceedings and investigations by authorities. Against the backdrop of complex legal matters, the assessment of the outcome of the proceedings is subject to discretion. The probability and the amount of utilization is taken into account when recognizing provisions. The assessment is based on internal estimates, supported by external consultants and lawyers in individual cases. These estimates will be adjusted if new insights and changes in circumstances occur, and they may deviate significantly from the actual outcome of the proceedings.

The worldwide consequences of global warming include more severe or frequent weather extremes such as floods, storms and droughts. These climate-related risks as well as the related legislation are continuously monitored as part of the preparation of the consolidated financial statements. Resulting effects (e.g., decisions about company locations, further development of the product portfolio, useful life of non-current assets) are taken into account in strategic planning. In the current fiscal year, there were no major effects on the accounting and measurement of assets and liabilities.

Regarding contracts to buy or sell non-financial items, it is subject to judgment whether ZF has entered into them and continues to hold them for the purpose of the receipt or delivery of a non-financial item in accordance with the expected purchasing, sale or usage requirements, which would put them outside the scope of IFRS 9.

No other major judgments were made.

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

NOTES TO THE CONSOLIDATED STATEMENT OF PROFIT OR LOSS

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

1 Sales

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

in € million	2023	2022
Volume production business sales	39,933	37,292
Aftermarket and service sales	4,641	4,484
Other sales	2,053	2,025
	46,627	**43,801**

Other sales include product development and application revenues of €733 million (2022: €825 million).

in € million	2023	2022
Germany	8,643	8,213
Western Europe	7,643	7,685
Eastern Europe	4,003	2,819
North America	13,122	12,487
South America	1,386	1,432
Asia-Pacific	11,262	10,689
Africa	568	476
	46,627	**43,801**

2 Cost of sales

in € million	2023	2022
Cost of materials	29,940	28,507
Personnel expenses	5,452	5,084
Depreciation, amortization and impairment	1,607	1,589
Others	2,116	1,724
	39,115	**36,904**

3 Other operating income

in € million	2023	2022
Foreign exchange gains	480	434
Income from hedging	138	86
Income from the disposal of intangible assets and property, plant and equipment	20	22
Income from deconsolidations	41	103
Others	266	183
	945	**828**

Other income includes compensation and cost reimbursements of €139 million (2022: €73 million).

4 Other operating expenses

in € million	2023	2022
Foreign exchange losses	517	410
Expenses from hedging	70	109
Losses on the disposal of intangible assets and property, plant and equipment	14	7
Changes of allowances for receivables	32	29
Expenses from deconsolidations	128	41
Others	69	100
	830	**696**

5 Net result from participations

in € million	2023	2022
Result from at-equity valuation	10	3
Result from disposal of associates	47	0
Other income and expenses	17	–21
Result from associates	**74**	**–18**
Income from participations	3	3
Result from disposal of participations	7	0
Valuation of participations	2	0
Other net result from participations	**12**	**3**
Net result from participations	**86**	**–15**

6 Financial income

in € million	2023	2022
Interest from financial assets	74	22
Other interest	32	53
Income from derivative financial instruments	2	8
Interest income	**108**	**83**
Foreign exchange gains	845	890
Income from derivative financial instruments	234	169
Income from securities	14	5
Other financial income	**1,093**	**1,064**
Financial income	**1,201**	**1,147**

Interest income under the effective interest method accounts for €107 million for the 2023 fiscal year (2022: €55 million).

7 Financial expenses

in € million	2023	2022
Interest from financial liabilities	575	320
Interest from lease liabilities	32	30
Other interest	31	18
Interest cost on pension provisions	124	56
Unwinding the discount on other non-current items	4	21
Expenses from derivative financial instruments	4	0
Interest expenses	**770**	**445**
Foreign exchange losses	846	816
Expenses from derivative financial instruments	272	274
Expenses from securities	2	4
Valuation of financial receivables	9	23
Expenses from financial guarantees	0	105
Transaction costs and incidental expenses	44	27
Other financial expenses	**1,173**	**1,249**
Financial expenses	**1,943**	**1,694**

8 Income taxes

Income taxes are composed as follows:

in € million	2023	2022
Current taxes	636	406
Deferred taxes	1	–220
Income tax expenses	**637**	**186**

Current income tax expenses include adjustments in the amount of –€115 million (2022: –€42 million) for current taxes of prior fiscal years. Deferred tax expenses (2022: tax income) include tax income of approximately €71 million (2022: €171 million) in connection with the development of temporary differences.

The current 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 current taxes of international subsidiaries are determined on the basis of relevant national tax laws and the tax rate applicable in the country of incorporation.

The ZF Group falls within the scope of the Pillar 2 framework on global minimum tax (also referred to as the GloBe rules), which came into force in German legislation on December 28, 2023 as the Global Minimum Tax Act ("MinStG") and applies to financial years beginning on or after December 30, 2023. Under the legislation, the ZF Group is liable to pay a top-up tax for each jurisdiction having an effective tax rate below 15%, as calculated in accordance with the regulations. Determining the effective tax rate according to the MinStG is very complex and involves a large number of specific adjustments. This legislation provides relief in the form of temporary jurisdictional safe harbor regulations during the initial years of application, under which no top-up tax is due for the year when certain conditions are met. As ZF Friedrichshafen AG as the ultimate parent entity is located in Germany, the MinStG will apply to the ZF Group for the fiscal year commencing January 1, 2024. Since the MinStG does not yet apply to the ZF Group for the fiscal year 2023 and no other countries have introduced a corresponding regulation for 2023, the Group has no current tax exposure from this.

The ZF Group has performed an impact assessment regarding the application of the MinStG and the implementation of the necessary processes in order to fulfil the upcoming reporting and tax compliance obligations. In its impact assessment, the ZF Group is especially analyzing the impact of the Country by Country Reporting (CbCR) safe harbor rule. Based on a sample calculation using non-qualified CbCR data from fiscal year 2022, 40 out of 45 jurisdictions satisfy the temporary CbCR safe harbor rule, meaning that no top-up tax would have arisen in relation to these jurisdictions. For the remaining jurisdictions, the quantitative impact of any top-up tax cannot yet be reasonably assessed due to the complexity of the rules and data required.

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 ZF Group is making use of the temporary exemption included in the amendment of the IAS 12 standard published in May 2023 (and endorsed by the European Union as per November 8, 2023), under which it does not have to recognize deferred taxes arising as a result of applying the GloBe rules.

The (current and deferred) income tax expenses expected on the basis of the German overall tax rate of 30% (2022: 30%) deviate from the reported income tax expenses as set out below:

in € million	2023	2022
Expected income tax expenses	229	169
Increase/decrease of income taxes due to		
Tax effects due to different national tax rates and taxation systems	–55	–71
Effects of changes in tax laws	0	1
Tax effects due to non-recognition and write-down of deferred tax assets and their reversal	293	54
Tax effects due to permanent differences [1]	42	6
Tax effects from provisions and due to prior-period items	130	22
Other	–2	5
Reported income tax expenses	**637**	**186**

1) Permanent differences comprise tax-reducing items such as tax credits as well as non-deductible operating expenses and withholding taxes.

The significant effect from the reconciliation of tax expenses results from the item „Non-recognition and impairment of deferred taxes or their reversal“ and is due to the changed business outlook of the ZF Group, especially in Germany. The changed business outlook is mainly due to geopolitical conflicts and the consequently more intense competition as well as the ongoing transformation process in the automotive industry.

Deferred tax assets of €61 million (2022: €324 million) were recognized for companies with a loss history. For the determination of impairment, projected gains were taken into account via the reversal of taxable temporary differences to the extent that the losses are based on identifiable and special, most likely not recurring circumstances.

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

	2023		2022	
in € million	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Intangible assets	0	697	0	859
Other assets	332	221	338	285
Pensions	127	0	511	0
Other liabilities	667	225	535	231
Tax loss carryforwards and tax credits	246	0	331	0
Total	**1,372**	**1,143**	**1,715**	**1,375**
Netting	–566	–566	–748	–748
	806	**577**	**967**	**627**

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

At the end of the fiscal year, tax loss carryforwards are reported which were subject to offsetting restrictions. To that extent, no deferred tax assets have been recognized for these since their utilization due to future positive taxable profit is not probable.

No deferred tax assets were recorded for the following items (gross amounts):

in € million	2023	2022
Deductible temporary differences	2,004	627
Tax loss carryforwards and tax credits	2,422	1,261
	4,426	**1,888**

The use of unrecognized tax loss carryforwards and tax credits of €443 million (2022: €371 million) is limited in time to up to 5 years. In the amount of €1,979 million (2022: €890 million), the period of use is longer than 5 years. Other items in the amount of €238 million (2022: €233 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 €184 million (2022: €186 million) were recorded for reserves generated by subsidiaries, as far as can be reliably ascertained. Apart from that, no deferred taxes have been recognized for the reserves generated by subsidiaries of €2,228 million (2022: €2,065 million), as the profits are to be reinvested for an indefinite period of time.

9 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	2023	2022
Cost of raw materials, supplies and merchandise	29,871	28,518
Cost of purchased services	368	321
Other cost of materials	29	35
	30,268	**28,874**

The breakdown of personnel expenses is as follows:

in € million	2023	2022
Wages and salaries	7,807	7,214
Social security and benefit expenses	1,488	1,373
Pension expenses	212	265
	9,507	**8,852**

Personnel expenses include expenses for defined contribution plans in the amount of €402 million (2022: €362 million). The expenses contained for the state plans amounting to €341 million (2022: €322 million) primarily comprise the employer's contribution to the state pension scheme, which is included in the social security expenses.

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

	Intangible assets		Property, plant and equipment	
in € million	2023	2022	2023	2022
Cost of sales	249	254	1,354	1,326
Research and development costs	38	42	123	118
Selling expenses	376	383	22	23
General administrative expenses	31	23	128	140
	694	**702**	**1,627**	**1,607**

Research and development costs recorded in the fiscal year reached €2,881 million (2022: €2,790 million).

NOTES TO THE CONSOLIDATED STATEMENT OF FINANCIAL POSITION

10 Financial assets

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Investments in participations	104	0	111	0
Securities	64	26	58	24
Financial receivables	193	48	160	57
Net assets from defined benefit plans	273	0	292	0
Derivative financial instruments	158	139	125	75
	792	**213**	**746**	**156**

Investments in participations have developed as follows:

in € million	2023	2022
Carrying amount as of Jan. 1	111	77
Changes in the basis of consolidation	–5	0
Net exchange differences	–2	–1
Changes affecting profit and loss	3	0
Changes not affecting profit and loss	–7	21
Additions	13	14
Disposals	–8	0
Depreciation, amortization and impairment	–1	0
Carrying amount as of Dec. 31	**104**	**111**

The financial receivables include granted loans and direct insurance claims against life insurances of €29 million (2022: €30 million).

The financial receivables also contain unavailable bank deposits and time deposit investments of €62 million (2022: €57 million).

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

in € million	2023	2022
Carrying amount as of Jan. 1	65	51
Net exchange differences	1	0
Additions	4	17
Utilization	–2	–3
Carrying amount as of Dec. 31	**68**	**65**

The credit-based loss allowances for financial receivables are at €2 million (2022: €1 million).

11 Trade receivables

The trade receivables have the following risk structure:

Dec. 31, 2023 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	706	12	5	2	713
2	4,487	77	51	35	4,573
3	618	11	9	28	655
4	6	0	7	1	14
Total	**5,817**	**100**	**72**	**66**	**5,955**

Dec. 31, 2022 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	636	11	8	1	645
2	4,612	77	34	38	4,684
3	704	12	45	31	780
4	15	0	12	0	27
Total	**5,967**	**100**	**99**	**70**	**6,136**

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

in € million	2023	2022
Carrying amount as of Jan. 1	99	60
Net exchange differences	2	2
Changes in the basis of consolidation	–1	0
Additions	29	54
Utilization	–44	–3
Reversals	–13	–14
Carrying amount as of Dec. 31	**72**	**99**

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

in € million	2023	2022
Carrying amount as of Jan. 1	70	83
Net exchange differences	–3	1
Net reversals	–1	–14
Carrying amount as of Dec. 31	**66**	**70**

Net reversals for credit-based loss allowances are mainly due to an adjustment of the expected probability of default.

12 Contract assets

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Volume production business	763	427	670	353
Product development and application	230	104	169	55
Others	7	7	13	13
	1,000	**538**	**852**	**421**

Sales recorded in fiscal year 2023 from performance obligations satisfied (or partially satisfied) in previous fiscal years amount to €117 million (2022: €79 million).

Contract assets have developed as follows:

in € million	2023	2022
Carrying amount as of Jan. 1	852	590
Changes in the basis of consolidation	–7	0
Net exchange differences	–1	4
Additions	607	623
Allowances	–11	0
Utilization	–421	–355
Reversals	–19	–10
Carrying amount as of Dec. 31	**1,000**	**852**

The contract assets have the following risk structure:

Dec. 31, 2023 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	835	84	10	3	848
2	118	12	0	0	118
3	9	0	0	0	9
4	38	4	0	0	38
Total	**1,000**	**100**	**10**	**3**	**1,013**

Dec. 31, 2022 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	720	85	0	2	722
2	100	12	0	0	100
3	4	0	0	0	4
4	28	3	0	0	28
Total	**852**	**100**	**0**	**2**	**854**

13 Other assets

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Other tax receivables	553	504	658	548
Prepaid expenses	143	112	171	124
Others	289	172	295	175
	985	**788**	**1,124**	**847**

Other tax receivables are, for the most part, sales tax refund entitlements. Others comprise, in general, capitalized reimbursement claims against suppliers and payments in advance.

The specific loss allowances for other assets amount to €14 million (2022: €15 million).

The credit-based loss allowances for other assets are at €2 million (2022: €1 million).

14 Inventories

in € million	Dec. 31, 2023	Dec. 31, 2022
Raw materials and supplies	2,413	2,588
Work in progress	2,071	1,888
Finished goods and merchandise	1,074	1,105
Payments in advance	8	16
	5,566	**5,597**

Compared to the previous year, write-downs of inventories increased by €16 million to €290 million.

15 Associates

in € million	Dec. 31. 2023	Dec. 31. 2022
Investments in joint ventures	23	41
Investments in associates	99	75
	122	**116**

The joint ventures and associates, including the shareholding, are set out in the list of shares held.

ZF PWK Mécacentre S.A.S., Saint-Etienne (France), is classified as an associate despite a participation quota of 50% as the company is not jointly controlled.

The total comprehensive income of the associates is as follows:

	Investments in joint ventures		Investments in associates	
in € million	2023	2022	2023	2022
Net profit or loss after tax	7	7	67	–25
Other comprehensive income	1	0	0	–2
Total comprehensive income	**8**	**7**	**67**	**–27**

Net profit or loss after tax includes impairments on investments in associates amounting to €0 million (2022: €21 million).

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, 2023	**8,248**	**8,407**	**300**	**80**	**17,035**
Changes in the basis of consolidation	−2	−12	0	0	−14
Net exchange differences	−153	−141	−7	0	−301
Additions	0	56	10	12	78
Reclassifications	0	76	0	−76	0
Disposals	−15	−59	−43	−1	−118
Cost as of Dec. 31, 2023	**8,078**	**8,327**	**260**	**15**	**16,680**
Accumulated amortization as of Jan. 1, 2023	**73**	**4,384**	**182**	**0**	**4,639**
Changes in the basis of consolidation	0	−5	0	0	−5
Net exchange differences	0	−104	−5	0	−109
Additions (amortization)	0	673	21	0	694
Additions (impairments)	0	0	18	0	18
Disposals	0	−59	−34	0	−93
Accumulated amortization as of Dec. 31, 2023	**73**	**4,889**	**182**	**0**	**5,144**
Carrying amount as of Dec. 31, 2023	**8,005**	**3,438**	**78**	**15**	**11,536**

in € million	Goodwill	Patents, licenses, software and similar rights and assets	Development costs	Payments in advance	Total
Cost as of Jan. 1, 2022	**8,095**	**8,112**	**256**	**67**	**16,530**
Changes in the basis of consolidation	−20	6	0	0	−14
Net exchange differences	198	299	11	0	508
Additions	0	31	33	17	81
Reclassifications	0	2	0	−2	0
Disposals	−5	−37	0	−2	−44
Reclassification of disposal groups	−20	−6	0	0	−26
Cost as of Dec. 31, 2022	**8,248**	**8,407**	**300**	**80**	**17,035**
Accumulated amortization as of Jan. 1, 2022	**73**	**3,537**	**152**	**0**	**3,762**
Net exchange differences	0	187	8	0	195
Additions (amortization)	0	680	22	0	702
Additions (impairments)	0	16	0	0	16
Disposals	0	−35	0	0	−35
Reclassification of disposal groups	0	−1	0	0	−1
Accumulated amortization as of Dec. 31, 2022	**73**	**4,384**	**182**	**0**	**4,639**
Carrying amount as of Dec. 31, 2022	**8,175**	**4,023**	**118**	**80**	**12,396**

Goodwill

Accordingly, goodwill from the consolidation of investments in subsidiaries and from the individual financial statements is shown below:

in € million	Dec. 31, 2023	Dec. 31, 2022
Active Safety Systems	1,036	1,068
Car Chassis Technology	395	395
Electrified Powertrain Technology	909	909
Electronics and ADAS	57	57
Passive Safety Systems	1,098	1,135
Commercial Vehicle Solutions	3,746	3,828
Industrial Technology	234	234
Aftermarket	530	544
Central units	0	5
	8,005	**8,175**

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

17 Property, plant and equipment

in € million	Land and buildings	Technical equipment and machines	Other equipment, factory and office equipment	Payments in advance and construction in progress	Total
Cost as of Jan. 1, 2023	**4,629**	**14,261**	**3,016**	**1,335**	**23,241**
Changes in the basis of consolidation	–25	–84	–10	5	–114
Net exchange differences	–29	–100	–22	–16	–167
Additions	179	665	191	1,200	2,235
Reclassifications	108	651	89	–848	0
Disposals	–157	–459	–148	–14	–778
Cost as of Dec. 31, 2023	**4,705**	**14,934**	**3,116**	**1,662**	**24,417**
Accumulated depreciation as of Jan. 1, 2023	**1,971**	**10,480**	**2,334**	**0**	**14,785**
Changes in the basis of consolidation	–14	–65	–6	0	–85
Net exchange differences	–6	–53	–16	0	–75
Additions (depreciation)	235	1,164	228	0	1,627
Additions (impairments)	0	5	10	0	15
Reclassifications	30	–34	4	0	0
Disposals	–131	–445	–142	0	–718
Accumulated depreciation as of Dec. 31, 2023	**2,085**	**11,052**	**2,412**	**0**	**15,549**
Carrying amount as of Dec. 31, 2023	**2,620**	**3,882**	**704**	**1,662**	**8,868**

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, 2022	**4,391**	**13,574**	**2,927**	**1,087**	**21,979**
Changes in the basis of consolidation	5	−34	−13	−11	−53
Net exchange differences	24	75	32	17	148
Additions	215	517	173	983	1,888
Reclassifications	81	594	52	−727	0
Disposals	−85	−408	−129	−1	−623
Reclassification of disposal groups	−2	−57	−26	−13	−98
Cost as of Dec. 31, 2022	**4,629**	**14,261**	**3,016**	**1,335**	**23,241**
Accumulated depreciation as of Jan. 1, 2022	**1,755**	**9,797**	**2,236**	**0**	**13,788**
Changes in the basis of consolidation	−6	−40	−9	0	−55
Net exchange differences	−2	31	23	0	52
Additions (depreciation)	243	1,134	230	0	1,607
Additions (impairments)	0	9	1	0	10
Reclassifications	27	−27	0	0	0
Disposals	−46	−376	−123	0	−545
Reclassification of disposal groups	0	−47	−24	0	−71
Reversals of impairments	0	−1	0	0	−1
Accumulated depreciation as of Dec. 31, 2022	**1,971**	**10,480**	**2,334**	**0**	**14,785**
Carrying amount as of Dec. 31, 2022	**2,658**	**3,781**	**682**	**1,335**	**8,456**

18 Leases

The leased assets are primarily rented properties, leased motor vehicles and forklift trucks. The rights of use from leases reported in property, plant and equipment have the following additions and depreciations:

in € million Dec. 31, 2023	Land and buildings	Technical equipment and machines	Other equipment, factory and office equipment	Total
Additions	122	1	51	174
Depreciations	122	12	43	177
Carrying amount	**592**	**25**	**82**	**699**
Dec. 31, 2022				
Additions	136	2	45	183
Depreciations	127	12	42	181
Carrying amount	**607**	**36**	**78**	**721**

In fiscal year 2023, expenses for current leases amounted to €42 million (2022: €38 million) and expenses for leases of low-value assets were incurred in the amount of €22 million (2022: €19 million). Interest expenses for leases reported in the net financial result amounted to €32 million (2022: €30 million).

In the fiscal year, payments for lease liabilities in the amount of €170 million (2022: €175 million), including interest, were made.

In some cases, there are purchase options or termination options for long-term leasing contracts, mainly for real estate. To the extent that management considers the exercise of these options to be probable, they are included in the calculation of the right-of-use asset or lease liabilities. Beyond these, no significant leasing contracts were signed as of December 31, 2023, whose lease terms only begin after the end of the fiscal year.

The maturity structure of lease liabilities, including interest, as of December 31, 2023, is as follows:

in € million	2023	2022
within the upcoming fiscal year	186	182
between 2 and 5 years	433	450
more than 5 years	270	291
	889	**923**

As of December 31, 2023, there are purchase commitments for short-term leases to the customary extent.

19 Impairment tests

In the fourth quarter of 2023, goodwill impairment tests as well as asset impairment tests were performed on the basis of a triggering event analysis to assess the impairment of the assets.

Inter alia, assumptions were made with regard to the development of sales in order to calculate the impairment tests. The partial decline in growth rates in the detailed planning period is mainly attributable to the growing uncertainty in the global economy and the ongoing transformation process in the automotive industry.

The assumptions made for the average sales increase in the planning period are as follows:

in %	2023	2022
Active Safety Systems	4	6
Car Chassis Technology	–5	7
Electrified Powertrain Technology	2	3
Electronics and ADAS	17	17
Passive Safety Systems	4	3
Commercial Vehicle Solutions	7	9
Industrial Technology	11	8
Aftermarket	5	9

The growth rate of the Car Chassis Technology Division results from the planned sale of the Chassis Systems and Modules Product Line. Without this one-off effect, the aforementioned division would show positive average sales growth of 6%.

As in the previous year, the annual impairment tests of goodwill did not lead to an impairment loss on goodwill.

In addition, a sensitivity analysis regarding material measurement parameters was conducted in the context of the impairment tests. This involved an analysis to what extent, if assessed on an isolated basis, a reduction of the sustainable operating profit by 10%, a reduction of the sustainable growth rate to 0.5% or an increase in the capitalization rate by 10% would affect the recoverability of goodwill. In all of the scenarios analyzed, this sensitivity analysis would not have led to an impairment of goodwill.

In addition, the Industrial Technology Division recorded impairments on intangible assets amounting to €18 million (2022: €16 million).

20 Financial liabilities

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Bonds	8,611	110	7,826	1,668
Bonded loans	2,093	531	2,166	122
Liabilities to banks	2,035	1,551	2,099	172
Other financial liabilities	158	150	66	45
Lease liabilities	786	161	797	155
Derivative financial instruments	112	50	82	76
	13,795	**2,553**	**13,036**	**2,238**

Under current financial liabilities, non-current loans, bonded loans and bonds are recognized with their redemption installments and accrued interest due within one year. Moreover, current liabilities which serve short-term financing purposes are included under this item. The country-specific interest rates on all financial liabilities fluctuates between 1.4% (2022: 1.1%) and 7.1% (2022: 5.97%). Most of the financial liabilities have a fixed interest rate. Most of the loans are due at the end of the contractual term.

The financing strategy in 2023 focused on actively shaping the maturity profile of financial liabilities of the ZF Group. In fiscal year 2023, ZF repaid debts of €2.4 billion. On the refinancing side, ZF successfully placed approximately €2.9 billion on the capital market, mostly in the form of bonds.

Apart from other obligations, the loans mentioned above also include a financial covenant that ZF has to comply with. It is defined as the ratio of net debt to adjusted, consolidated EBITDA. This financial key figure is tested each quarter. As of December 31, 2023, the contractually agreed maximum value not to be exceeded was 3.25. ZF met the requirement on all test dates in the past and on the reporting date.

21 Contract liabilities

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Volume production business	1,227	1,146	1,000	979
Product development and application	1,015	571	965	579
Others	61	25	50	23
	2,303	**1,742**	**2,015**	**1,581**

Contract liabilities have developed as follows:

in € million	2023	2022
Carrying amount as of Jan. 1	2,015	2,066
Changes in the basis of consolidation	–8	–3
Net exchange differences	–29	5
Additions	1,525	1,297
Utilization	–1,046	–1,178
Reversals	–154	–165
Reclassification of disposal groups	0	–7
Carrying amount as of Dec. 31	**2,303**	**2,015**

From the consumption of contract liabilities, €631 million (2022: €806 million) was recognized in profit or loss in sales.

The expected future sales from performance obligations not satisfied (or partially not satisfied) are as follows:

in € million	2023	2022
1 to 5 years	967	923
> 5 years	52	144
Carrying amount as of Dec. 31	**1,019**	**1,067**

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

In the current fiscal year, there were changes in the timeframe, which had an effect amounting to €55 million (2022: €66 million) on the fulfillment of future performance obligations.

22 Other liabilities

in € million	Dec. 31, 2023 Total	Dec. 31, 2023 Thereof current	Dec. 31, 2022 Total	Dec. 31, 2022 Thereof current
Liabilities to employees	965	872	882	798
Social contributions	71	69	70	68
Other tax liabilities	297	297	301	301
Prepaid expenses	50	27	47	22
Others	602	538	616	572
	1,985	**1,803**	**1,916**	**1,761**

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

23 Other provisions

in € million	Carrying amount Dec. 31, 2023 Total	Expected utilization 2024	2025 to 2029	2030 and beyond
Obligations from sales	799	424	365	10
Obligations from personnel	448	134	270	44
Other obligations	452	320	83	49
	1,699	**878**	**718**	**103**

in € million	Carrying amount Dec. 31, 2022 Total	Expected utilization 2023	2024 bis 2028	2029 and beyond
Obligations from sales	783	473	307	3
Obligations from personnel	491	168	284	39
Other obligations	332	208	97	27
	1,606	**849**	**688**	**69**

in € million	Obligations from sales	Obligations from personnel	Other obligations	Total
Jan. 1, 2023	783	491	332	1,606
Changes in the basis of consolidation	−6	−1	0	−7
Net exchange differences	−10	0	−1	−11
Additions	328	129	170	627
Unwinding of the discount	4	8	0	12
Utilization	−250	−159	−22	−431
Reversals	−50	−10	−27	−87
Netting of plan assets	0	−10	0	−10
Dec. 31, 2023	**799**	**448**	**452**	**1,699**

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

The obligations from personnel mainly affect provisions for restructuring measures as well as other obligations to employees. Furthermore, the surplus of liabilities due to semi-retirement obligations of €61 million (2022: €74 million) remaining after offsetting with plan assets is included.

The provisions for restructuring measures primarily concern expenses for severance payments that will be incurred as part of a long-term program for structural adjustment.

Other obligations include, among other things, provisions for litigation and other legal risks, environmental protection measures, other punitive damages as well as tax risks.

24 Provisions for pensions

The provisions for pensions are broken down as follows:

2023 in € million	Present value of defined benefit plans					Financial assets	Provisions for pensions
	Unfunded	Funded	Total	Plan assets	Net value	Net assets	Net liability
Germany	1,040	5,069	6,109	−2,774	3,335	171	3,506
United Kingdom	1	1,071	1,072	−1,150	−78	79	1
Other	171	140	311	−137	174	23	197
	1,212	**6,280**	**7,492**	**−4,061**	**3,431**	**273**	**3,704**
Obligations from medical care benefits	153	0	153	0	153	0	153
Balance sheet disclosure						**273**	**3,857**

2022 in € million	Present value of defined benefit plans					Financial assets	Provisions for pensions
	Unfunded	Funded	Total	Plan assets	Net value	Net assets	Net liability
Germany	954	4,554	5,508	−2,435	3,073	157	3,230
United Kingdom	0	970	970	−1,081	−111	111	0
Other	150	136	286	−136	150	24	174
	1,104	**5,660**	**6,764**	**−3,652**	**3,112**	**292**	**3,404**
Obligations from medical care benefits	147	0	147	0	147	0	147
Balance sheet disclosure						**292**	**3,551**

The consolidated ZF Group offers various schemes for retirement and medical care benefits. The structure of those schemes depends on the legal, economic and tax situation in the respective countries. A distinction has to be made 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. There are both unfunded and funded pension systems. Provisions for defined benefit pension commitments are set up for obligations from vested benefits of entitled current and former employees of the consolidated ZF Group and their surviving dependents.

Description of plans

The following paragraphs describe the most significant pension and medical care plans of the consolidated ZF Group. The essential risks for the company lie with the actuarial parameters, particularly interest level and pension trend as well as the demographic developments and the development of the market value of plan assets. After the obligations and associated plan assets of the largest pension plan in the USA to date were transferred to a third party in 2022, the plans are no longer listed separately in the United States.

Germany (GER)

In Germany, there is a variety of defined benefit obligations with different characteristics.

Until 1993, commitments were granted depending on length of service and remuneration. From 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 2005, the annually allocated 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.

A Group-internal contractual trust arrangement (CTA) was concluded in 2016 to hedge the above-mentioned direct defined benefit obligations, and assets were contributed to the CTA. While the CTA was initially intended to hedge the grants made to executive managers, the group of beneficiaries was expanded in 2021 so that the obligations from all of the above-mentioned commitments involving different hierarchy levels are hedged. There are no legal or regulatory minimum funding requirements.

Within the scope of the acquisition of TRW and WABCO, ZF also acquired unfunded defined benefit plans in Germany. These plans have meanwhile been closed and partly transferred to the "ZF Vorsorge" scheme.

In the context of the "ZF Rente" pension scheme, employee-financed pension modules are awarded. 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 a guaranteed interest rate of 3.5% for established employees before December 31, 2005. The second rate does not offer a guaranteed interest rate for new employees as of 2006.

In 2019, employees that had not previously been covered were granted a defined benefit commitment as part of the realignment of company pension schemes. This commitment called "ZF Vorsorge" also requires a monthly employee contribution in the amount of at least 1% of the remuneration. Entitled employees are now able to pay monthly contributions into a funded benefit account from their pensionable remuneration by way of deferred remuneration. With this commitment, the employer also makes contributions depending on the level of the employees' contributions. The commitment includes a retirement benefit as well as risk-based benefits in the case of reduced earning capacity and death. The employees can choose between various payout options. Employees who had already been beneficiaries were offered a change to the "ZF Vorsorge" scheme. Any previously vested benefit obligations were taken into account in the form of starting modules. Upon the introduction of the "ZF Vorsorge" scheme, all benefit commitments in Germany were closed for new entrants, including both "ZF Rente" and the commitments of TRW and WABCO.

Both employer and employee contributions for this new company pension scheme are managed by a trust fund association, specifically founded for this purpose.

The asset ceiling of €133 million (2022: €173 million) is applied for the first time for a defined benefit obligation in Germany. The plan assets attributable to ZF from a pension fund are limited to the value of the guaranteed pension benefit.

United Kingdom (UK)

In the United Kingdom, the consolidated ZF Group maintains funded defined pension plans that have been closed except for a small number of employees of ZF CV Distribution UK Ltd. 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. The technical evaluation may lead to additional contributions from the employer in order to comply with the minimum funding requirements.

In the case of pension commitments for employees of ZF CV Distribution Ltd., both employers and employees must make contributions to the trust assets. The pension amount depends on the pensionable income as well as the period of employment. The employer guarantees a minimum pension.

Defined benefit pension plans

The following actuarial assumptions are used in the calculation of pension provisions:

	2023		2022	
in %	GER	UK	GER	UK
Discount rate	3.3	4.5	3.7	4.8
Pension increases	2.1	2.4 – 2.9	2.1	2.3 – 2.9

As part of the measurement of provisions for other pension plans in Germany, the replacement interest rate is 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 average maturity period of the defined benefit obligations is as follows:

	2023		2022	
in years	GER	UK	GER	UK
Average maturity	15	13	14	17

Pension provisions are calculated using country-specific mortality tables which are updated annually, depending on the country involved. The following mortality tables are used:

	2023	2022
GER	Heubeck 2018 G mortality tables	Heubeck 2018 G mortality tables
UK	2018 VITA tables (averaged) with CMI 2022	2018 VITA tables (averaged) with CMI 2021

A discount as regards the probability of disability according to the Heubeck 2018 G mortality tables to measure pension obligations at Group companies in Germany was applied. The discount is determined on the basis of company-owned historical data.

The development of pension provisions as well as the related plan assets is presented in the following table:

in € million	GER	UK	Other	2023 Total
Present value of the defined benefit obligations as of Jan. 1	**5,508**	**970**	**286**	**6,764**
Current service costs	98	1	25	124
Past service costs	0	0	2	2
Interest expenses	202	46	18	266
Contributions by plan participants	106	0	1	107
Pension payments	–205	–45	–22	–272
Actuarial gains (–) and losses (+) from the change in demographic assumptions	0	–9	0	–9
Actuarial gains (–) and losses (+) from the change in financial assumptions	334	54	–8	380
Actuarial gains (–) and losses (+) due to experience adjustments	47	33	12	92
Other changes	19	2	–6	15
Net exchange differences from plans abroad	0	20	3	23
Present value of the defined benefit obligations as of Dec. 31	**6,109**	**1,072**	**311**	**7,492**
Plan assets at fair value as of Jan. 1	**2,608**	**1,081**	**136**	**3,825**
Expected return on plan assets	93	50	6	149
Actuarial gains (+) and losses (–) from the change in plan assets	24	20	–1	43
Employer contributions to the plan assets	99	29	5	133
Employee contributions	104	0	1	105
Pension benefits paid	–24	–45	–8	–77
Other changes	3	–7	–1	–5
Net exchange differences from plans abroad	0	22	–1	21
Plan assets at fair value as of Dec. 31	**2,907**	**1,150**	**137**	**4,194**
Asset ceiling as of Jan. 1	**–173**	**0**	**0**	**–173**
Change in asset ceiling	40	0	0	40
Asset ceiling as of Dec. 31	**–133**	**0**	**0**	**–133**

in € million	GER	UK	Other	2022 Total
Present value of the defined benefit obligations as of Jan. 1	**7,833**	**1,621**	**642**	**10,096**
Current service costs	182	1	25	208
Past service costs	–32	0	0	–32
Interest expenses	82	29	16	127
Contributions by plan participants	104	0	1	105
Settlements	0	0	–270	–270
Pension payments	–188	–91	–32	–311
Actuarial gains (–) and losses (+) from the change in demographic assumptions	0	–32	0	–32
Actuarial gains (–) and losses (+) from the change in financial assumptions	–2,448	–543	–52	–3,043
Actuarial gains (–) and losses (+) due to experience adjustments	–9	67	–61	–3
Other changes	–16	0	–18	–34
Net exchange differences from plans abroad	0	–82	35	–47
Present value of the defined benefit obligations as of Dec. 31	**5,508**	**970**	**286**	**6,764**
Plan assets at fair value as of Jan. 1	**2,545**	**2,276**	**520**	**5,341**
Expected return on plan assets	26	40	10	76
Actuarial gains (+) and losses (–) from the change in plan assets	–177	–1,027	–112	–1,316
Employer contributions to the plan assets	119	0	5	124
Employee contributions	104	0	1	105
Settlements	0	0	–282	–282
Pension benefits paid	–13	–91	–16	–120
Other changes	4	0	–18	–14
Net exchange differences from plans abroad	0	–117	28	–89
Plan assets at fair value as of Dec. 31	**2,608**	**1,081**	**136**	**3,825**
Asset ceiling as of Jan. 1	**0**	**0**	**0**	**0**
Change in asset ceiling	–173	0	0	–173
Asset ceiling as of Dec. 31	**–173**	**0**	**0**	**–173**

The items recognized in profit or loss in connection with pension obligations are composed as follows:

in € million	GER	UK	Other	2023 Total
Current service costs	98	1	25	124
Past service costs	0	0	2	2
Administration expenses	0	6	1	7
Net interest on the net defined benefit liability	109	−4	12	117
	207	**3**	**40**	**250**

in € million	GER	UK	Other	2022 Total
Current service costs	182	1	25	208
Past service costs	−32	0	0	−32
Curtailments and settlements	0	0	14	14
Administration expenses	0	4	0	4
Unwinding the discount on net liabilities	56	−11	6	51
	206	**−6**	**45**	**245**

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 €380 million (2022: gains of €1,589 million) are recorded in other comprehensive income with no effect on profit or loss. This also includes an actuarial gain from the change in the asset ceiling of €40 million (2022: loss of €173 million).

The plan assets consist of the following items:

in € million	2023	2022
Cash and cash equivalents	341	353
Securities		
Equity instruments	1,301	1,197
Debt instruments	1,749	1,908
Fund shares	448	0
Derivative financial instruments	1	−16
Other	354	383
	4,194	**3,825**

Securities are measured at prices quoted on active markets. The “Other” item mainly includes securities covered by receivables (asset-backed securities).

Contributions to plan assets are expected to amount to €144 million (2022: €107 million) in the following year.

Pension payments for the next ten years are as follows:

in € million	2023	2022
within the upcoming fiscal year	337	357
between one to five years	1,349	1,385
after five up to ten years	1,865	1,879

The calculation presents the expected 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:

in € million	GER	UK	Other	2023 Total
Discount rate				
−0.25%	+222	+39	+7	+268
+0.25%	−208	−37	−7	−252
Pension increases				
−0.25%	−78	0	−1	−79
+0.25%	+81	0	+1	+82
Life expectancy				
−1 year	−135	−32	−2	−169
+1 year	+151	+31	+3	+185

in € million	GER	UK	Other	2022 Total
Discount rate				
−0.25%	+199	+34	+7	+240
+0.25%	−187	−32	−6	−225
Pension increases				
−0.25%	−72	0	−1	−73
+0.25%	+76	0	+1	+77
Life expectancy				
−1 year	−120	−27	−2	−149
+1 year	+134	+28	+2	+164

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

Disclosures on medical care benefits

Certain foreign subsidiaries, particularly in the USA and Canada, grant post-retirement benefits to their employees if specific conditions as to age and period of employment are met.

The average maturity period of the defined benefit obligations is 9 years (2022: 8 years).

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

in € million	2023	2022
Present value of the defined benefit obligations as of Jan. 1	**147**	**166**
Current service costs	0	4
Past service costs	−2	1
Interest expenses	7	5
Payments made	−13	−19
Actuarial gains (−) and losses (+) from the change in financial assumptions	0	−46
Actuarial gains (−) and losses (+) due to experience adjustments	18	26
Net exchange differences from plans abroad	−4	10
Present value of the defined benefit obligations as of Dec. 31	**153**	**147**

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, 2023, the valuation factors for discounting were between 4.5% and 9.2% (2022: 4.8% and 10.0%).

The net expenses of the obligations for medical care benefits comprise the following:

in € million	2023	2022
Current service costs	0	4
Past service costs	–2	1
Unwinding the discount on net liabilities	7	5
	5	**10**

The actuarial losses amounting to €18 million (2022: gains of €20 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	2023	2022
Discount rate		
–0.25%	+3	+3
+0.25%	–3	–3
Life expectancy		
–1 year	–7	–5
+1 year	+8	+5

25 Equity

Subscribed capital

At the end of the fiscal year, the subscribed capital still amounts to €500 million. As of December 31, 2023, 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 after tax amounting to –€445 million (2022: +€170 million) is attributed to non-controlling interests in the amount of –€29 million (2022: –€14 million) as well as €1 million (2022: –€2 million) to associates.

Fair value adjustment on 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.

Deferred taxes on equity items not affecting profit or loss

in € million 2023	Before income tax	Income tax	After tax
Foreign currency translation differences	–458	13	–445
Mark-to-market of securities	–9	0	–9
Mark-to-market of cash flow hedges	84	–17	67
Actuarial gains and losses	–398	–56	–454
Other comprehensive income	**–781**	**–60**	**–841**

in € million 2022	Before income tax	Income tax	After tax
Foreign currency translation differences	175	–5	170
Mark-to-market of securities	10	2	12
Mark-to-market of cash flow hedges	38	–8	30
Actuarial gains and losses	1,609	–517	1,092
Other comprehensive income	**1,832**	**–528**	**1,304**

Dividends

ZF Friedrichshafen AG has proposed a dividend payout of €41 million (€0.08 per share) for the fiscal year 2023 – unchanged from the previous year.

26 Disclosures on capital management

The primary objective of capital management at the consolidated ZF Group is to ensure the financial stability and independence of ZF and to meet the requirements of the shareholders and lenders. Ensuring a sufficient equity ratio is an important basis for achieving this objective. Net debt and the debt-equity ratio (net debt in relation to EBITDA) are central parameters for capital management at ZF with regard to external financing. The credit rating by the commissioned rating agencies is another vital indicator. The objective is to achieve a stable Group rating at investment grade level.

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

	Dec. 31, 2023	Dec. 31, 2022
Equity in € million	7,719	8,595
Equity ratio in %	20	22

ZF Friedrichshafen AG is not subject to by-laws-based capital requirements.

NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS

27 General

The consolidated statement of cash flows shows how the cash position of the consolidated ZF Group changed in the fiscal year due to the inflow and outflow of funds. A distinction is drawn between cash flows from operating, investing and financing activities.

The cash position presented in the consolidated statement of cash flows covers all cash and cash equivalents reported in the consolidated statement of financial position, i.e., cash on hand and cash at banks, available at any time for use by the consolidated ZF Group. In addition, highly liquid financial investments that have a maturity of less than three months and that are subject to small fluctuations in value are assigned to the cash position.

The cash position is comprised as follows:

in € million	Dec. 31, 2023	Dec. 31, 2022
Cash and cash equivalents	3,637	2,518
Cash and cash equivalents of disposal groups	0	6
Total	**3,637**	**2,530**

The cash flows from investing and financing activities are determined on the basis of payments. The cash flow from operating activities, on the other hand, is indirectly derived from the net profit or loss before income tax.

Dividends and interest received are assigned to the cash flow from investing activities. Interest and transaction costs paid for borrowings, including lease liabilities, are included in cash flow from financing activities. To this end, the net profit or loss before income tax in the cash flow from operating activities is adjusted by the net result from participations and the financial result.

As part of the indirect calculation, the changes in financial line items taken into account in conjunction with the operating activities are adjusted for effects from the translation of foreign currencies and changes in the basis of consolidation. Changes in the respective financial line items can therefore not be reconciled to the corresponding values on the basis of the published consolidated statement of financial position.

28 Sale of consolidated companies

The divestments in assets and liabilities from the share deals relate to the following:

in € million	2023	2022
Current assets	180	125
thereof cash and cash equivalents	38	10
Non-current assets	115	70
Current liabilities	79	63
Non-current liabilities	67	50

The total sales prices for the sale of shares in fiscal year 2023 in the amount of €59 million (2022: €138 million) were fully paid in cash.

29 Change in financial liabilities

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

	Financial liabilities			
	2023		2022	
in € million	Current	Non-current	Current	Non-current
Carrying amount as of Jan. 1	2,162	10,792	1,043	11,488
Change in cash	–2,103	2,648	–736	898
Non-cash changes				
Reclassification	2,382	–2,382	1,853	–1,853
Currency effects	–1	–40	4	72
Other	63	162	–2	187
Carrying amount as of Dec. 31	**2,503**	**11,180**	**2,162**	**10,792**

Changes in cash involve taking on and extinguishing financial liabilities. Other non-cash changes are primarily comprised of changes in deferred interests (partly cash items) as well as the cancelation of loan-raising costs and the increase in lease liabilities due to new leasing contracts.

The presentation does not consider derivative financial instruments.

OTHER DISCLOSURES

30 Contingent liabilities

The following table shows contingent liabilities recognized at nominal values:

	Dec. 31, 2023	Dec. 31, 2022
Guarantees	103	11
thereof for participations	97	11
Other	130	197
	233	**208**

The guarantees are due within one 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. As in the previous year, 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 consist of investment projects launched and procurement agreements initiated.

	Dec. 31, 2023	Dec. 31, 2022
Purchase commitments	1,404	1,482
Payment obligations on participations	12	31
	1,416	**1,513**

The purchase commitments can be broken down into intangible assets amounting to €7 million (2022: €7 million) and property, plant and equipment amounting to €1,397 million (2022: €1,475 million).

32 Litigation

ZF continues to be in close contact with the National Highway Traffic Safety Administration (NHTSA) in the USA in relation to the latter's investigation regarding certain vehicles that are equipped with ZF airbag control units and of which a few were subject to recalls by Toyota, FCA and HKMC. Based on the currently available investigation results, ZF does not believe to have culpably caused the recalls and is defending itself against lawsuits pending in the USA and Canada.

In connection with already concluded antitrust proceedings, ZF is dealing with customers with regard to possible claims for damages.

In principle, claims for damages may be asserted even in connection with completed proceedings. Neither ZF nor any of its Group companies are involved in current or foreseeable court or arbitration proceedings which, based on facts known today, have had in the past or could have a significant impact on the economic situation of the consolidated ZF Group.

33 Disclosures on financial instruments

Carrying amounts of the financial instruments by category

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

in € million	Dec. 31, 2023	Dec. 31, 2022
Assets		
At amortized cost	8,999	7,739
At fair value through other comprehensive income		
Debt instruments	653	937
Equity instruments	56	57
At fair value through profit or loss	170	179
Derivative financial instruments (hedge accounting) [1]	117	63
	9,995	**8,975**
Liabilities		
At amortized cost	19,531	19,181
At fair value through profit or loss	99	39
Lease liabilities [1]	786	797
Derivative financial instruments (hedge accounting) [1]	13	43
	20,429	**20,060**

1) No measurement category in accordance with IFRS 9

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

Fair values

The fair values of the financial assets and liabilities are presented below. Provided that financial assets and liabilities are recognized at amortized cost, the fair value is compared to the carrying amount.

The following table shows the carrying amounts and the fair values of the financial assets and liabilities recognized at amortized cost. Due to short maturities, the carrying amounts of the current financial instruments recognized at cost approximate the fair values.

	Dec. 31, 2023		Dec. 31, 2022	
in € million	Carrying amount	Fair value	Carrying amount	Fair value
Assets				
At amortized cost				
Cash and cash equivalents	3,637	3,637	2,518	2,518
Financial receivables	193	193	160	160
Trade receivables	5,164	5,164	5,030	5,030
Other receivables	5	5	31	31
	8,999	**8,999**	**7,739**	**7,739**
Liabilities				
At amortized cost				
Bonds	8,611	8,511	7,826	6,882
Bonded loans	2,093	1,990	2,166	2,238
Liabilities to banks	2,035	2,035	2,099	2,105
Other financial liabilities	158	158	66	66
Trade payables	6,634	6,634	7,024	7,024
Lease liabilities [1]	786	-	797	-
	20,317	**19,328**	**19,978**	**18,315**

1) No measurement category in accordance with IFRS 9

In the following, the financial instruments are allocated to the three levels of the fair value hierarchy based on the input parameters used for measurement. The classification as well as the need to perform reclassifications is reviewed on the reporting date. Level 1 covers those financial instruments for which prices for identical assets and liabilities quoted on active markets are available. Allocation to level 2 occurs if input parameters are used for the measurement of financial instruments that are directly (e.g., prices) or indirectly (e.g., derived from prices) observable on the market. Financial instruments whose valuation is based on information that is not observable on the market are reported in level 3.

The following table shows the allocation of the fair values of the financial instruments recognized at amortized cost to the three levels of the fair value hierarchy:

in € million	Level 1	Level 2	Level 3	Dec. 31, 2023 Total
Assets				
Cash and cash equivalents	0	3,637	0	3,637
Financial receivables	0	193	0	193
Trade receivables	0	5,164	0	5,164
Other receivables	0	5		5
	0	**8,999**	**0**	**8,999**
Liabilities				
Bonds	8,511	0	0	8,511
Bonded loans	0	1,990	0	1,990
Liabilities to banks	0	2,035	0	2,035
Other financial liabilities	0	158	0	158
Trade payables	0	6,634	0	6,634
	8,511	**10,817**	**0**	**19,328**

in € million	Level 1	Level 2	Level 3	Dec. 31, 2022 Total
Assets				
Cash and cash equivalents	0	2,518	0	2,518
Financial receivables	0	160	0	160
Trade receivables	0	5,030	0	5,030
Other receivables	0	31	0	31
	0	**7,739**	**0**	**7,739**
Liabilities				
Bonds	6,882	0	0	6,882
Bonded loans	0	2,238	0	2,238
Liabilities to banks	0	2,105	0	2,105
Other financial liabilities	0	66	0	66
Trade payables	0	7,024	0	7,024
	6,882	**11,433**	**0**	**18,315**

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.

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

in € million	Dec. 31, 2023	Dec. 31, 2022
Assets		
At fair value through other comprehensive income		
Securities	1	2
Investments in participations	55	55
Trade receivables	653	937
At fair value through profit or loss		
Securities	63	56
Investments in participations	49	56
Derivative financial instruments	41	62
Other receivables	17	5
Derivative financial instruments (hedge accounting) [1]	117	63
	996	**1,236**
Liabilities		
At fair value through profit or loss		
Derivative financial instruments	99	39
Derivative financial instruments (hedge accounting) [1]	13	43
	112	**82**

1) No measurement category in accordance with IFRS 9

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, 2023 Total
Assets				
Securities	19	13	32	64
Investments in participations	0	0	104	104
Trade receivables	0	653	0	653
Derivative financial instruments	0	153	5	158
Other receivables	0	17	0	17
	19	**836**	**141**	**996**
Liabilities				
Derivative financial instruments	0	112	0	112

in € million	Level 1	Level 2	Level 3	Dec. 31, 2022 Total
Assets				
Securities	17	27	14	58
Investments in participations	5	36	70	111
Trade receivables	0	937	0	937
Derivative financial instruments	0	125	0	125
Other receivables	0	5	0	5
	22	**1,130**	**84**	**1,236**
Liabilities				
Derivative financial instruments	0	82	0	82

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

For level 1 securities, the fair value is recognized directly as the quoted price on an always active market. An active market is either the stock exchange of the respective country or a comparable trading platform offering the liquidity and transparency of the underlying asset. Level 2 includes classes whose prices can be derived or modeled from parameters which can be observed on the market. This includes in particular observable interest rates, exchange rates or comparable instruments. The level 3 securities are zero-coupon bonds for which no active market exists. The market values of level 3 securities are determined on the basis of currently available information from the funds' managers. A significant change of the underlying future cash flows and the interest rate, which implies a change of the discount factor, would influence the fair values of these securities.

The level 3 investments in participations concern investments in companies that are not listed on the stock exchange. In case of these investments in participations recognized at fair value through profit or loss, there is either not enough information available or only a vast range of possible values can be determined for the fair value by using a multiplier method. The acquisition costs are therefore used to appropriately estimate the fair value. In case of changes in the environment of the participations or in case of proof due to external transactions, the estimate is adjusted accordingly. A significant change regarding the future results and multipliers used for the multiplier method would affect the fair value of these investments in participations in the amount of −€9 million (2022: −€5 million) to +€69 million (2022: +€15 million).

The trade and other receivables measured at fair value are allocated to level 2 since measurement can be derived from parameters observable on the market.

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

	Investments in participations		Securities	
in € million	**2023**	2022	**2023**	2022
As of Jan. 1	70	42	14	0
Changes in the basis of consolidation	−5	0	0	0
Fair value changes – recognized through profit or loss	−1	0	−1	0
Net exchange differences – recognized through profit or loss	−1	0	0	0
Purchases	7	7	2	3
Sales	−2	0	−1	0
Reclassifications from level 2 to level 3	36	21	18	11
As of Dec. 31	**104**	**70**	**32**	**14**

During the fiscal year, investments in participations and securities from level 2 of the fair value hierarchy in the amount of €54 million were reclassified to level 3 as a result of the deteriorated market availability of the relevant investments in participations and securities in the current fiscal year compared to the prior year.

Net gains and losses by measurement category

in € million	Dec. 31, 2023 Total net gains and losses	Dec. 31, 2023 Thereof from interest	Dec. 31, 2022 Total net gains and losses	Dec. 31, 2022 Thereof from interest
At amortized cost				
Financial assets	172	97	163	57
Financial liabilities	–737	–588	–390	–340
At fair value through profit or loss				
Financial assets and liabilities	–7	11	–71	5
	–572	**–480**	**–298**	**–278**

Net gains and losses in the "Financial assets at amortized cost" measurement category primarily contain, in addition to interest income, exchange rate gains and losses from foreign currency receivables in the amount of +€65 million, as well as income from the change in write-downs in the amount of +€10 million.

In the "Financial liabilities at amortized cost" measurement category, apart from interest expenses, net gains and losses primarily comprise exchange rate gains and losses from foreign currency liabilities in the amount of –€156 million.

Net gains and losses in the "Financial assets and liabilities at fair value through profit or loss" measurement category essentially include losses from derivative financial instruments excluding hedge accounting.

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	Dec. 31, 2023 Gross amount	Dec. 31, 2023 Offsetting	Dec. 31, 2023 Net amount
Offset items			
Trade receivables (current)	5,943	126	5,817
Trade payables (current)	6,754	126	6,628
Eligible for offsetting in the event of insolvency			
Derivative financial instruments (assets)	158	43	115
Derivative financial instruments (liabilities)	112	43	69

in € million	Dec. 31, 2022 Gross amount	Dec. 31, 2022 Offsetting	Dec. 31, 2022 Net amount
Offset items			
Trade receivables (current)	6,070	103	5,967
Trade payables (current)	7,113	103	7,010
Eligible for offsetting in the event of insolvency			
Derivative financial instruments (assets)	125	42	83
Derivative financial instruments (liabilities)	82	42	40

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, 2023, 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 within the finance area comprises counterparty and credit risks with customers and suppliers, liquidity and interest rate risks as well as currency and raw material price risks. Reports on the essential risk positions of the consolidated ZF Group are presented to the Board of Management and the Supervisory Board on a regular basis. Compliance with the guidelines is audited by Corporate Audit.

The companies of the consolidated ZF Group hedge their foreign currency risks in a standardized manner at prevailing market conditions either internally through the responsible ZF Treasury Hubs or directly externally with banks. Risk items hedged externally are traded with banks with excellent credit rating, taking into account the prescribed risk limits. In general, derivative financial instruments with plain vanilla character are used. These are used exclusively to hedge existing balance sheet items or forecast transactions. Hedge accounting is applied if the IFRS criteria are met. The Commercial Vehicle Solutions Division partially hedges its risk independently while following guidelines comparable to the consolidated ZF Group's hedging strategy. Integration into ZF's hedging strategy was advanced in 2023 and will be completed in 2024. Interest rate and raw material price risks are hedged on a case-by-case basis.

Hedging transactions are concluded in accordance with uniform corporate policies, following various jurisdictions' rules and regulations and in line with bank regulations on the operating of trading business. Such conclusions 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 our contracting parties in the areas of financial investments, financial receivables and trade receivables will not meet their payment obligations. This risk is defined based on calculated probabilities of default or information about the insolvency of contracting parties.

In order to reduce the counterparty risk for financial investments and derivatives, all financial transactions are carried out only with banks with a first-class credit rating within the framework of defined limits. These limits are reviewed quarterly and adjusted, if necessary. Input parameters for taking into account counterparty risk are ratings with a long-term perspective issued by independent rating agencies for 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.

Outstanding trade receivables mainly comprise receivables from manufacturers of passenger cars and commercial vehicles, off-road machinery and wind turbines worldwide. In order to secure the entire value-added chain, the creditworthiness of our strategic suppliers is constantly monitored on the one hand, in particular by concentrating new contract awarding decisions on creditworthy suppliers. In order to reduce the credit risk in relation to customers on the other hand, the creditworthiness of customers as well as the related 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 as of December 31, 2023 is €6 million (2022: €51 million).

Trade receivables are sold as part of factoring programs. Essentially all opportunities and risks, measured on the basis of the variability of incoming payments, are transferred ("true sale"). An asset-backed securitization program (ABS program) is another off-balance sheet measure. As part of the business practices customary for such programs, trade receivables are sold to a special purpose vehicle on a revolving basis. As is also customary, a portion of the purchase price is retained in reserve accounts. These are reported as other receivables under other assets.

The following table illustrates the credit risk existing per risk category for trade receivables and contract assets as of the reporting date:

Dec. 31, 2023 in € million Risk category	Trade receivables	Contract assets
1	713	848
2	4,573	118
3	655	9
4	14	38
Receivables (gross)	**5,955**	**1,013**
Specific loss allowances	–72	–10
Credit-based loss allowances	–66	–3
Receivables (net)	**5,817**	**1,000**

Dec. 31, 2022 in € million Risk category	Trade receivables	Contract assets
1	645	722
2	4,684	100
3	780	4
4	27	28
Receivables (gross)	**6,136**	**854**
Specific loss allowances	–99	0
Credit-based loss allowances	–70	–2
Receivables (net)	**5,967**	**852**

A specific loss allowance on receivables is recognized if there is an existing credit risk. The amount of the allowance mainly depends on the risk category and how long the receivable is overdue, and may be up to 100% in individual cases. A distinction is made between credit risk and business risk in assessing the recoverability of receivables.

Liquidity risk

The expected future outflow of funds due to principal and interest payments for financial liabilities and trade payables is contained in the medium-term liquidity planning.

The following table lists the maturity structure of principal and interest payments for the financial liabilities and trade payables:

in € million	Carrying amount Dec. 31, 2023 Total	Cash outflow 2024	Cash outflow 2025 to 2029	Cash outflow 2030 and beyond
Bonds	8,611	319	9,076	562
Bonded loans	2,093	613	1,726	0
Liabilities to banks	2,035	1,649	588	0
Other financial liabilities	158	150	9	8
Trade payables	6,634	6,634	0	0
	19,531	**9,365**	**11,399**	**570**

in € million	Carrying amount Dec 31, 2022 Total	Cash outflow 2023	Cash outflow 2024 to 2028	Cash outflow 2029 and beyond
Bonds	7,826	1,805	6,138	721
Bonded loans	2,166	185	2,190	66
Liabilities to banks	2,099	263	1,743	228
Other financial liabilities	66	45	12	9
Trade payables	7,024	7,010	14	0
	19,181	**9,308**	**10,097**	**1,024**

The solvency and the liquidity reserves within the consolidated ZF Group are managed on the basis of short-, medium- and long-term liquidity and financing planning. A sufficient amount of cash and cash equivalents as well as securities that can be converted to cash and confirmed credit lines is held so that the solvency of the consolidated ZF Group is ensured at all times. Cash and cash equivalents amounted to €3,637 million as of the reporting date. The carrying amount of short-term securities was €26 million.

The syndicated loan in the form of a revolving credit facility (RCF) was unused as of the reporting date. The credit line was refinanced in July 2022 and, since a contractually agreed extension option was exercised in the year under review, now has a residual term until July 2028.

Reverse factoring agreements were concluded for trade payables with a nominal value of €258 million (2022: €199 million). Within these agreements, suppliers can transfer their trade receivables to the offering bank against a discount and thus receive the discounted invoice amount early. ZF will be charged the original invoice amount by the offering bank on the original due date.

Market price risk from securities

The market price risk is the risk that the fair value of securities decreases. Due to the low portfolio of securities, the risk from market price fluctuations is considered immaterial. Therefore, a sensitivity analysis is dispensed with.

Foreign currency risk

The foreign currency risk is the risk that the fair values or future cash flows of monetary items are negatively influenced due to exchange rate changes. As a result of its international orientation, the ZF Group carries out transactions in different currencies.

The consolidated ZF Group follows a unified approach to managing currency risks. The hedging approach pursues a central and systematic currency risk assessment and strategy that includes regular survey rounds for expected risk items, risk assessment and the implementation of multi-layered hedging for a hedging horizon of 24 months.

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 FX forward instruments. The intended hedging relationship between the designated amount of the hedged item and the designated amount of the hedging instrument generally amounts to up to 80%.

Individual hedging is generally carried out for the project business (gross principle). As a rule, the hedged item of project-related individual hedges is hedged in the full amount.

The translation risk from the measurement of line items is not hedged – the risks are monitored on a regular basis.

The economic relationship between the hedging instrument and the hedged item can be determined in terms of quality and quantity, and ZF assesses the effectiveness of this hedging relationship using the hypothetical derivatives method and linear regression. Ineffectiveness is largely expected to occur through changes in credit risk or from timing adjustments regarding the hedged item. In the current fiscal year, no amounts from ineffective hedging relationships (2022: €0 million) were derecognized from the cash flow hedge reserve. When hedging instruments are due or de-designated, accumulated measurements are essentially reclassified from other comprehensive income to other operating income and expenses.
As of December 31, 2023, a liability with a partial amount of €915 million (2022: €500 million) and maturity periods until 2028 and 2030 is designated for hedging

a net investment in a foreign operation of the same amount. The hedging instrument is reported under financial liabilities. The cumulative change in the value of the hedge of a net investment in a foreign operation amounts to €60 million (2022: €25 million) and is included in other comprehensive income under foreign currency translation differences.

The expected cash outflow from derivative financial instruments entered into to hedge currency risks is presented below:

in € million	Market value as of Dec. 31, 2022 Total	Nominal value	Cash outflow Within a year	Cash outflow 1 to 5 years
Derivatives excl. hedge accounting				
Assets	24	2,059	2,050	9
Liabilities	–99	2,120	1,876	244
Cash flow hedge				
Assets	117	1,893	1,371	522
Liabilities	–11	458	317	141

in € million	Market value as of Dec. 31, 2022	Nominal value	Cash outflow Within a year	Cash outflow 1 to 5 years
Derivatives excl. hedge accounting				
Assets	7	1,352	1,327	25
Liabilities	–39	1,563	1,550	13
Cash flow hedge				
Assets	63	1,348	818	530
Liabilities	–43	798	672	126

For the purposes of hedging foreign currency risk, the hedging rates for the material currency pairs are as follows: 4.70 EUR/PLN; 18.76 USD/MXN; 1.09 EUR/USD; 0.88 EUR/GBP. The hedging rates comprise derivatives including and excluding hedge accounting.

in € million	Change in value of hedging instrument 2023	Change in value of hedging instrument 2022	Change in value of hedged item 2023	Change in value of hedged item 2022
Cash flow hedge	110	20	–110	–20
Hedge of a net investment	–60	32	60	–32

Sensitivity analysis

In terms of sensitivity to exchange rates volatility, ZF considers most relevant to evaluate the potential impact of EUR strengthening or weakening on its portfolio of outstanding cash flow hedge derivatives, as well as on un-hedged financing instruments such as loans and cash and cash equivalents in foreign currencies. For this purpose, the sensitivity of the portfolio of derivatives and financing instruments was determined for a 10% appreciation and depreciation of EUR versus all other currencies represented in the portfolio.

The following table shows the hypothetical effects on equity and profit or loss (in both cases excluding tax effects) within the scope of the aforementioned parameters:

	Effect on equity		Effect on net profit or loss before tax	
in € million	**Dec. 31, 2023**	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
Appreciation of the euro by +10%	−44	−4	−2	−24
Devaluation of the euro by −10%	45	6	−2	26

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. ZF is working on setting up a structured raw material hedging program.

In 2023, ZF concluded virtual power purchase agreements with terms of 7 and 9 years. Under these agreements, ZF receives certificates of origin for the electrical energy generated by photovoltaic systems in Spain with an installed capacity of 109 megawatts assigned to ZF. The agreements meet the definition of a derivative financial instrument and are recognized at fair value through profit or loss in accordance with IFRS 9. Changes in fair value are included in the cost of materials in the electricity procurement costs. As of the reporting date, the agreements had a positive fair value of €5 million.

The following table shows the effect on net profit or loss before income tax of an increase or decrease of the electricity price level in Spain by 10%:

	Effect on net profit or loss before tax	
in € million	**Dec. 31, 2023**	Dec. 31, 2022
Increase in electricity price level in Spain by +10%	+2	0
Decrease in electricity price level in Spain by −10%	−3	0

Interest rate risk

The interest rate risk is the risk that either the fair values or future cash flows of financial instruments will fluctuate or future financing will become more expensive, both due to changes in the market interest rates.

Facing increases in the reference rates, interest rate hedges were executed in the previous year by means of interest rate swaps with maturity periods until 2029 and option instruments with maturity within the coming year. The interest rate swaps fix an average secured interest rate of 3.07%, the option instruments have a cap at 2.25%. The executed hedges cover 60% of the variable financing exposures over the full financing lifetime. For IFRS purposes, no hedging relationship to the underlying business was documented.

No new interest rate hedges were executed in the fiscal year 2023.

The assumed cash outflow from derivative financial instruments entered into to hedge interest rate risks is presented below:

	Market value as of **Dec. 31, 2023**		Cash outflow	
in € million	**Total**	Nominal value	Within a year	1 to 5 years
Derivatives excl. hedge accounting				
Assets	12	1,658	0	0
Liabilities	−2	296	0	4

in € million	Market value as of Dec. 31, 2022	Nominal value	Cash outflow	
			Within a year	1 to 5 years
Derivatives excl. hedge accounting				
Assets	28	1,875	0	0
Liabilities	0	78	2	0

The following tables indicate the effect on net profit or loss before income tax in the event of an increase or decrease in the average interest rate on financial investments as well as on variable-rate financial liabilities in the corresponding currency:

Investment of funds	Change in base points		Effect on net profit or loss before income tax (in € million)	
	Dec. 31, 2023	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
EUR	+100 −100	+100 −100	+4 −4	+3 −3
USD	+100 −100	+100 −100	+3 −3	+1 −1
CNY	+100 −100	+100 −100	+7 −7	+8 −8

Financial liabilities	Change in base points		Effect on net profit or loss before income tax (in € million)	
	Dec. 31, 2023	Dec. 31, 2022	**Dec. 31, 2023**	Dec. 31, 2022
EUR	+100 −100	+100 −100	−16 +19	+15 −7
USD	+100 −100	+100 −100	−9 +9	−25 +25

The effect on net profit or loss before income tax of the variable-rate financial liabilities denominated in euros includes the effect from interest rate hedges.

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.

In the current fiscal year, derivative interest rate instruments do not result in material cash outflows.

35 Government grants

In the fiscal year 2023, €85 million (2022: €61 million) in government grants were received. They were divided as follows:

in € million	**2023**	2022
Investment grants	63	25
Expense subsidies	22	36

Investment grants were mainly received for investments at locations in China, Serbia and India.

Expense subsidies mainly comprise research subsidies and subsidies for personnel expenses.

36 Related party transactions

Related party transactions have to be disclosed in accordance with IAS 24. The group of related parties includes associates, joint ventures and non-consolidated subsidiaries as well as persons who exercise a significant influence over the financial and operating policies of the consolidated ZF Group. The latter comprise all persons in key positions as well as close members of their family. In the consolidated ZF Group, these are the members of the Board of Management and the Supervisory Board. In addition, the Zeppelin Foundation as a special fund of the City of Friedrichshafen, the Dr. Jürgen and Irmgard Ulderup Foundation and their affiliated companies are considered related 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:

2023 **in € million**	Joint ventures	Associates	Other participations
Supplies and services rendered	21	10	11
Supplies and services received	19	232	85
Receivables	9	5	10
Liabilities	0	34	3

2022 **in € million**	Joint ventures	Associates	Other participations
Supplies and services rendered	12	13	15
Supplies and services received	18	71	52
Receivables	5	6	9
Liabilities	0	28	5

37 Board of Management

Dr. Holger Klein
Chief Executive Officer
Sales, Research & Development,
System House of Autonomous Mobility Systems, Aftermarket

Dr. Lea Corzilius (as of August 1, 2023)
Chief Human Resources Officer / Director of Labor Relations
Human Resources, Legal and Compliance

Dr. Martin Fischer
Quality, Regions of North and South America, Passive Safety Systems, Electronics and ADAS, Chassis Solutions

Michael Frick
Chief Financial Officer
Finance, IT and M&A

Sabine Jaskula (until July 31, 2023)
Chief Human Resources Officer / Director of Labor Relations
Human Resources, Sustainability, Governance

Prof. Dr. Peter Laier
Production, Region of India, Commercial Vehicle Solutions, Industrial Technology

Stephan von Schuckmann
Materials Management, Region of Asia-Pacific, Electrified Powertrain Technology

38 Supervisory Board

Dr. Heinrich Hiesinger
Chairman
Former Chief Executive Officer of thyssenkrupp AG

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

Jörg Amon*
Chairman of the Lemförde location Works Council of ZF Friedrichshafen AG

Andreas Brand
First Mayor of the City of Friedrichshafen

Dr. Rolf Breidenbach (as of March 15, 2023)
Former Chairman of the Board of Management of Hella GmbH & Co. KGaA

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

Rachel Empey (as of March 15, 2023)
Former Member of the Board of Management (CFO) of Fresenius SE & Co. KGaA

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

Klaus Helmrich
Former Member of the Board of Management of Siemens AG

Joachim Holzner* (until March 15, 2023)
Former Member of the Management Team of the Commercial Vehicle Solutions Division, ZF Friedrichshafen AG

Peter Kippes*
Head of Functional Area Business Policy, IG Metall

Mario Kläs*
Chairman of the Saarbrücken location Works Council of ZF Friedrichshafen AG

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

Dr. Joachim Meinecke
Lawyer (died on January 25, 2023)

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

Jürgen Otto (until March 15, 2023)
CEO of the s.Oliver Group

Jürgen Sammer*
Chairman of the Central Executives' Committee of ZF Friedrichshafen AG

Dr. Thomas Schulze (as of October 9, 2023)
Chairman of the Board of Management of the Dr. Jürgen and Irmgard Ulderup Foundation

* Employee representative

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

Dr. Mohsen Sohi (until March 15, 2023)
CEO of Freudenberg SE

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

Dagmar Steinert (until March 15, 2023)
Member of the Board of Management (CFO) of Rheinmetall AG

Axel Strotbek
Former Member of the Board of Management of Audi AG

Erdal Tahta*
Chairman of the Koblenz location Works Council of ZF Active Safety GmbH

Dr. Feiyu Xu (as of March 15, 2023)
Co-founder and Chief Innovation Officer of nyonic GmbH

* Employee representative

39 Board of Management and Supervisory Board compensation

The compensation of the Board of Management, as determined by the Supervisory Board of the consolidated ZF Group, comprises one fixed basic salary and two variable salary components, each consisting of short-term and long-term incentives. While the short-term incentive (STI) is based on the achievement of targets in the respective preceding fiscal year, the respective long-term incentive (LTI) is determined by reference to the business performance over a 3-year period. The remuneration structure is designed to facilitate a long-term positive development of the company.

The last review and adjustment of remuneration took place in the fiscal year 2018. For this reason, the Supervisory Board conducted an external market comparison in the fiscal year 2022 to review appropriateness in terms of amount and structure. This resulted in a necessary adjustment of the annual target income to the median of comparable companies. The structural comparison also showed that the STI share in the annual target income was rather below average, the share of the company pension scheme was rather above average. As a result, the STI share was increased in the fiscal year 2023 and the share of the pension scheme was reduced accordingly.

To decrease future pension burdens and risks for ZF, the previous company pension scheme commitment was replaced by a pension provision module. All newly appointed members of the Board of Management receive a gross amount at the end of each fiscal year, for which they have to pay tax themselves and which they have to invest on their own responsibility. When a member of the Board of Management leaves the company, this means that no further pension obligations will remain with the company in the future.

Inflow in fiscal year 2023

The payment of basic salaries and short-term incentives to active members of the Board of Management for the fiscal year 2023 amounts to €10.3 million (2022: €10.0 million). As a result of the improved EBIT and the higher weighting, STI target achievement has increased, whereas the reduction in the number of active members of the Board of Management has a reverse effect.

The long-term remuneration component LTI 2020–2022 of €2.6 million (2022: €4.9 million) paid out in April 2023 reflects the challenging business performance in the past year as well as in the two years before which were dominated by the Covid-19 pandemic.

As already mentioned, as of the 2023 fiscal year, newly appointed members of the Board of Management will no longer receive an allocation to the company pension scheme to build up future pension rights, but rather a pension provision module that is paid out as a gross amount. For this purpose, a total amount of €1.7 million was appropriated in the fiscal year 2023. The corresponding counter-effect can be seen below in the reduction of expenses by €3.1 million for earned pension rights.

In total, payments (basic salaries, short-term variable incentives, long-term variable incentives and the pension provision module) to active members of the Board of Management for the fiscal year 2023 amount to €15.0 million (2022: €15.8 million).

Expenses

For long-term incentives (LTIs), target figures to be achieved in the next three fiscal years are agreed before the beginning of a given fiscal year. Their payment is not guaranteed, but depends on the achievement of ambitious targets for ZF.

Currently, there are commitments for LTIs for the years 2021–2023, 2022–2024 and 2023–2025, which will be paid out after the end of the fiscal year in April of the following year. The entitlement to be recognized as an expense for all these future commitments is determined in each annual financial statement based on the latest estimates and plans, and the provisions are adjusted accordingly. With expectations not significantly changed compared to the previous year, the expenses for variable long-term salary components in the amount of €5.4 million have decreased compared to the previous year (2022: €7.8 million). This is mainly due to the reduction in the number of members of the Board of Management and the pro-rata consideration of new members of the Board of Management.

Due to the aforementioned compensation of the pension scheme, expenses for pension rights earned in the current fiscal year by the active members of the Board of Management decreased to €0.7 million (2022: €3.8 million).

The total remuneration, consisting of fixed remuneration, short-term and potential, though partly not certain, long-term variable components as well as earned pension entitlements, amounts to €18.0 million (2022: €21.5 million).

The emoluments of former members of the Board of Management and their surviving dependents amount to €9.0 million (2022: €6.9 million). The pension provisions for former members of the Board of Management and their surviving dependents amount to €96.9 million (2022: €77.8 million).

The emoluments of the Supervisory Board for the fiscal year 2023 amount to €2.5 million (2022: €2.6 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.

40 Personnel

The annual average number of employees was 166,679 (2022: 162,614), of whom 79,526 were direct employees (2022: 78,763) and 87,153 were indirect employees (2022: 83,851). At the end of the year, the consolidated ZF Group had 168,738 (2022: 164,869) employees. Direct employees are employees whose activities depend on the production volume and can be allocated directly to the products.

41 Appointed auditor fees

Fees of the consolidated ZF Group's auditing firm, EY GmbH & Co. KG Wirtschaftsprüfungsgesellschaft, recorded in the consolidated statement of profit or loss, amount to €4 million for auditing services. The total consolidated Group-wide fees of EY amount to €14 million for auditing services, €6 million for other assurance services as well as €1 million for tax advisory services. Apart from EY, other auditing companies work for the consolidated ZF Group.

42 Listing of the shares held as of December 31, 2023

Consolidated subsidiaries

Germany	Share of capital in %
Brake Force One GmbH, Tübingen, Germany	100.0
FTU Beteiligungsverwaltung GmbH, Auerbach, Germany	100.0
GAT – Gesellschaft für Antriebstechnik mbH, Alsdorf, Germany	100.0 [1]
intellic Germany GmbH, Berlin, Germany	100.0
Lemförder Electronic GmbH, Espelkamp, Germany	100.0 [1]
Lucas Automotive Grundstücksverwaltungs AG & Co. KG, Koblenz, Germany	100.0 [1]
Lucas Varity Grundstücksverwaltungs AG & Co. KG, Koblenz, Germany	100.0 [1]
Transics Deutschland GmbH, Hanover, Germany	100.0
TRW Deutschland Holding GmbH, Koblenz, Germany	100.0 [1]
WABCO Fahrzeugsysteme GmbH, Hanover, Germany	100.0 [1]
WABCO Holding GmbH, Hanover, Germany	100.0 [1]
WABCO Radbremsen GmbH, Mannheim, Germany	100.0 [1]
WABCO Systeme GmbH, Hanover, Germany	100.0 [1]
ZF Active Safety GmbH, Koblenz, Germany	100.0 [1]
ZF Airbag Germany GmbH, Aschau am Inn, Germany	100.0 [1]
ZF Airbag Germany Grundstücksverwaltungs AG & Co. KG, Aschau am Inn, Germany	100.0 [1]
ZF Alpha Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Alpha Property Service GmbH, Friedrichshafen, Germany	100.0
ZF Asia-Pacific Holding GmbH, Friedrichshafen, Germany	100.0 [1]
ZF Auslandsverwaltungs GmbH, Friedrichshafen, Germany	100.0
ZF Automotive Germany GmbH, Alfdorf, Germany	100.0 [1]
ZF Automotive Germany Grundstücksverwaltungs AG & Co. KG, Alfdorf, Germany	100.0 [1]
ZF Automotive Safety Germany GmbH, Aschaffenburg, Germany	100.0 [1]
ZF Automotive Safety Germany Grundstücksverwaltungs AG & Co. KG, Aschaffenburg, Germany	100.0 [1]

Germany	Share of capital in %
ZF Beta Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Beta Property Service GmbH, Friedrichshafen, Germany	100.0
ZF Car eWallet GmbH, Berlin, Germany	100.0
ZF Chassis Modules GmbH, Stemwede, Germany	100.0
ZF Chassis Modules Holding GmbH, Stemwede, Germany	100.0
ZF CV Distribution Germany GmbH & Co. KG, Hanover, Germany	100.0 [1]
ZF CV Logistics Germany GmbH, Hanover, Germany	100.0 [1]
ZF CV Systems Hannover GmbH, Hanover, Germany	100.0 [1]
ZF Delta Property Service GmbH, Friedrichshafen, Germany	100.0
ZF Delta Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Epsilon Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Epsilon Property Service GmbH, Friedrichshafen, Germany	100.0
ZF Europa Beteiligungs GmbH, Friedrichshafen, Germany	100.0 [1]
ZF Finance GmbH, Friedrichshafen, Germany	100.0
ZF Gamma Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Gamma Property Service GmbH, Friedrichshafen, Germany	100.0
ZF Gastronomie Service GmbH, Friedrichshafen, Germany	100.0 [1]
ZF Getriebe Brandenburg GmbH, Brandenburg, Germany	100.0 [1]
ZF Gusstechnologie GmbH, Nuremberg, Germany	100.0 [1]
ZF Industrieantriebe Witten GmbH, Witten, Germany	100.0 [1]
ZF Micro Mobility GmbH, Ravensburg, Germany	100.0 [1]
ZF Mobility Solutions GmbH, Ingolstadt, Germany	100.0 [1]
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 [1]
ZF RACE ENGINEERING GmbH, Schweinfurt, Germany	100.0 [1]
ZF Terra GmbH, Friedrichshafen, Germany	100.0
ZF Test Track Germany GmbH, Wietze, Germany	100.0 [1]

Germany	Share of capital in %
ZF Ventures GmbH, Friedrichshafen, Germany	100.0 [1]
ZF Zeta Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
ZF Zeta Property Service GmbH, Friedrichshafen, Germany	100.0

1) The company lays claim to exemption according to Section 264, para. 3, and Section 264b HGB (German Commercial Code).

International	Share of capital in %
2 Getthere B.V., Utrecht, Netherlands	100.0
2 Getthere Holding B.V., Utrecht, Netherlands	100.0
Advanced Cargo Transhipment B.V., Utrecht, Netherlands	100.0
Alfaro Brakes S.L.U., Corella, Spain	100.0
Automotive Holdings (Spain) S.L.U., Vigo, Spain	100.0
Beespeed Technical Engineering Center S.R.L., Timișoara, Romania	100.0
Changchun WABCO Vehicle Control System Co., Ltd., Changchun, China	60.0
Clayton Dewandre Holdings Limited, Hull, United Kingdom	100.0
Compagnie Financière de ZF SAS, Paris La Défense, France	100.0
Dalphi Metal Espana, S.L.U., Vigo, Spain	100.0
Dalphi Metal Portugal, LDA, Vila Nova de Cerveira, Portugal	100.0
Delta Industrie Service SARL, Saint-Hilaire-de-Brethmas, France	100.0
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, Livonia, USA	100.0
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
Guangdong WABCO Vehicle Brakes Co., Ltd., Taishan, China	100.0
Kelsey-Hayes Holdings Inc., Livonia, USA	100.0
Kelsey-Hayes Mexico LLC, Reynosa, Mexico	100.0
Liuzhou ZF Machinery Co., Ltd., Liuzhou, China	51.0
LucasVarity, Solihull, United Kingdom	100.0
LucasVarity Langzhong Brake Company Limited, Langfang, China	70.0
Midwest Lemförder Limited, Darlaston, United Kingdom	100.0
OOO ZF Russia, Saint Petersburg, Russia	100.0
PT. ZFAG Aftermarket Jakarta, Jakarta, Indonesia	100.0
Qingdao FMG Asia Pacific Co., Ltd., Qingdao, China	100.0
Revestimientos Especiales de Mexico, S. de R.L. de C.V., Cienega de Flores, Mexico	100.0

International	Share of capital in %
Roadster Holdings (Canada) ULC, Toronto, Canada	100.0
Safe-Life-Industria de Componentes de Seguranca Automovel LDA, Ponte de Lima, Portugal	100.0
Shanghai Sachs Huizhong Shock Absorber Co., Ltd., Shanghai, China	60.0
TAVARES B.V., Brussels, Belgium	100.0
Transics Belux B.V., Ypern, Belgium	100.0
Transics France SARL, Alès, France	100.0
TRANSICS International B.V., Ypern, Belgium	100.0
Transics Ireland Limited, Dublin, Ireland	100.0
Transics Italia S.r.l., Collegno, Italy	100.0
Transics Nederland B.V., Rotterdam, Netherlands	100.0
Transics Telemática España S.L.U., Madrid, Spain	100.0
TRW Aftermarket Asia Pacific PTE Ltd., Singapore Central, Singapore	100.0
TRW Airbag Systems SRL, Roman, Romania	100.0
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 Automotive (LV) Corp., Livonia, USA	100.0
TRW Automotive China Holdings Ltd., Ebene, Mauritius	100.0
TRW Automotive Components Technical Service Shanghai Co. Ltd., Shanghai, China	100.0
TRW Automotive Espana S.L.U., Pamplona, Spain	100.0
TRW Automotive Holding Mexico LLC, Reynosa, Mexico	100.0
TRW Automotive India Private Limited, Haryana, India	100.0
TRW Automotive Portugal Lda., Santos Domingos de Rana, Portugal	100.0
TRW Automotive Safety Systems SRL, Timișoara, Romania	100.0
TRW China Holdings Ltd., Grand Cayman, Cayman Islands	100.0
TRW Delplas, S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW FAWER Automobile Safety Systems (Changchun) Co., Ltd., Changchun, China	60.0

International	Share of capital in %
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 Occupant Restraints de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Odyssey Mexico LLC, Reynosa, Mexico	100.0
TRW Safety Systems Mexico LLC, Reynosa, Mexico	100.0
TRW Sistemas de Direcciones, S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW Sistemas de Frenado S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW Steering Wheel Systems de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Vehicle Safety Systems de Mexico, S. de R.L. de C.V., Reynosa, Mexico	100.0
Verona Holding Corp., Wilmington, USA	100.0
WABCO Air Compressor Holdings Inc., Auburn Hills, USA	100.0
WABCO Asia Private Ltd., Singapore, Singapore	100.0
WABCO Australia Pty Ltd., Melbourne, Australia	100.0
WABCO Automotive B.V., Rotterdam, Netherlands	100.0
WABCO Automotive Control Systems Inc., Auburn Hills, USA	100.0
WABCO Automotive Mexico, S. de R.L. de C.V., San Luis Potosi, Mexico	100.0
WABCO Automotive Pension Trustees Limited, Batley, United Kingdom	100.0
WABCO Automotive Products Ltd., Grand Cayman, Cayman Islands	100.0
WABCO Comercial México S. de R.L. de C.V., Santa Fe, Mexico	100.0
WABCO Compressor Manufacturing Company, Charleston, USA	70.0
WABCO Europe Holdings B.V., Rotterdam, Netherlands	100.0
WABCO Europe Holdings, LLC, Wilmington, USA	100.0
WABCO Expats Inc., Auburn Hills, USA	100.0
WABCO Financial Services Srl, Brussels, Belgium	100.0
WABCO Foundation Brakes Private Limited, Chennai, India	100.0
WABCO Group Inc., Auburn Hills, USA	100.0

International	Share of capital in %
WABCO Group International Inc., Auburn Hills, USA	100.0
WABCO Holdings B.V., Rotterdam, Netherlands	100.0
WABCO Holdings Inc., Auburn Hills, USA	100.0
WABCO Hong Kong Ltd., Hong Kong, China	100.0
WABCO International, LLC, Auburn Hills, USA	100.0
WABCO IP Holdings, LLC, Auburn Hills, USA	100.0
WABCO Korea Ltd., Suwon, Korea (Republic)	100.0
WABCO Logistics (Qingdao) Co., Ltd., Qingdao, China	100.0
WABCO Services SAS, Jossigny, France	100.0
WABCO USA, LLC, Auburn Hills, USA	100.0
WABCO Vehicle Control Systems, LLC, Auburn Hills, USA	100.0
WABCO Vehicle Control Systems S. de R.L. de C.V., Santa Fe, Mexico	100.0
WBC C.V., Capelle aan den IJssel, Netherlands	100.0
ZF (China) Investment Co., Ltd., Shanghai, China	100.0
ZF (Guangzhou) Technologies Co., Ltd., Guangzhou, China	100.0
ZF (Shanghai) Management Co., Ltd., Shanghai, China	100.0
ZF (Thailand) Limited, Bangkok, Thailand	100.0
ZF Active Safety and Electronics US, LLC, Livonia, USA	100.0
ZF Active Safety France SAS, Bouzonville, France	100.0
ZF Active Safety Slovakia s.r.o., Nove Mesto nad Vahom, Slovakia	100.0
ZF Active Safety US Holding Company, Livonia, USA	100.0
ZF Active Safety US Inc., Livonia, USA	100.0
ZF Aftermarket Iberica S.L.U., Pamplona, Spain	100.0
ZF Aftermarket Malaysia Sdn. Bhd., Senai, Malaysia	100.0
ZF ANSA Lemförder S.L. (Sociedad Unipersonal), Sant Cugat del Vallès, 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

International	Share of capital in %
ZF Asia Pacific Automotive Safety Systems (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Asia Pacific Group Co., Ltd., Shanghai, China	100.0
ZF Asia Pacific Pte. Ltd., Singapore Central, Singapore	100.0
ZF Auto Holdings US, LLC, Livonia, USA	100.0
ZF Autocruise France SAS, Plouzane, France	100.0
ZF Automotive (Thailand) Co. Ltd., Bangkok, Thailand	100.0
ZF Automotive Aftermarket France SAS, Bonneval, France	100.0
ZF Automotive B.V., Amsterdam, Netherlands	100.0
ZF Automotive Brasil Ltda., Limeira, Brazil	100.0
ZF Automotive Canada Limited, Woodstock, Canada	100.0
ZF Automotive Components & Systems (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Automotive Czech s.r.o., Jablonec nad Nisou, Czech Republic	100.0
ZF Automotive Holding Italia S.r.l. Società Unipersonale, Turin, Italy	100.0
ZF Automotive Holdings (UK) Limited, Solihull, United Kingdom	100.0
ZF Automotive Holdings France SAS, Paris La Défense, France	100.0
ZF Automotive Italia S.r.l. Società Unipersonale, Turin, Italy	100.0
ZF Automotive J.V. US, LLC, Livonia, USA	100.0
ZF Automotive Korea Co., Ltd., Ansan, Korea (Republic)	71.0
ZF Automotive Malaysia Sdn Bhd., Bukit Beruntung, Malaysia	100.0
ZF Automotive Passive Safety Systems (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Automotive Safety Systems (Thailand) Co., Ltd., Rayong, Thailand	100.0
ZF Automotive Safety Systems (Weihai) Co., Ltd., Weihai, China	100.0
ZF Automotive Safety Systems (Wuhan) Co., Ltd., Wuhan, China	100.0
ZF Automotive Safety Technology (Rizhao) Co., Ltd., Rizhao, China	100.0
ZF Automotive Systems (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Automotive Systems (Wuhan) Co., Ltd., Wuhan, China	100.0
ZF Automotive Systems (Zhangjiagang) Co., Ltd., Zhangjiagang, China	100.0
ZF Automotive Systems Poland Sp. z o.o., Czestochowa, Poland	100.0

International	Share of capital in %
ZF Automotive Technologies (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Automotive Technologies (Zhangjiagang) Co., Ltd., Zhangjiagang, China	100.0
ZF Automotive UK Limited, Solihull, United Kingdom	100.0
ZF Automotive US Inc., Livonia, USA	100.0
ZF Automotive Vietnam Co., Ltd., Haiphong, Vietnam	100.0
ZF Axle Drives Marysville, LLC, Marysville, USA	100.0
ZF Boge Elastmetall Espana S.A.U., Santa Perpètua de Mogoda, Spain	100.0
ZF Braking Systems Poland Sp. z o.o., Gliwice, Poland	100.0
ZF Brazil US, LLC, Livonia, USA	75.0
ZF Chassis Components, LLC, Newton, USA	100.0
ZF Chassis Modules (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Chassis Modules (Shenyang) Co., Ltd., Shenyang, China	100.0
ZF Chassis Modules (Solihull) Limited, Solihull, United Kingdom	100.0
ZF Chassis Modules (USA) Inc., Wilmington, USA	100.0
ZF Chassis Modules (Windsor) Inc., Windsor, Canada	100.0
ZF Chassis Modules Hungary Kft., Kecskemet, Hungary	100.0
ZF Chassis Modules Toluca S. de R.L. de C.V., Toluca, Mexico	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 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 Commercial Vehicle Control Systems India Limited, Chennai, India	75.0
ZF Commercial Vehicle Distribution South Africa (PTY) Ltd., Germiston, South Africa	100.0
ZF Commercial Vehicle Solutions India Private Limited, Chennai, India	100.0

International	Share of capital in %
ZF Commercial Vehicle Systems (Jinan) Co., Ltd., Jinan, China	100.0
ZF Commercial Vehicle Systems (Qingdao) Co., Ltd., Qingdao, China	100.0
ZF Commercial Vehicle Technology (Jiaxing) Co., Ltd., Jiaxing, China	100.0
ZF Composites North America Ltd., Hamilton, Canada	100.0
ZF CV Control Systems Manufacturing India Private Limited, Chennai, India	75.0
ZF CV Distribution Austria GmbH, Vienna, Austria	100.0
ZF CV Distribution Belgium B.V., Brussels, Belgium	100.0
ZF CV Distribution Czech Republic s.r.o., Brno, Czech Republic	100.0
ZF CV Distribution France SAS, Jossigny, France	100.0
ZF CV Distribution Italy S.r.l. Società Unipersonale, Turin, Italy	100.0
ZF CV Distribution Poland Sp. z.o.o., Wrocław, Poland	100.0
ZF CV Distribution Spain S.L.U., Madrid, Spain	100.0
ZF CV Distribution Sweden AB, Gothenburg, Sweden	100.0
ZF CV Distribution UK Limited, Leeds, United Kingdom	100.0
ZF CV Middle East and Africa FZCO, Dubai, United Arab Emirates	100.0
ZF CV Solutions (Thailand) Limited, Rayong, Thailand	100.0
ZF CV Solutions Japan, Inc., Tokyo, Japan	90.0
ZF CV Systems Europe B.V., Brussels, Belgium	100.0
ZF CV Systems Global GmbH, Bern, Switzerland	100.0
ZF CV Systems North America, LLC, Auburn Hills, USA	100.0
ZF CV Systems Poland Sp. z.o.o., Wrocław, Poland	100.0
ZF CVS Turkey Fren Sistemleri Sanayi Ticaret Limited Şirketi, Istanbul, Turkey	100.0
ZF Danmark ApS, Tåstrup, Denmark	100.0
ZF Digital Solutions India Private Limited, Bangalore, India	100.0
ZF Dongfang Automotive Safety Technology (Xi'an) Co., Ltd., Xi'an, China	90.0
ZF Dongfeng Shock Absorber Shiyan Co., Ltd., Shiyan, China	51.0
ZF Drivetech (Jiaxing) Co., Ltd., Jiaxing, China	100.0
ZF Drivetech (Suzhou) Co., Ltd., Suzhou, China	100.0

International	Share of capital in %
ZF Electric Mobility Systems (Shenyang) Co., Ltd., Shenyang, China	100.0
ZF Electric Mobility Technologies (Shenyang) Co., Ltd., Shenyang, China	100.0
ZF Electrified Powertrain Technologies (Hangzhou) Co., Ltd., Hangzhou, China	100.0
ZF Electronic Systems Juárez, S.A. de C.V., Juárez, Mexico	100.0
ZF Electronic Systems Monterrey S. de R.L. de C.V., Monterrey, 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., Klášterec, 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 Automotive Chassis Systems (Changchun) Co., Ltd., Changchun, China	60.0
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
ZF Holdings Australia Pty. Ltd., Dingley Village, Australia	100.0
ZF Holdings B.V., Amsterdam, Netherlands	100.0
ZF Hungária Ipari és Kereskedelmi Korlátolt Felelösségú 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 Holdings Inc., Livonia, USA	100.0
ZF International UK Limited, Solihull, United Kingdom	100.0
ZF Italia S.r.l. Società Unipersonale, Assago, Italy	100.0
ZF Japan Co., Ltd., Yokohama, Japan	100.0
ZF Lemforder (Thailand) Co., Ltd., Rayong, Thailand	100.0

International	Share of capital in %
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 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, United Kingdom	100.0
ZF Light Vehicle Systems India Private Limited, Pune, India	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
ZF Mobility France S.A.S., Paris, France	100.0
ZF North America, Inc., Northville, USA	100.0
ZF North America Capital, Inc., Northville, USA	100.0
ZF Occupant Safety Systems de la Laguna, S. de R.L. de C.V., Durango, Mexico	100.0
ZF Off-Highway Solutions Minnesota Inc., North Mankato, USA	100.0
ZF OPENMATICS s.r.o., Plzeň, Czech Republic	100.0
ZF Österreich Gesellschaft m.b.H., Vienna, Austria	100.0
ZF Overseas Inc., Livonia, USA	100.0
ZF Padova S.r.l. Società Unipersonale, Selvazzano Dentro, Italy	100.0
ZF Passive Safety Czech s.r.o., Stara Boleslav, Czech Republic	100.0
ZF Passive Safety Korea Co., Ltd., Ansan, Korea (Republic)	100.0
ZF Passive Safety South Africa Inc., Livonia, USA	100.0
ZF Passive Safety Systems (Thailand) Co., Ltd., Rayong, Thailand	100.0

International	Share of capital in %
ZF Passive Safety Systems Canada Ltd., Midland, Canada	100.0
ZF Passive Safety Systems France SAS, Paris La Défense, France	100.0
ZF Passive Safety Systems Global B.V., Amsterdam, Netherlands	100.0
ZF Passive Safety Systems Japan KK, Yokohama, Japan	100.0
ZF Passive Safety Systems Poland Sp z.o.o., Czestochowa, Poland	100.0
ZF Passive Safety Systems US Inc., Washington, USA	100.0
ZF Passive Safety US Inc., Livonia, USA	100.0
ZF Pension Sponsor UK Limited, Solihull, United Kingdom	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 Rane Automotive India Private Limited, Chennai, India	51.0
ZF Rane Occupant Safety Systems Private Limited, Kanchipuram, India	51.0
ZF Restraints US Inc., Livonia, USA	100.0
ZF Sachs España S.A.U., Bilbao, Spain	100.0
ZF Sachs Italia S.r.l. Società Unipersonale, 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. Pančevo, Pančevo, 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., Sydney, Australia	100.0
ZF Services Belgium NV, Brussels, Belgium	100.0
ZF Services España, S.L.U., Barberá del Vallés, Spain	100.0
ZF Services France S.A.S., Puteaux, France	100.0

International	Share of capital in %
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 [2)]
ZF Services Nederland B.V., Delfgauw, Netherlands	100.0
ZF Services Schweiz AG, Volketswil, Switzerland	100.0
ZF Services South Africa (Proprietary) Ltd., Johannesburg, South Africa	100.0
ZF Services Türk San. ve Tic. A.Ş., Istanbul, Turkey	100.0
ZF Services UK Limited, Nottingham, United Kingdom	100.0
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., Staňkov, Czech Republic	100.0
ZF Steering Active Safety US Inc., Livonia, USA	100.0
ZF Steering Systems Poland Sp. z o.o., Czechowice-Dziedzice, Poland	100.0
ZF Steyr Präzisionstechnik GmbH, Steyr, Austria	100.0
ZF Suspension Technology Guadalajara, S.A. de C.V., Guadalajara, Mexico	100.0
ZF Taiwan Ltd., Taipei, Taiwan	100.0
ZF Test Track Sweden AB, Arvidsjaur, Sweden	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 (Tianjin) Co., Ltd., Tianjin, China	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., Singapore Central, Singapore	100.0
ZF YTO (Luoyang) Axle Co., Ltd., Luoyang, China	51.0

2) 100% voting rights

Consolidated companies accounted for using the equity method

	Share of capital in %
Germany	
Ahead Automotive GmbH, Berlin, Germany	25.0
Alltrucks GmbH & Co. KG, Munich, Germany	33.3
Alltrucks Verwaltungs GmbH, Munich, Germany	33.3
doubleSlash Net-Business GmbH, Friedrichshafen, Germany	51.0
Ibeo Automotive Systems GmbH, Hamburg, Germany	43.8
WABCOWÜRTH Workshop Services GmbH, Hanover, Germany	50.0
International	
2getthere Asia Pte. Ltd., Singapore Central, Singapore	49.0
2Getthere B.V. Mechanical Equipment, LLC, Abu Dhabi, United Arab Emirates	49.0
embotech AG, Zurich, Switzerland	25.9
Evercast, S.A. de C.V., Saltillo, Mexico	30.0
FOTON ZF LCV Automated Transmission (Jiaxing) Co. Ltd., Jiaxing, China	40.0
Ing. Tsetinis Beratungs GmbH, Kuchl, Austria	40.0
S.M. Sistemas Modulares Ltda., Taubate, Brazil	50.0
Shanghai G7 WABCO IOT Technology Co., Ltd., Shanghai, China	50.0
SOMIC ZF Components Private Limited, New Delhi, India	50.0
TRW Sun Steering Wheels Private Limited, New Delhi, India	49.0
Wolong ZF Automotive Electric Motors Co., Ltd., Shaoxing, China	26.0
ZF Fonderie Lorraine S.A.S., Grosbliederstroff, France	49.0
ZF Hero Chassis Systems Private Limited, Gurugram, India	50.0
ZF PWK Mécacentre S.A.S., Saint-Étienne, France	50.0

Friedrichshafen, March 4, 2024

ZF Friedrichshafen AG
The Board of Management

Dr. Holger Klein (CEO) | Dr. Lea Corzilius | Dr. Martin Fischer

Michael Frick | Dr. Peter Laier | Stephan von Schuckmann

Further Information

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Independent Auditor's Report

To ZF Friedrichshafen AG

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, 2023, consolidated statement of financial position as at December 31, 2023, the consolidated statement of cash flows and the consolidated statement of changes in equity for the fiscal year from January 1 to December 31, 2023, and notes to the consolidated 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, 2023.

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 (1) 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, 2023 and of its financial performance for the fiscal year from January 1 to December 31, 2023, 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. The executive directors are responsible for the other information. The other information comprises the prescribed parts of the annual report, which were provided to us prior to us issuing this auditor's report, specifically the following:

- Key Figures,
- Company Profile,
- Focus Forward,
- Management (a.o. board of management letter and report of the supervisory board),
- Sustainability,

but not the consolidated financial statements, nor the disclosures in the group management report included in our audit and not our auditor's report thereon.

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 (i.e., fraudulent financial reporting and misappropriation of assets) 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 the risk of not detecting a material misstatement 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 4, 2024

EY GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft

Renner	Herbst
Wirtschaftsprüferin	Wirtschaftsprüfer
(German Public Auditor)	(German Public Auditor)

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In cases of doubt, the German version of this Report is binding.

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