



NEXT
GENERATION
MOBILITY

SUSTAINABILITY REPORT

ABOUT THE REPORT

This is the eighth edition of the ZF Sustainability Report published by ZF Friedrichshafen AG; it is based on the fiscal year 2019.

The report is intended to offer transparency, with a particular focus on sustainability activities and objectives. It addresses customers, employees, suppliers, politicians, authorities and all other target groups that are interested in our company and wish to know about our values, principles and actions. At the same time, the ZF Sustainability Report represents our progress report to the United Nations Global Compact, which we joined in May 2012.

The GRI Standards request companies to perform a materiality analysis which sets priorities in reporting and focuses on central elements of the performance indicators in the fields of economy, environment and society. Our latest materiality analysis was conducted in summer 2018 and is still valid. The process is described on page 19. The strategic objectives of our sustainability program correspond to the identified material topics of ZF.



This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.



CONTENTS

4 SUSTAINABILITY PROGRAM

9 GENERAL DISCLOSURES

10 Organizational Profile

13 Strategy

16 Governance

17 Stakeholder Engagement

19 Reporting Practice

21 MATERIAL TOPICS

22 ECONOMIC

22 Economic Performance

24 Indirect Economic Impacts

25 Procurement Practices

26 Anti-corruption

29 ENVIRONMENT

29 Materials

30 Energy

33 Water

34 Emissions

36 Effluents and Waste

38 Environmental Compliance

38 Supplier Environmental Assessment

39 SOCIAL

39 Employment

40 Labor/Management Relations

41 Occupational Health and Safety

44 Training and Education

46 Diversity and Equal Opportunity

49 Non-discrimination

49 Supplier Social Assessment

50 Customer Health and Safety

52 IMPRINT

These icons can be used within the Sustainability Report by clicking with the following functions:

 Table of contents

 Print

 Internal references

 External references

SUSTAINABILITY PROGRAM

ZF Friedrichshafen AG has been reporting about its sustainability activities since 2012, the same year we have made our commitment to the ten principles of the United Nations Global Compact. By stepping up our efforts over the years, we have continuously worked towards our contribution to sustainable development – encoded in the 17 United Nations Sustainable Development Goals (SDGs).

With regard to our business activities, we have identified seven SDGs where we can contribute the most – either through minimizing our negative impacts or by developing solutions for positive change. In 2020, for example, we announced our climate strategy with which we will halve our production-related emissions by 2030 compared to 2018 and produce climate-neutral no later than 2040.

But we are nowhere near the end of our efforts. Our entire industry still has a long way to go to meet the many environmental and social challenges on the road to sustainable development. Due to the complexity of these challenges, they cannot be solved alone, but only in cooperation and partnership. We will therefore further analyze our impact on SDGs, strengthen our own sustainability efforts and, together with our partners, intensify the development of solutions for a viable future.



PRODUCTS

- Sustainable product portfolio:** Gradually increasing the share of revenue from sustainable products and services.
- Product safety:** Zero accidents and zero fatalities through smart product solutions and highest quality assurance.
- Material efficiency of products:** Reducing the use of raw materials and realizing a circular economy.

- Safety at work and health protection:** We strive to improve our safety performance by conducting professional incident management, Safety Leadership and Behavior Based Safety actions as well as improving our functional safety areas.
- Training and education:** We aim to continuously contribute to improve the organization, in order to achieve a global learning culture of innovative learning and development.

EMPLOYEES

PRODUCTION

- Emissions of plant operations:** Reducing CO₂ emissions caused by plant operations.
- Water:** Saving water resources and supporting clean water quality.
- Waste:** Supporting recycling management and reducing hazardousness of waste.

- Upstream and downstream emissions:** Slowing down climate change and working towards healthier environments.
- Standards in the supply chain:** We aim for an implemented supply chain sustainability management.

SUPPLY CHAIN



The ZF Sustainability Program follows the updated materiality analysis of 2018. Strategic objectives correspond to the identified material topics. We will regularly report and comment on how we are proceeding to achieve these targets, which projects and measures have already been implemented and what progress has been made.

Strategic Objective	Targets	Actions/Status
Products		
Product safety: Targeting zero accidents and zero fatalities through smart product solutions and quality standards.	By 2021, ZF will develop an integrated concept for “Functional Safety” and “Safety of the Intended Functionality” (SOTIF) to address emerging active safety technologies and automated driving	A SOTIF process was integrated into the ZF safety process framework. Following ongoing ISO revisions, this new process will be updated, independently reviewed by an external organization like TÜV as necessary and deployed.
	By 2022, ZF will align safety concepts across all segments and domains.	ZF has released standardized safety training integrating experience from all divisions and is continuing to unify safety concepts from varied domains.
	ZF is tracking the development of Euro NCAP. By 2022, ZF will enable customers to meet the highest NCAP ratings in the 2025 roadmap.	New target
	Regarding Product Safety, ZF continues its strategy of developing new safety systems and consistently improving product quality aimed at safety.	ZF deployed product cybersecurity and integrated it with functional safety. ZF demonstrated a system to improve vehicle crash performance by dynamically shaping crumple zones before a crash. The system detects pre-crash conditions using external sensors. Significant reduction in occupant injury is predicted. ZF actively contributes to UNECE safety regulations for steering and braking systems.
Upstream and downstream emissions: Slowing down climate change and working towards healthier environments	Vision Zero: Zero Emissions ZF will continue to improve product efficiency and as a result reduce CO ₂ emissions.	Projects:  CeTrax (city buses; commercial vehicles);  AxTrax (city buses);  EV plus (plug-in hybrid);  ZF Marine “hybrid ready” transmission.
	CO ₂ reduction in tons in the course of the development of new products, using carbon footprinting and life cycle assessments.	In the context of the ZF Climate Neutrality Strategy a comprehensive PCF strategy was developed, including specific responsibilities (CO ₂ champions in divisional R&D).
	By 2020, the existing monitoring system will be extended to upstream and downstream emissions.	First screening of Scope 3 emissions completed; material categories were identified for further improvement.
Material efficiency of products: Reducing the use of raw materials and realizing a circular economy	By the end of 2020, a strategy and targets will be developed to increase overall material efficiency of products.	As part of the Product Carbon Footprint (PCF) strategy under development, aspects of material efficiency were reviewed for improvement.
Sustainable product portfolio: Gradually increasing the share of revenue from sustainable products and services	By 2020, a concept will be developed to align environmental compatibility of our products with the new ZF Product Strategy Process.	Development of the concept was on hold to be aligned with the ZF Climate Neutrality Strategy. Development and rollout are planned for 2020.

Strategic Objective	Targets	Actions/Status
Supply chain		
Standards in the supply chain: We aim for an implemented supply chain sustainability management by 2025.	By 2020, a new initiative will be introduced worldwide to reduce the highest CO ₂ -emitting supplies and suppliers within the product life cycle.	The concept to manage supply chain emissions with a focus on the highest supplies and suppliers is in preparation under consideration of carbon footprint and customer requirements; pilots for testing and improvements have been initiated.
	Increase coverage on sustainability-related certificates (e.g. ISO 14001) within the ZF supplier base.	ISO 14001 is required for new sourcing decisions for environmentally critical parts.
	Increase CSR self-assessment for new suppliers.	100% implementation of CSR Assessments for new suppliers. No new supplier approval without a CSR Assessment.
	Implementation of a Sustainability Supplier Assessment for the existing supplier base and for new suppliers.	Start of the assessment in Q3 2019 with a pilot phase covering about 800 strategic suppliers.
	Introduction of a Social Media Monitoring.	Social Media Monitoring was initiated in cooperation with a third party.
Employees		
Globally attractive employer: We aim to be among the most attractive engineer employers worldwide and well positioned in growing markets.	By 2025, we aim to be among the Top 15 engineering employers in our strategic markets.	Fostering and increasing university cooperations; Trendence/Universum rankings in combination with International ZF Benchmark Study in strategic markets. Overall target achievement by 2019 was 50%, with positive ranking especially for professionals and diversity (<Top 15).
	By 2020, the turnover rate for the Group will be lower than 12% (compared to 13.3% in 2017).	With a turnover rate of 10.1% the target has been achieved.
	By 2025, functional excellence will be established through standardized operational processes.	Major recruiting and learning processes reviewed and standardized. Global rollout supported by a new digital HR platform in 2019. Further processes such as onboarding will follow.
Training and education: We aim to continuously contribute to improving the organization, in order to achieve a global learning culture of innovative learning and development.	By 2025, a global and innovative leadership and learning culture will be established across divisions, functions and regions. Therefore, a Digital Learning Platform, an active feedback system, harmonized leadership development training, agile working environments and an innovative performance management system will be implemented.	New open content networks and new digital learning formats have been made available. Our learning portfolio is continuously enriched and blended by virtual formats. A learning culture analysis was conducted and has now been finalized. Target definitions and actions will be subsequently implemented.

Strategic Objective	Targets	Actions/Status
Safety at work and health protection: We strive to improve our safety performance by conducting professional incident management, Safety Leadership and Behavior Based Safety actions as well as improving our functional safety areas	Reduction of the Group accident rate (LTAR: accidents with more than one day absence from work per million working hours) by 10% per year. (Goal for 2020: 3.5%).	Programs and activities such as near-miss reporting, safety alerts, root cause analysis and the Safety Leadership program led to an improvement of 15% (4.5 > 3.8%) in 2019.
	Safety Leadership & Behavior Based Safety (BBS): Conduct 200 Safety Leadership workshops worldwide per year. Add 15 sites in 2019 and 20 sites in 2020 to the ZF global Behavior Based Safety program.	307 workshops were conducted by internal Safety Leadership Coaches. Globally 23 sites in total were added to the BBS program. The BBS pilot in Germany was successful; additional sites in Germany and the rest of the world will be added in 2020 to reach the 2020 target of an additional 20 sites implementing BBS.
	Internal Transportation: Improve the safety of internal transport by reducing the potential risk to pedestrians and the number of incidents compared with the previous year by 20%.	~90% of the locations reached the target.
Occupational health management: We aim to ensure the protection of the health, and to promote the well being, of our employees worldwide	Global implementation of the Health Management System is implemented worldwide by end of 2021 with fulfillment of 90%.	Implementation at site level started and is supported by regional EHS teams.
	Reporting of occupational diseases worldwide based on national definitions.	Ongoing process, first report by end of 2021.
	Conducting the "Fit im Betrieb" campaign at all German locations.	The campaign started in 2019 and will be concluded during 2020.
Compliance within the Group: We aim to continually improve our Compliance Management System to uphold the good reputation we have earned and to ensure the Group's long-term business success	By 2020, all compliance-relevant policies will be harmonized within the entire Group.	Harmonization of all compliance-relevant policies within the entire Group is progressing, and drafts are currently being fine-tuned. Entry into force and implementation are expected to take place in early 2020.
	Addition of "Human Rights" as a category of the ZF Trustline, our electronic compliance notification system.	New target, completion early 2020.

Strategic Objective	Targets	Actions/Status
Production		
As climate protection has become one of the most urgent issues of our time, ZF makes its contribution by bundling and strengthening current measures in a climate strategy: Our goal is to become climate-neutral – from Scope 1 to Scope 3 – not later than 2040 and already halve our emissions from production by 2030 compared to 2018. In doing so, the company is supporting the goals of the Paris Climate Agreement, which aims to limit global warming to 1.5 degree. See GRI 305 for detailed information.		
Emissions of plant operations: Reducing CO ₂ emissions caused by plant operations	By end of 2020, CO ₂ emissions will be reduced by 10% relative to sales based on the ZF Group performance of 2017 (including direct emissions caused by ZF operations).	The slight increase of 0.1% results from decreased sales caused by economic situation - the increase of this specific KPI does not reflect achievements regarding absolute reduction. Considering our new ZF Climate Neutrality Strategy to reduce absolute CO ₂ emissions we achieved an absolute reduction by -2.6% or 42,000 tons compared to previous year.
	By 2020, a well-established and comprehensive CO ₂ reduction program will be in place covering energy efficiency and renewable energy.	Energy program completed and rolled out. Systematical planning for renewable projects in preparation (e.g. new solar plants).
	By 2020, the emissions profile of purchased energies will be part of the evaluation during the procurement process.	The development of a concept on renewable energy strategy was anchored in the ZF Climate Neutrality Strategy.
	By end of 2020, energy consumption will be reduced by a further 10% relative to sales based on the ZF Group performance of 2017.	Programs to support locations in energy efficiency projects are in place. The reduction of -0.6% result from decreased sales caused by economic situation – the decrease of this specific KPI does not reflect achievements regarding absolute reduction. Considering our new ZF Climate Neutrality Strategy to reduce absolute CO ₂ emissions we achieved an absolute reduction by 118 GWh compared to previous year. Thereof 78 GWh were reduced by energy efficiency measures in 2019.
	By 2020, energy productivity will be included in regular operations reviews.	Energy efficiency as part of Operational Review process. In 2019, the concept was adapted to the new ZF Climate Neutrality Strategy. In this course the Science-based target setting process was also evaluated and considered.
Water: Saving water resources and supporting clean water quality	Water consumption relative to sales will be lower than the previous year.	Target on reduction of water consumption relative to sales was achieved.
	By 2020, in water-scarce areas project related targets will be defined and monitored.	The ZF Group is not affected by Water Scarced Areas, which is why the focus is being expanded to include Water Stressed Areas.
Waste: Supporting recycling management and reducing of waste	The amount of waste for disposal relative to sales will be lower than the previous year.	Target on reduction of waste for disposal relative to sales was achieved.
	A special focus will be placed on minimizing landfilling of waste.	Multiple locations reduced landfilling due to waste projects. This contributed to the increase of waste for recycling.

GRI CONTENT INDEX

GRI 101: FOUNDATION 2016

GRI 102: GENERAL DISCLOSURES 2016



The following GRI disclosures are based on the Standards (2016) of the Global Reporting Initiative (GRI). For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report.

ORGANIZATIONAL PROFILE

GRI 102-1

Name of the organization

ZF Friedrichshafen AG

GRI 102-2

Activities, brands, products, and services

The ZF Group is a leading worldwide supplier of automotive components and systems. With our vision of zero accidents and zero emissions, we shape our future in four technology areas: Vehicle Motion Control, Integrated Safety, Electric Mobility and Automated Driving across three segments: passenger cars, commercial vehicles and industrial applications. ZF is currently the only supplier to deliver autonomous driving systems, electric drivelines and predictive maintenance technologies to both automotive and industry applications.

As our technology can be found in many applications, mobility solutions range from motorcycles and construction equipment to trucks and yachts. In the world of electromobility, ZF stands not only for efficient power consumption in electric vehicles, but also for intelligent power generation through renewable energy sources such as wind parks. At the same time, the Group transfers its expertise to all other areas of application, including connectivity and cloud-based solutions, and is working on digital solutions for mobility providers and new automotive customers.

We also digitalize our products to enable Intelligent Mechanical Systems, which are being used for vehicles to see, think and act. Autonomous driving becomes a reality through networking environmental sensors, such as camera and radar (see), electronic control units (think) and intelligent mechatronics in driveline, chassis and steering (act).

Our Group has an international service network of around 120 of its own service locations and 650 service partners. Through these partners, ZF customers worldwide have access to a comprehensive range of services. This includes individual service offers for fleets and exchange transmissions for minimum downtimes as well as intelligent connectivity solutions, plus maintenance and repair services, and conversions and retrofits for more efficiency, comfort and safety.

Through ZF Aftermarket we use a workshop concept that not only makes technical innovations available in the aftermarket in good time, but also provides the relevant technical know-how for professional diagnostic findings, maintenance and repair of our components. The most important ZF Aftermarket product brands include:

- **SACHS:** clutches, dual-mass flywheels, torque converters and shock absorbers for passenger cars, motorcycles, commercial vehicles and agricultural machinery
- **LEMFÖRDER:** steering and suspension parts, rubber-to-metal components for passenger cars and commercial vehicles

- **TRW:** braking systems, steering and suspension parts and shock absorbers for passenger cars and commercial vehicles. Brakes, clutches, handlebars, pretensioners, radar, switches, accessories and footrest systems for motorcycles
- **BOGE:** shock absorbers for passenger cars and commercial vehicles

GRI 102-3

Location of headquarters

Friedrichshafen, Germany

GRI 102-4

Location of operations

As of 2019, ZF has 18 main development locations and operates at 241 locations in 41 countries. The Group has an international service network of around 130 of its own service locations and 650 service partners.

GRI 102-5

Ownership and legal form

ZF Friedrichshafen AG is a non-listed corporation in accordance with German law. The shareholders of ZF are the Zeppelin Foundation, which is administered by the City of Friedrichshafen and holds 93.8 percent of the company's shares, and the Dr. Jürgen and Irmgard Ulderup Foundation, Lemförde (Germany), which holds 6.2 percent of the company's shares. Employee stocks are not issued.

GRI 102-6

Markets served

The main sales markets of the Group are Europe (46%), North America (29%) and Asia-Pacific (21%).

Cars and light commercial vehicles make up the major share (80%) of the sales distribution by sectors, whereas commercial vehicles over six tons (12%) and construction and agricultural machinery, marine craft, aircraft, special and rail vehicles, and wind power (8%) account for the minor shares.

GRI 102-7

Scale of the organization

At the end of 2019, ZF had a workforce of 147,797 employees at approximately 241 locations and 18 main development locations. ZF has a portfolio of several thousand products and generated sales of €35.5 billion in 2019. For detailed liabilities and equity, please see the Consolidated statement of financial position, p. 27 in the  2019 Annual Report.

GRI 102-8

Information on employees and other workers

On December 31, 2019, ZF employees worldwide numbered 147,797. This represents an decrease of 0.79 percent over the previous year.

In sum the total number of employees remained stable. The support of ZF's Next Generation Mobility has led to an increase in the Technology Center in India. In view of the increasing importance of India, since 2018 the country has not been listed as part of Asia-Pacific but as a separate region. The headcount in Germany is slightly unchanged. There are increases in Europe and India, and decreases of headcount in Asia-Pacific, North America, South America and Africa.

Almost two-thirds of the Group's employees work in Europe, most of them in Germany. 96 percent of all employees have regular contracts with the ZF Group. The percentage of women employed by the ZF Group is 27, with the North America region showing the highest proportion with 40 percent. In 2019, ZF had a total of 12,429 External Agency Workers.

T.03 HR

	2019	2018	2017
Number of people¹			
ZF Group (total)	147,797	148,969	146,148
Europe	88,304	86,388	85,294
of which Germany	50,864	50,794	50,618
North America	34,785	36,762	35,885
South America	5,322	5,509	5,470
Asia-Pacific ²	16,132	17,396	18,367
India ²	2,627	1,980	-
Africa	627	934	1,133
Employee Category³			
Direct	74,442	78,281	77,797
Indirect	73,355	70,688	68,352
Work contracts			
Regular	142,068	143,198	141,954
Limited	5,729	5,771	4,194
Full-time	144,246	146,383	143,513
Part-time	3,551	2,586	2,635
Apprentices and temporary workers			
Apprentices	2,540	2,756	2,856 ⁴
External Agency Workers	12,429	12,421	15,195

1 Number of employees by contracts in accordance with IFRS regulations at the end of the year.

2 As of 2018, India is not listed as part of Asia-Pacific but as a separate region.

3 Direct and indirect participation in value creation processes.

GRI 102-9**Supply Chain**

Solely for the procurement of production materials, ZF maintains a global network consisting of approximately 6,600 suppliers, ranging from small family businesses through to large groups. Among these, there are about 1,200 strategic suppliers. Furthermore, ZF has about 46,380 non-production material suppliers worldwide.

The purchasing volume for production materials totaled €20.6 billion in 2019 and includes directed buy volumes. The value of non-production materials amounted to some €6.0 billion.

Since ZF manufactures products at about 160 locations worldwide, a major part of value creation in production lies in the supply of components. The costs for materials purchased from suppliers account for some 73 percent of sales. ZF suppliers are normally contractors who procure the raw materials or basic components for the products ordered, manufacture the products and, in some cases, also design products.

GRI 102-10**Significant changes to the organization and its supply chain**

There were no significant changes relevant to this report.

GRI 102-11**Precautionary Principle or approach**

All locations follow the principle "prevention before reaction" and the precautionary principle. Therefore, a core element of ZF's Environment, Health and Safety (EHS) management system is the evaluation and minimization of potential risks. All locations conduct environmental aspect assessments and risk assessments for their respective facilities and processes in a local context and on a regular basis, for example prior to the introduction of procedures and substances. Environ-

mental due diligence is also conducted as part of acquisition processes to minimize liability and financial risks. Additionally, internal and external audits are conducted.

In preparation for emergencies, every location has an emergency organization in place. Emergency response teams are provided with adequate equipment and procedures. Mock emergency drills are carried out on a regular basis. Technical installations (e.g. flood or fire protection, collection trays, redundant installations) are company standard, as are behavior-based measures for increasing awareness for prevention of environmental damage.

GRI 102-12**External initiatives**

The ZF Group observes the core labor standards of the International Labour Organization (ILO), the content of the German Corporate Governance Code and the OECD Guidelines for Multinational Enterprises. ZF also respects and supports the Universal Declaration of Human Rights and the UN Guiding Principles on Business and Human Rights.

Therefore, ZF signed the United Nations Global Compact on May 1, 2012, thus committing the Group to observe and promote its ten principles. Since joining, ZF has also become a member of the German Global Compact Network and participates in exchanges between the member companies.

GRI 102-13**Memberships of associations**

The ZF Group and its companies are committed to a wide range of associations and interest groups. The following list provides a representative selection:

- Association of German Engineers e.V. (VDI) – Lake Constance regional association (as a supporting member)

- Automotive Industry Action Group (AIAG)
- Carbon Composites e.V.
- Chamber of Industry and Commerce Hochrhein Bodensee
- Chamber of Industry and Commerce Oberschwaben, Weingarten
- Compliance Network e.V.
- Employers' Association Südwestmetall
- European Association of Automotive Suppliers (CLEPA)
- Foundation of German Business – Remembrance, Responsibility, and Future (as a donor)
- German Aerospace Industries Association (BDLI) (ZF Luftfahrttechnik GmbH, Kassel-Calden is a member)
- German Association of Materials Management, Purchasing, and Logistics e.V. (BME)
- German Digital Association e.V. (Bitkom)
- German Global Compact Network
- German Association of the Automotive Industry e.V. (VDA)
- German Engineering Federation e.V. (VDMA)
- German Federation for Motor Trades and Repairs (ZDK)
- German Diversity Charter (Charta der Vielfalt e.V.)
- Wissenswerkstatt Friedrichshafen e.V. (as a supporting organization)

STRATEGY

GRI 102-14

Statement from senior decision-maker

Dear readers,

2019 was a year many will remember because of challenging weather events across the globe. Some of them had an unprecedented scale like the bushfires in Australia. Combined, these events are proof that we all have to work even harder to achieve our goals for sustainable development. For two reasons in particular, I am confident that we can overcome the enormous challenges that we are facing today.

Firstly, ZF is well prepared to offer technological solutions that benefit people – and the planet. We are investing more than ever in research and development following our ZF Strategy with good results. Recent product innovations like our EVplus plug-in hybrid and our e-drive technology give proof to this. It is now in volume production with an OEM for passenger cars and a European market leader in city buses. We have made solid progress over the last 18 months with milestone business awards which show that our strategy is on the right track. Where solutions are not yet at hand, we will continue pushing forward.

Secondly, I have spoken with many smart and motivated people inside and outside of ZF who are working together to achieve our common sustainability goals and one common theme is clear: ZF has a history of managing change successfully. Now, as part of our "Next Generation Mobility" strategy, we are pursuing an agile and integrated approach to shape the fundamentally changing mobility requirements of tomorrow.

Our overarching aim is to balance the mobility needs of our society with the prerequisites of a healthy ecosystem. We must ensure that all of our activities respect the latter's limits and at the same time develop sustainable and future-fit solutions. As we have a clear vision to be part of the solution to the current environmental and societal challenges, ZF is prepared to step up its efforts.

For this reason, we have worked intensively on our ZF Climate Neutrality Strategy over the past year. Our long-term goal is to become climate neutral, from Scope 1 to Scope 3, no later than 2040 and already halve our emissions from production by 2030 compared to 2018. At the same time, we will work on reducing emissions across our supply chain as well as minimizing the environmental impact from our products. In doing so, ZF can actively support the goals of the Paris Climate Agreement which aims to limit global warming to 1.5 degrees.

To emphasize this commitment, ZF decided to join the World Economic Forum's Alliance of CEO Climate Leaders. The aim of this initiative is to demonstrate the engagement of the business community for climate action and at the same time to advocate a uniform regulatory framework. ZF will fulfill its own promise by working relentlessly and with clear focus.

Furthermore, since 2012 ZF has been a signatory of the United Nations Global Compact. Under this initiative, over 13,000 organizations are working towards a more sustainable future – sharing strategies and joining actions. We are keeping our commitment to promoting its ten principles in the areas of human rights, labor standards, environmental

protection and fighting corruption. ZF is actively supporting these principles not only with regard to our own operations but along the entire value chain.

In addition to our commitment to climate protection, it is a central concern of ZF to ensure that human rights are respected worldwide and within all of our business activities. In the reporting period, we have reviewed our Business Partner Principles, published a  Statement of Principles on Human Rights and have initiated a series of measures to further strengthen our due diligence processes in the supply chain.

With this report we wish to inform you of our progress within all of our sustainability related action fields. We welcome your feedback and engagement.

Yours sincerely,

Wolf-Henning Scheider
Chief Executive Officer

GRI 102-15**Key impacts, risks, and opportunities**

ZF's opportunities and risks culture is focused on sustaining the Group's continued existence and increasing its value. Our risk management system aims to identify and take opportunities as early as possible while preempting risks that could adversely affect the value of our activities by identifying them early, assessing them appropriately and initiating suitable management measures.

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

The framework conditions, as well as the responsibilities and processes of the risk management system, are laid down in a Group-wide directive approved by the Board of Management. It is accessible to all employees and is subject to regular review by Group Risk Management, which also ensures compliance with the directive. Major opportunities are also listed

and analyzed. They are then actioned if substantiated. More detailed information about our general approach regarding risk management can be found in the  2019 Annual Report, p. 30.

Over the past two years, the Group has gradually developed its ZF Enterprise Risk Management. This includes the definition and regulation of clear roles and responsibilities as well as a Group-wide standardized risk management process. Another major innovation of the revised Enterprise Risk Management (ERM) is an integrated Governance, Risk & Compliance (GRC) approach, which is characterized by improved interfaces between the internal control system, compliance, corporate audit, and corporate risk management. Structured documentation and monitoring of risks and measures to deal with them, the consideration of strategic and operational risks and the future aggregation of the overall risk landscape all contribute to improved transparency of the risk situation.

As part of the environmental management system in accordance with ISO 14001, respective risks and opportunities are assessed at site and Group level and reported as part of the management review. This procedure will be adapted to the new enterprise risk management standard in 2020.

The context for our sustainability considerations is to a large extent shaped by global megatrends. Climate change, demographic change and increasing urbanization are leading to changes in consumer behavior – with a fundamentally grow-

ing demand for finite resources, which is leading to increased conflict. Several trends require a technology shift toward efficiency and resource conservation, which ZF is pushing for by continually reducing CO₂ and noise emissions, for example. Megatrends also play a central role when setting targets for innovation. ZF identifies a need for action, principally in the areas of efficiency, advanced driver assistance systems, autonomous driving and integrated safety.

Innovative solutions in these areas are directed towards our "Vision Zero": Zero accidents. Zero emissions. ZF therefore offers solutions for almost all vehicle segments which are showcased for example by the Vision Zero Vehicle, the ZF Tractor, the ZF Innovation Truck or the ZF Advanced Urban Vehicle. In order to take full advantage of these opportunities, ZF has invested in companies, creating a close network of strategic cooperation. We call this the ZF Vision Zero Eco System.

With strong partners and wide-ranging expertise, ZF can make this vision real one day: Driver assistance systems and the continuous development of automated and autonomous driving can drastically reduce the number of accidents. At the same time highly efficient hybrid drives and locally completely emission-free electric drives are contributing to emission reduction.

GRI 102-16**Values, principles, standards, and norms of behavior**

A company can only achieve business success in an intact economic environment. But a company's focus on success must also match the development of the surrounding and dependent companies so that sustainable corporate governance is possible for all. This principle plays a major role in the relationships with our business partners, but also in investments in production materials and capacities.

This is why the Group has firmly anchored sustainable corporate management factors in its Guiding Principles. They are seen not as individual actions, but as a central aspect of entrepreneurial activity in the day-to-day decision-making processes.

ZF Charter

As an integral part of the ZF Management System, the ZF Charter defines aspects regarded as most important across all our divisions, functions and regions. The Guiding Principles of the ZF Charter are: Innovation Approach, Customer Focus, Result Orientation and Commitment to People. The Guiding Principle "Commitment to People" helps us create a corporate culture that supports trusting collaboration and motivates top performance.

The ZF Management System with its focus on Speed, Simplicity and Target Focus and its four principles are at the core of all our activities and actions and represent everything that makes ZF special. By concentrating on them, we become stronger, and grow faster and more sustainably.

Code of Conduct

Correct, responsible and sustainable business management and accepting corporate social responsibility are fundamental components of our corporate policy. We reject all forms of human trafficking and support the abolition of slavery, forced labor and child labor. Our  Code of Conduct explicitly states that we do not tolerate any discrimination, especially on the grounds of race, gender, religion, age, nationality, social or ethnic origin, pregnancy, disability, belief, sexual orientation, or political and trade union engagement. These principles apply to all new and existing employees and the collegial relationships between employees, our dealings with business partners and, lastly, how employees are promoted within the organization. See  GRI 205 for more information and our Code of Conduct.

Business Partner Principles

The  ZF Business Partner Principles (BPP) require all suppliers and service providers to make a commitment to respect national and international laws and regulations at their locations worldwide. They must ensure that human rights are respected and human dignity is protected in all business processes. The BPP are currently being revised, and a new version is expected to enter into force in 2020. See  GRI 204 for more information on our management approach regarding business partners.

GOVERNANCE

GRI 102-18

Governance structure

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

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

In the 2019 fiscal year, the Board of Management initially comprised seven members, and later, eight: Chief Executive Officer Wolf-Henning Scheider, Dr. Konstantin Sauer, Michael Hankel, Sabine Jaskula, Dr. Holger Klein, Dr. Franz Kleiner and Wilhelm Rehm. Dr. Martin Fischer was appointed to the Board of Management on November 1, 2019. As of 2020, he took charge of the responsibilities previously managed by Dr. Franz Kleiner, who stepped down on December 31, 2019.

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

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

- At the first managerial level (executive vice president/ senior vice president) and the second managerial level (vice president) below the Board of Management, the percentage of women is planned to increase to 15.0 percent each.
- For vacancies regarding the Board of Management, a quota of 10.0 percent female Board of Management members is envisaged. The appointment of Sabine Jaskula as member of the Board of Management for the HR and Legal Corporate Function means that this target has been met.
- For vacancies regarding the Supervisory Board, a quota of 30.0 percent was set. The quota is currently 10 percent.

GRI 102-30

Effectiveness of risk management processes

The objective of ZF's Enterprise Risk Management is to recognize and realize opportunities as well as to identify threats of value losses from entrepreneurial activities at an early stage, to assess resulting risks and to initiate adequate mitigating measures.

The risk management framework including the corresponding responsibilities and processes is governed through a Group-wide binding policy, applicable to all of its direct and indirect controlled subsidiaries. This policy is accessible to all employees and is subject to regular reviews. Implementation and compliance are ensured by Corporate Risk Management.

Corporate Risk Management coordinates the risk management process at group level and provides structure, suitable methods and technologies. The risk management system is integrated into the strategy, planning, controlling and reporting processes of all Corporate Functions and operational units.

The Risk Committee, which is led by the member of the Board of Management responsible for Finance, IT and M&A, is responsible for evaluating the holistic risk situation for ZF and for initiating further development of Corporate Governance aspects. The accountability for risk management lies with the Board of Management. The Board of Management reports the both centrally and decentrally identified relevant opportunities and risks at least quarterly to the Supervisory Board as well as the Audit Committee. The Supervisory Board monitors the Board of Management and focuses on the effectiveness of the risk management system. Corporate Audit checks the implementation and effectiveness of the risk management system on a regular basis. Every year, the suitability of the early warning system is subject to the Financial Statement audit by the assigned external auditor.

STAKEHOLDER ENGAGEMENT

GRI 102-40

List of stakeholder groups

There are many significant stakeholders at ZF, including employees, customers, suppliers, the company owners, investors, authorities, trade unions, associations, the media and politicians as well as business partners and residents at company locations. An increasingly important group includes the next generation of employees, which is why schools, vocational schools, universities of applied sciences, universities and scientific institutes can be found at the top of the list of stakeholder groups to be involved. As a B2B company, ZF has rarely been in direct contact with national, non-governmental organizations (NGOs) that represent ecological and social issues. However, as is the case with local environmental initiatives that are often in direct communication with the location managements, these NGOs likewise number among the stakeholder groups that we consider important.

GRI 102-41

Collective bargaining agreements

The Group values open communication among its employees and respects their right – as is consistent with applicable law – to join or assist a labor union or works council, or to refrain from doing so. No employee or employee representative shall be disadvantaged as a consequence of exercising his or her rights in this regard. As the implementation of HR software tools has not yet been completed, valid data regarding collective bargaining agreements within our workforce were not available.

GRI 102-42

Identifying and selecting stakeholders

As our approach to stakeholder communication and engagement has been applied and refined for several years, all relevant stakeholders are well identified. Each group is important, since it contributes unique insights and feedback. Our day-to-day interaction influences the way we reconsider and reevaluate topics, processes and priorities.

GRI 102-43

Approach to stakeholder engagement

ZF is in regular contact with its stakeholders through the following channels: the German Global Compact Network, personal contact with residents at company locations, the media, direct discussions with customers, suppliers, investors, analysts and other capital market participants, as well as surveys on topics such as sustainability, and with employees via the Works Council as well as through internal events and Group media.

Customer satisfaction

Delivery reliability, the ability to innovate and cost competitiveness are basic qualifiers in today's automotive industry. Due to regulatory changes, rising consumer awareness and new supply chains for megatrends such as electrification, the sustainability expectations towards the automotive industry are constantly growing.

In this environment the role of a Tier 1 automotive supplier such as ZF is rapidly changing. From selling components and systems we are now offering complex vehicle functions to a greater extent, such as autonomous driving or vehicle motion control. This requires not only new skills but also a different market approach, offering the entire competence and product portfolio of ZF from the one source. Furthermore, our customers expect an empowered counterpart that can represent the entire Group.

Therefore, we have rebuilt our sales organisation in 2019 with the participation of our top customers. In this global key account management organization, the Key Account Executives (KAE's) are the decision makers and most important customer contact for the entire ZF Group. The KAE manage the customer account in an entrepreneurial manner, they are responsible for customer-specific results and act as sparring partners for the divisions. The introduction of the new key account management organization is supported by ZF's internal Sales Academy with targeted training.

Employees

Since employees collaborate on an everyday basis, feedback and recognition are ever-present. Several new initiatives to foster ZF's feedback culture have been implemented (e.g. regular Skip-Level-Meetings). Employee feedback surveys are implemented on location level. The objective is to sustainably contribute to company goals through increased transparency and by involving employees on all levels.

ZF Excellence Award

The fifth ZF Excellence Award set a new record: Over 4,000 employees in 935 teams took part in the competition, with 776 applications from more than 100 locations in 29 countries. Participation across regions, divisions and departments was very well balanced. Of the 46 teams that reached the final, the Executive Board and top management selected five winners in each of the categories.

In addition to the categories “Products and Manufacturing Processes”, “Health, Safety, Environment and Social Affairs”, “Small Projects”, “Learning from Each Other” and “Business Processes and Methods”, a special “Best Performing Plant” prize was again awarded in 2019.

GRI 102-44

Key topics and concerns raised

Over the past year, the topics climate change and human rights have dominated the general discussion in society. Accordingly, our stakeholders have more and more addressed these issues with us.

With regards to combating climate change, civil society in particular raised its voice and increased the pressure for action by companies and governments alike. By the end of 2019, Germany adopted the Climate Action Programme 2030, including a price on CO₂ emissions in the transport and heating sectors as of 2021. In addition to regulatory efforts, ZF has been increasingly addressed by its customers but also employees to learn more about our next steps in the field of combating climate change. During 2019 we have prepared a Climate Neutrality Strategy, which we announced in early 2020 (see  GRI 305 for more information). In the course of 2020 we will continue to further elaborate specific actions including increasing partnerships and respective dialogue.

At the end of 2019 the Corporate Human Rights Benchmark published its assessment of Germany’s twenty largest companies in which ZF finished in the rear ranks. While the

benchmark again highlighted the respective critical points, we had already started to revise our supply chain due diligence processes in 2018. Among other things, we have now finished the review of our Business Partner Principles and published a  Statement of Principles on Human Rights (see  GRI 204 for more information). In the light of Germany’s National Action Plan (NAP) on Business and Human Rights, ZF is part of the NAP Monitoring. The objective of this moni-

toring is to check the extent to which companies meet their responsibilities. In this context ZF maintains close dialogue with all monitoring partners. With other suppliers and OEM in the German Association of the Automotive Industry (VDA), ZF also works together on an assessment standard that examines different criteria of Corporate Social Responsibility including human rights issues.

T. 01 Types of stakeholder communication

Groups	Media
Employees	“we>move” employee magazine, social intranet “Zoom” including CEO Blog and various news channels, townhall meetings, webinars, innovation challenges and pitch event, Excellence Award and family days, zf.com, social media, ZF hilft, ZF BarCamp New Work, ZF Digital Convention
Potential employees	Cooperations with universities, Annual Report, Sustainability Report, advertisements, ZF website, involvement in trade fairs, “vision” print/online magazine, social media
Former employees	ZF website, ZF pensioner association, ZF Family Day, Senior Professionals Program, “vision” online magazine, social media
Customers	Annual Report, Sustainability Report, “vision” company magazine, ZF website, brochures, advertisements, customer days, involvement in trade fairs, key account management
End customers	Annual Report, Sustainability Report, involvement in trade fairs such as the Frankfurt Motor Show, North American International Auto Show, CES, non-automotive trade fairs, advertisements, ZF website, “vision” online magazine, social media
Suppliers and partners	Annual Report, Sustainability Report, ZF website, involvement in trade shows, advertisements, supplier days, key purchasing strategy, ZF Global Supplier Summit, “vision” online magazine, social media
Politics, associations, interest groups	Annual Report, Sustainability Report, ZF website, personal discussions, External Affairs department
Educational institutions	Sustainability Report, cooperations with universities and schools, ZF website, involvement in trade fairs, advertisements, “vision” online magazine, social media
Press and the media	Annual Report, Sustainability Report, ZF website, press releases, press conferences, “vision” online magazine, social media, Online Press Center
Communities	Press, ZF website, advertisements, sponsoring, regional events, “vision” online magazine, social media

REPORTING PRACTICE

GRI 102-45

Entities included in the financial statement

In addition to ZF Friedrichshafen AG, 34 German and 236 international subsidiaries controlled by ZF Friedrichshafen AG are included in the consolidated financial statements.

On March 28, 2019, ZF Friedrichshafen AG signed a binding agreement regarding the purchase of all outstanding shares of WABCO Holdings Inc. (WABCO) listed on the New York Stock Exchange for a cash purchase price of \$136.50 per share. This corresponds to a purchase price of approximately \$7 billion. The Board of Management and the Supervisory Board of ZF as well as the Board of Directors of WABCO agreed to the planned acquisition. On June 27, 2019, 68.44% of the WABCO shareholders agreed to the transaction. The transaction is subject to a number of general closing conditions, e.g. approval by the responsible authorities. ZF expects to be able to complete the transaction in the spring of 2020.

WABCO is a leading global supplier of brake control systems, technologies and services for the improvement of the safety, efficiency and connectivity of trucks, buses and trailers. WABCO offers integrated brake control and stability control systems, air suspension, transmission automation and aerodynamics, telematics and fleet management systems. In 2019, WABCO achieved sales of €3 billion. The company employs approximately 14,000 people in 40 countries around the globe.

More detailed information about entities belonging to the Group can be found in ZF's  2019 Annual Report, page 47f.

GRI 102-46

Defining report content and topic boundaries

The topic boundaries of this report follow the materiality analysis which we conducted in summer 2018.

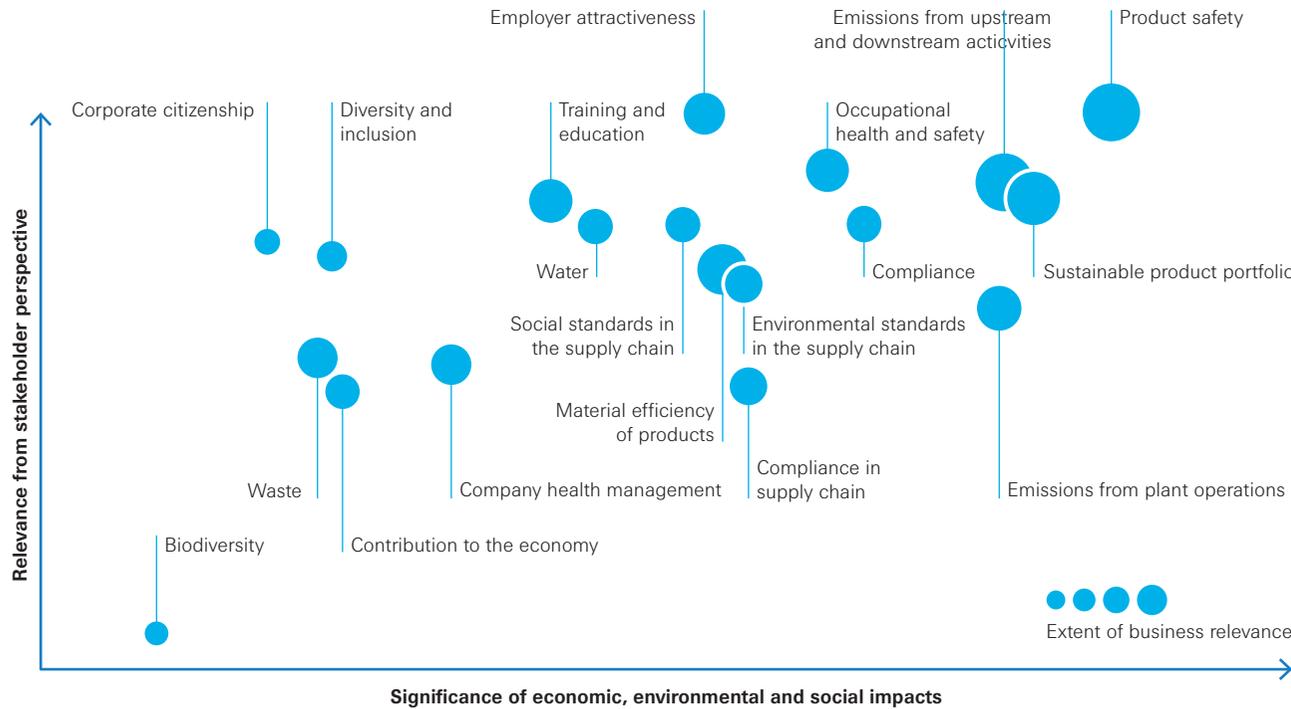
As for the methodology: In a first step, a list of all sustainability topics potentially relevant to ZF was compiled. An industry analysis and general sustainability standards served as the basis. In the next step, this list was evaluated by an external expert panel via qualitative telephone interviews and a supplementary online survey. Additionally, opportunities and risks were concretized; and ZF's opportunities to exert influence were discussed. As part of a workshop of the Sustainability Steering Committee, the topics were then prioritized with regard to business relevance, relevance from the stakeholders' point of view, and the impacts of ZF's business activities. Topics for reporting and topics that should be the focus of strategic further development were identified in this process. The results of the materiality analysis were finally confirmed by the Board of Management.

GRI 102-47

List of material topics

- 201 Economic performance
- 203 Indirect economic impacts
- 204 Procurement practices
- 205 Anti-corruption
- 301 Materials
- 302 Energy
- 303 Water
- 305 Emissions
- 306 Effluents and waste
- 307 Environmental compliance
- 308 Supplier environmental assessment
- 401 Employment
- 402 Labor management relations
- 403 Occupational health and safety
- 404 Training and education
- 405 Diversity and equal opportunity
- 406 Non-discrimination
- 414 Supplier social assessment
- 416 Customer health and safety

ZF MATERIALITY MATRIX



GRI 102-51

Date of most recent report

March 2019

GRI 102-52

Reporting cycle

Annual

GRI 102-53

Contact point for questions regarding the report

ZF Friedrichshafen AG
 Corporate Governance Sustainability
 Löwentaler Straße 20
 88046 Friedrichshafen

Email: sustainability@zf.com

GRI 102-54

Claims of reporting in accordance with the GRI Standards

This report has been prepared in accordance with the GRI Standards: Core option.

GRI 102-55

GRI content index

This GRI table is the GRI content index.

GRI 102-56

External assurance

This report was not submitted for an external assurance.

GRI 102-48

Restatements of information

A few figures were updated with explanatory footnotes under respective disclosures.

GRI 102-49

Changes in reporting

In accordance with the updated materiality.

GRI 102-50

Reporting period

This is the eighth edition of the Sustainability Report published by ZF Friedrichshafen AG, which follows the ZF Sustainability Report 2018. It is based on the fiscal year 2019.

MATERIAL TOPICS

ECONOMIC

GRI 201 ECONOMIC PERFORMANCE 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

In 2018, under its new Chief Executive Officer Wolf-Henning Scheider, ZF established a new strategy, "Next Generation Mobility," based on the core objectives of the ZF 2025 Strategy. The strategy is designed to position ZF and its systems expertise in the passenger car, commercial vehicle and industrial applications sectors

Our strategic focus is digital networking and automation. In line with this we are developing our product portfolio around four technological fields, systematically combining them through integrated solutions:

- **Vehicle Motion Control:** Supply of networking solutions for intelligent chassis control: These solutions combine steering, braking, damping and electric drive and ensure safe, efficient and comfortable mobility via a central controller.
- **Integrated Safety:** Providing products and solutions for mobile safety: The spectrum ranges from sensors, brakes, steering systems, seat belts, airbags and electronics to active chassis.
- **Automated Driving:** Providing products and solutions on the road to automated driving: Cameras, radar, lasers, 360-degree communication and overview systems, intelligent drive, steering and brake controls, and human-machine interfaces.

- **Electromobility:** offering purely electric and hybrid solutions for all vehicle segments: In addition to drives, this includes power electronics, inverters and suitable software solutions.

ZF's strategic approach is to ensure it can meet both historical and future challenges by continuing to develop existing technology while also entering completely new markets and fields, thus serving both existing and new customers. Our goal is technology leadership within our industry and our roadmap consists of four technology clusters that we defined as follows:

Vehicle System & Functions: In the future, vehicles will increasingly be controlled by system functions. This cluster is developing the necessary architectures and software methods as well as the structure of these complex system functions.

Data Handling & Analytics: This cluster focuses on vehicle connectivity and communication with the infrastructure, from embedded components to the IoT platform necessary for data analysis, and algorithms including artificial intelligence.

Efficient Energy Conversion: We are researching and developing the efficient storage (batteries, hydrogen/fuel cell) and conversion (frequency changers, electric motors, DC/DC converters) of electrical energy as well as systemic algorithms for optimized vehicle control.

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

Within these four clusters are 18 key technologies that we are pursuing in global research and development.

The top financial key figures ROCE (Return on Capital Employed), ZF Value Added, and Operating Result are used to measure and monitor the financial performance of the ZF Group. For more details see the  2019 Annual Report, p. 22.

GRI 201-1

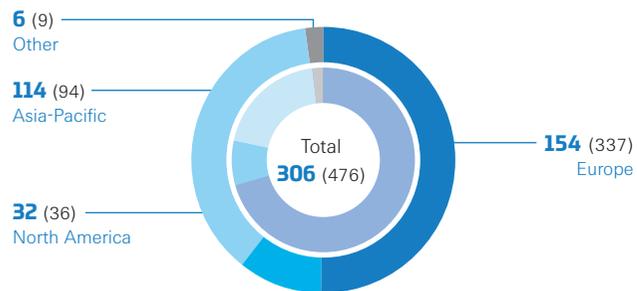
Direct economic value generated and distributed

The ZF Group had to accept decreasing sales by -1.1 percent to €36.518 million and invested 2.652 (2018: €2,501 million) in research and development, which is 7.3 percent of Group sales (2018: 6.7). The ZF Group overall donated €3.60 million (2018: €5.61 million).

The production materials purchasing volume in 2019 totaled €20.6 billion. This includes directed buy volumes. The value of non-production materials amounted to some €6.016 billion. Overall personnel expenses totaled €4.783 million (2018: €4.761 million), including wages and salaries, social security contributions and benefit expenses. For more details see the consolidated statement of profit or loss in the  2019 Annual Report, p. 40.

T.02 Ongoing tax payments by regions 2019 (2018)

in € million



GRI 201-2

Financial implications and other risks and opportunities due to climate change

One of the main factors resulting from our business activities is the emission of greenhouse gases during the production and use phases of our products. Reducing these emissions is therefore a central element of ZF's environmental policy and targets, which are managed worldwide by our environmental management system compliant with ISO 14001. See GRI 300 for more details on ZF's environmental management approach.

Worldwide legislative and regulatory measures in the fight against climate change continue to gain momentum. Yet, the legally binding implementation of national climate protection plans remains largely unclear due to the outcome of the 25th Climate Change Conference (COP25) in Madrid. Only few countries have already created regulations, including China, Mexico and Germany.

In China, emissions regulations and caps have been largely taken into account in the plant operating permits and have also been managed according to the 13th Five-Year Plan.

In 2019, Germany passed a climate protection law whose requirements will have a manageable impact on ZF plant operations from the years 2021–2025. Since 40 percent of CO₂ emissions are generated in German plant operations, ZF is preparing for even more stringent requirements from 2025 onwards by expanding emissions trading.

The European Union's Green Deal was adopted by Parliament in January 2020. After the editorial deadline of this report, the Commission will present a new European industrial strategy to tackle the twin challenges of the environmental and digital transformation.

Losses due to extreme weather

Extreme weather situations caused by climate change such as high water and flooding or extreme drought have so far only affected our production locations in isolated cases. Nevertheless, ZF sees these developments as a potential risk with more frequent and more extensive consequences to come. This is why we include early precautions against extreme weather and natural disasters as part of our sustainable corporate development.

We have only seen isolated examples of higher property insurance premiums at locations subject to potential natural hazards such as flooding, storm or extreme drought. These could increase in the future if incidents of damage occur more frequently. These issues are decisive factors when building new plants or purchasing production facilities.

Supply chains in light of climate change

To minimize risks and manage them more effectively, the ZF Group is working on localizing sources. The objective here is to reduce transport costs and actively contribute to lowering CO₂ emissions. Furthermore, this can limit the impact of

interruptions in the supply chain to the region affected. We are also carbon-footprinting selected components and supply material to gain insights for further optimization.

Product level

ZF generates a substantial proportion of its sales with products used in the combustion engine driveline. Even though progressive electrification in the passenger car and commercial vehicle drive segment may represent a competing technology, ZF sees promising opportunities in the development of safe and clean mobility through its electric, electronic and mechatronic competence.

Moreover, with our Vision Zero we defined a strategic response impacting many levels and processes within the ZF Group. Aiming for zero emissions and zero accidents leads to new products and services. The development of competitive products has opened up new sales opportunities for ZF.

At the same time, a possible increase in fuel or energy prices may result in an increase in logistics costs and a fall in the demand for individual mobility on the part of the market. ZF deals with this risk through innovations in hybrid technology, e-mobility and lightweight design. China's move away from a purely battery-electric electromobility strategy opens up possibilities for diversification discussions on the drive technology of the future and confirms ZF's position on technology openness in drive technology. For more information about ZF solutions see GRI 302-5.

In January 2020 ZF presented a strategy to be part of the solution to climate change. The longer-term goal is to become climate-neutral not later than 2040 and halve all emissions by 2030 compared to 2018. In doing so, the company is supporting the goals of the Paris Climate Agreement, which aims to limit global warming to 1.5 degrees. See [GRI 305](#) for more detailed information.

GRI 201-3**Defined benefit plan obligations and other retirement plans**

Provisions for pensions are set up for obligations from vested benefits and current pensions for entitled current and former employees of the consolidated ZF Group and their surviving dependents. Various retirement pension schemes exist in accordance with the legal, economic and tax situation in the respective countries, which – as a rule – are based on the length of service and emoluments of the employees. In general, for company pension schemes a distinction can be made between defined contribution plans (DC) and defined benefit plans (DB). Plan benefits depend upon salary, length of service and the cost of living index. For details about provision for pensions see the  2019 Annual Report, p. 28.

GRI 201-4**Financial assistance received from government**

In the fiscal year 2019, €27 million (2018: €42 million) in government grants was received. These were divided as follows: Investment grants were basically received for investments at various locations in Germany, India, China, South Africa and the USA. Expense subsidies mainly comprise research subsidies and subsidies for education and vocational training.

GRI 203 INDIRECT ECONOMIC IMPACTS 2016**GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)**

We are aware that a company can only achieve business success in an intact economic environment. A company's focus on success must match the development of the surrounding and dependent companies so that sustainable corporate governance is possible for all. This principle plays a major role in our relationships with business partners, but also in our investments in production materials and capacities. ZF is one of the biggest employers and customers in all the regions in which the company operates. See GRI 102-9 and  GRI 204-1 for details regarding our expenses for our supplier network, which has significant indirect economic impacts as we apply our "local for local" principle.

Corporate social responsibility at ZF is an important and intrinsic component of the company's mission statement. In line with this commitment, we therefore contribute a great deal to our local communities by supporting education, sports and recreation, culture, and environmental and community projects. Activities of this nature range from funding endowed chairs at universities, through the ZF Art Foundation supporting artists and musicians, festivals and non-profit organizations, to sponsoring the elite volleyball players of the VfB Friedrichshafen team or funding many local recreational sports.

Each year, ZF gives the Zeppelin Foundation a dividend. The funds are used in line with the articles of association, especially in the fields of science and research, art and culture, as well as child and youth development. The Dr. Jürgen and Irmgard Ulderup Foundation in Lemförde supports the education and vocational training of young people as well as nature and landscape conservation. Jürgen Ulderup was the founder of the Lemförder Group, a company that is part of the ZF Group today.

GRI 203-1**Infrastructure investments and services supported**

ZF makes significant investments in technical professions. We aim to promote interest in and enthusiasm for science, technology, engineering or mathematics (STEM) subjects early on among children and adolescents, with particular emphasis on girls. ZF is achieving this objective for instance by actively participating in the Girls' Day and running Knowledge Workshops ("Wissenswerkstätten") in several German cities. These popular workshops enable hundreds of children and adolescents every year to gain hands-on experience in the world of technology.

In higher education, ZF finances endowed professorships across the world. Cooperation with renowned universities, for example the Baden-Württemberg Cooperative State University in Friedrichshafen, the RWTH Aachen University or the University of Michigan in Detroit, is part of the young talent promotion program.

Furthermore, ZF supports several teams of the Formula Student Germany competition. In this engineering design contest, international students compete against each other in various disciplines with race cars which they build themselves. In addition to sharing its expertise, ZF has been supporting these young talents with high-tech racing products, financial assistance and team-building activities since 2002. In 2019, ZF sponsored 41 university teams. In the Formula Student Driverless race category, ZF supported eight teams. In this category, students face a new challenge: developing a race car that runs without a driver in autonomous mode – in line with the ZF triad "See – Think – Act", the leading principle for bringing artificial intelligence to vehicles.

ZF-Innolab

As part of expanding its long-term commitment to cooperation with universities, ZF established an innovation laboratory at the Friedrichshafen campus of the Duale Hochschule (DHBW) Ravensburg in 2016. At the “ZF-Innolab” facility, DHBW students, under an apprenticeship contract with ZF, conduct research on topics such as autonomous driving and digital business models. The students at the “ZF-Innolab” work closely together with ZF engineers from Central R&D in the field of future mobility, especially for automated driving, automated operations and new logistics solutions.

GRI 204 PROCUREMENT PRACTICES 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Good materials management is vitally important for customer satisfaction. Only through good management we can guarantee the high quality of our products and delivery reliability. This is why trusting and reliable collaboration with our suppliers is a priority for ZF.

The specific requirements for suppliers result from the Advanced Procurement Strategy (APS 25). The APS follows and supports the Group strategy and is based on the ZF Environmental Policy, the ZF Principles of Social Responsibility and the ten principles of the United Nations Global Compact. Establishing an effective and efficient value creation chain throughout the Group is the declared objective of the APS 25. The strategy also pursues three subordinate goals: increasing ROCE, total quality management and standardization. Its systematic implementation is supported by a process which ensures that sourcing decisions are based on total cost of ownership criteria.

To allow for responsible procurement practices, ZF appointed a cross-functional Sourcing Decision Board with representatives from Commodity Purchasing, Program Purchasing, Logistics, Quality, Supplier Management, Engineering, Program Management and Operations. The board enables us to ensure that along with pricing, environmental aspects, quality, technical and logistical requirements are also considered in the selection of suppliers.

We are determined to strengthen our sustainability-related activities within the supplier base. Consequently, in the summer of 2019 the position Head of Sustainability Management Supply Chain was created within the Materials Management of ZF. As a result, the new Sustainability Supply Chain department started reviewing the overall approach and related processes as well as developing a clear roadmap. It follows a systematic approach that aligns with ZF’s overall strategy: improving processes within Materials Management, a new supplier assessment and specific actions regarding focus topics such as human rights and climate neutrality.

Regarding the development of our suppliers, ZF’s Supplier Management Department further standardized processes to ensure a common understanding within the organization. The resulting Supplier Readiness Process follows the cradle-to-grave approach and provides clear steps towards the development of our suppliers. Besides other aspects, the focus lies on high quality, technical feasibility and punctual delivery.

Business Partner Principles

All new and existing suppliers are obligated to endorse the  ZF Business Partner Principles (BPP). The BPP represent values that ZF recognizes, supports and communicates: Respecting national and international laws and regulations at the locations worldwide is seen as a minimum. The BPP also conform to 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 Labour Organization (ILO).

The BPP are intended as guidelines that specify fundamental requirements for cooperation with our business partners. They address topics such as human rights, labor standards, occupational safety and health protection, environmental protection, responsible raw materials procurement, business ethics and compliance. Business partners are specifically expected to reject any form of slavery or forced labor as well as child labor. They are also expected to respect freedom of association and the right to form interest groups; to provide fair and appropriate remuneration and working times as well as supporting qualification of their employees.

In Germany, external service providers must sign an additional declaration of compliance to collective agreements guaranteeing fair wages, normal working hours and the rejection of unregistered labor and tax evasion. This declaration also applies to subcontractors engaged by ZF and includes the provision that ZF may check compliance at any time.

A standardized process for the request and confirmation of our BPP includes a tool to track the information about the current BPP status of each supplier. Acceptance of BPP is taken into consideration in supplier award decisions and in the approval process for new suppliers. ZF reserves the right to scrutinize business relationships and take appropriate action if deviations or violations are identified.

By the end of the reporting year, the BPP were under revision. The updated BPP will be published and implemented over the course of 2020.

Improving supply chains

The values and standards that are important to us are not only part of the Business Partner Principles; they also define supplier selection. During the approval process, ZF requires potential new suppliers to submit a self-assessment on sustainability, based on ZF's Business Partner Principles. ZF uses an adapted version of the Self-Assessment Questionnaire on CSR and Sustainability developed by the initiative Drive Sustainability (formerly European Automotive Working Group on Supply Chain Sustainability). The advantage of using a standardized Self-Assessment Questionnaire for all participants (OEM and Tier 1) is to avoid duplication and to improve efficiency for the suppliers. The long-term goal is a purchasing strategy that dispenses with procuring materials from critical sources.

To manage all inquiries and data regarding supplier contact, the existence of a product safety officer, HSE (Health, Safety and Environment) and general company data or certificates, ZF operates a supplier portal for all strategic and accepted suppliers.

At the end of 2019 ZF also launched a pilot project with strategic suppliers for production material that aims to improve the sustainability assessment of all suppliers. Questions include Environmental Protection (ISO 14001 / EMAS), Human Rights & Labor (SA 8000 (SIA)), Anti-bribery & Anti-corruption (ISO 37001), Health & Safety (OHSAS 18001 / ISO 45001) and Supply Chain Responsibility (Directive 2014/95/EU). This more comprehensive sustainability assessment will be extended to the wider supplier base during 2020. The overall goal is to increase transparency within the supply chain and better mitigate risks.

Risk assessment and management

ZF has implemented a comprehensive internal risk analysis process for compliance risks. The objective is to identify, assess and counteract compliance-related risks as early and effectively as possible. Detailed information can be found in the ZF  Annual Report.

In addition to contact opportunities in the regular course of business, ZF has set up an electronic reporting system in German, Chinese, Brazilian Portuguese, Spanish and English. The ZF Trustline is available to all employees and business partners if they wish to anonymously report suspected serious misconduct with regard to guidelines, regulations or laws.

In 2019, a social media monitoring system was set up in which media are screened for negative CSR issues in our supply chain on a daily basis. This allows for first indications, which then can be followed up with further due diligence measures.

GRI 204-1

Proportion of spending on local suppliers

80 percent (2018: 77%) of our global purchases for non-production materials (excluding investments) in the reporting year are to be made locally. The local procurement of production materials is calculated using a key indicator based on total spending including directed buy and internal supply. The average over all divisions for 2019 amounted to 57 percent (2018: 54%) for production materials.

GRI 205 ANTI-CORRUPTION 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Compliance is an essential element of successful management and good corporate governance. It supports reliable and respectful dealings with customers, business partners, employees and the environment. Compliance also constitutes the basis of lasting cooperation in an atmosphere of trust.

We rise to the challenge posed by globalization. This requires law-abiding, honest and responsible behavior on behalf of our employees at all levels and in all areas as the core value of our corporate culture. ZF communicates the relevant rules proactively to its employees, for example through the  Code of Conduct (CoC) or other compliance regulations.

The Code of Conduct defines binding principles for correct, law-abiding and ethical behavior. Subjects covered include adherence to laws, fair competition, human rights, anti-corruption, business and social responsibility, product compliance, occupational safety, data protection and transparency. The Code of Conduct is a core element of the Compliance Management System (CMS) and is therefore available in more than 25 languages. As managers at every level are responsible for the compliance culture within the company, they must confirm they have received the CoC and promise to follow its principles.

Compliance regulations

Compliance and legal regulations include rules governing anti-corruption and antitrust law. They also include the correct approach to handling favors, gifts and hospitalities. The following topics are covered by the regulations:

- Rules for lawful and responsible behavior
- Ban on corruption
- Business partner integrity
- Rules on handling favors, gifts and hospitality
- Correct behavior in competition
- Conflicts of interest
- Contacting the Corporate Compliance Office and reporting incidents
- Responsibilities, tasks and authorities of the Compliance Organization

ZF Compliance Management System

The ZF Compliance Management System (CMS) has created the framework for meeting the respective legal requirements worldwide. The objective of the CMS is to ensure compliance with internal and external regulations. The CMS focuses on preventing and investigating violations of employees as well as Business Partners in the areas of

- Fraud
- Reputational damage
- Corruption/bribery
- Conflicts of interest
- Gifts/entertainment.

A primary goal of the CMS is to meet the following requirements: independence and effectiveness of the Compliance Organization, integration of compliance into business processes, transparent decision-making processes and corresponding HR processes (sanctions). The pillars of the CMS are: prevent, detect and respond. The Compliance Organization is set up in line with the organizational structure of the ZF Group.

In joint ventures where ZF is the majority shareholder, the ZF board representatives must ensure that either the ZF Compliance Management System or a comparable compliance management system is in place.

Compliance Tools

- The ComplianceHelpdesk is a preventive tool for systematically clarifying and documenting general compliance questions. ZF employees can contact the ComplianceHelpdesk whenever they are faced with a compliance-related question in their day-to-day business activities.
- The ZF CMS is complemented by the ZF Trustline, an electronic notification system that employees and third parties can use to anonymously report suspected serious misconduct. Such cases might include violations of competition and anti-trust law, or cases of corruption and conflicts of interest.

- ZF developed an internal risk analysis process for compliance risks. The objective of this analysis is to identify and assess, on the basis of the risk profile of ZF, compliance-relevant risks at an early stage and to counteract them.
- Business partners can pose a compliance risk if their actions or failure to act can be attributed to ZF. All business functions of our company therefore must take appropriate measures – preferably before business relations with a partner are initiated – to ensure that business partners are adequately assessed and instructed. A business partner due diligence process was established in 2015.

T.08 ZF Compliance Organization

Prevent

- Risk analysis
- Regulations
- Communication
- Training
- ComplianceHelpdesk
- Business partner due diligence

Detect & respond

- Notification
- Investigation
- Monitoring
- Remediation & sanctioning

GRI 205-1**Operations assessed for risks related to corruption**

With regard to corruption-related categories, all operations are regularly assessed over a target period of about three years. To achieve more precise results, the risk analysis process is currently revised with the focus on product lines and usage of online survey tools.

GRI 205-2**Communication and training about anti-corruption policies and procedures**

News and the sharing of information on compliance issues raise awareness among employees and communicate values and expectations on employee conduct.

A range of communication measures ensure that compliance is firmly anchored within ZF's culture. All employees, including the Board of Management, have constant access to compliance topics through our corporate intranet "Zoom", the compliance intranet/blog and other channels. As a main communication channel, the intranet also provides access to necessary compliance contacts and essential documents. To ensure that compliance news reaches the management teams of the individual ZF locations, compliance officers and compliance delegates periodically update the management team regarding compliance issues, so that management staff will pass this information on to their employees.

The CoC is made available to all new hires, who sign an Employee Compliance Certification Form acknowledging receipt of the Code of Conduct and accepting their responsibilities as outlined by the CoC. They are also advised on how to ask questions about the CoC and how to report any possible violations.

Training opportunities

With such a large employees base, the ZF Group relies on online training as the leading form of training employees on key compliance topics. The objective of these online courses is to firmly anchor compliance in employees' consciousness and prevent wrongdoing. The courses convey knowledge and promote ability to act in critical situations. Target groups can be addressed in accordance with the necessities of a particular topic.

The roll-out of the CoC in 2018 was supplemented by an online course on certain topics covered by the Code such as antitrust, business partners, conflicts of interest, financial integrity and controls, and raising concerns. The course was deployed in English, German, Latin American Spanish, Simplified Chinese and Brazilian Portuguese. While it was made available to all employees, for approximately 17,500 management employees and the Board of Management this course was mandatory. The completion rate for this group was almost 87 percent. In April 2019, the company deployed myHRSuite, which contained a global learning management platform. In October 2019, the Code of Conduct course was integrated into the new platform.

A course on Conflicts of Interest was deployed in April 2019, and a communication was sent by email to all employees. This course is available to all employees on myHRsuite in the same languages as the Code of Conduct course. Future courses on compliance topics will also be delivered to employees via the myHRSuite platform.

Training in other formats such as in-person training is provided on key topics as needed to more focused groups based on region, job function and risk.

ENVIRONMENT

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Conserving natural resources is the fundamental principle of our environmental strategy. A corresponding policy therefore includes essential areas of activity such as climate protection, the environmental impact of production, eco-friendly product design and environmental performance improvement. It is binding for all locations.

The ZF Sustainability Program provides an overview of our environmental protection targets and actions, which is part of this report.

The global ZF environmental organization covers all areas of the company, from each individual division to different regions, right down to the locations. The corporate environmental protection officer is responsible at the Group level and senior environmental protection officers are appointed at the divisional level. On plant level, the EHS officers work on a daily basis towards securing environmental protection. The regional managers provide support for ensuring compliance in their respective regions, the implementation of ZF standards and monitoring of the environmental management system.

Systematic environmental management according to ISO 14001:2015 is the standard for all production and main development locations. In the ZF Group, a total of 246 certificates were issued up to 2019. These external expert audits confirm that the participating locations conform to current environmental, occupational health and safety legislation

as well as certification standards. In the year under review, the changeover to audits using the ISO 50001:2018 Energy Management Standard was successfully completed.

Management reviews are conducted twice a year, in which the Board of Management assesses the target achievement of the sites. The Board also assesses whether the environmental management system is qualified to fulfill current legal customer and management requirements.

Following the “design for environment” principle, our Group Directive for Global Development & Product Evolution Process (GD PEP) puts particular focus on environmentally friendly product design. Relevant aspects must be proven by means of a checklist at various steps in the development process, taking into account environmentally friendly manufacturing and manufacturability, wear, serviceability and repairability, recyclability and environmentally sound materials. To strengthen carbon footprint methods in R&D processes, ZF standards are periodically revised to ensure that they comply with current regulations and recent approaches towards reducing environmental impacts.

ZF Climate Neutrality Strategy

As climate protection has become one of the most urgent issues of our time, ZF makes its contribution by bundling and strengthening current measures in a climate strategy: Our goal is to become climate-neutral – from Scope 1 to Scope 3 – not later than 2040 and already halve our emissions from production by 2030 compared to 2018. In doing so, the company is supporting the goals of the Paris Climate Agreement, which aims to limit global warming to 1.5 degrees. See  GRI 305 for detailed information.

GRI 301 MATERIALS 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

As raw materials become increasingly scarce and more expensive, their efficient use is crucial. Likewise, materials must conform to our high expectations regarding quality and safety as well as environmental and social standards. See  GRI 204 for more details on procurement procedures.

Product-related environmental protection begins with responsible material selection. From the very start, during the product development phase, we consider the total life cycle of a product, including factors such as the product materials, the utilization phase as well as disposability and recyclability. For example, by reducing the variety of materials, using consistent materials and ensuring they can easily be separated, we continually increase the recyclability of our products.

Regarding the Control of Prohibited & Regulated Substances our technical standard ZF 9003 applies in addition to worldwide laws and regulations. Those requirements are implemented in our supply chain and are tracked to ensure conformity.

Additionally, ZF is implementing the ZF Materials Warehouse to support our overall materials management. The rollout to the business units will be finalized in the second quarter of 2020. The process relies upon screening and classification of materials into non-approved, approved and preferred materials, according to conformity with set requirements.

Besides material approval, the ZF Material warehouse enables material selection and material change. Early analysis of the materials not only ensures compliance with technical standards and country specific laws but also entails the possibility of controlling several material variants. At the same time, the effort for supplier management and material provision is limited to a manageable degree. In view of an increasing number of localization projects, this prevents an unmanageably high number of materials in the portfolio.

GRI 301-1

Materials used by weight or volume

The commodities steel and aluminum have the largest consumption share in the purchasing portfolio. The ZF Group purchases approximately 293,627 tons of aluminum and 2,923,224 tons of steel (including iron cast) annually.

ZF purchases not only raw materials but also a large number of assembled parts and products that already consist of a mixture of different materials. Therefore, figures on specific materials are not readily available. A standard ZF product, the 8HP70 8-speed automatic transmission, comprises approximately 58% steel and 25% aluminum. The rest is accounted for by lubricating oil (7%), silicon (3%), rubber and plastics (2.2%) and copper (1.5%) as well as other materials, alloys and solvents in extremely small quantities. ZF's E-Axle consists of around 63% steel and iron, 23% aluminum and 9% copper or copper alloy respectively. The remainder comprises rubber and plastics (3%), lubricants (0.7%) as well as ceramics and glass (0.15%), and other materials in extremely small quantities.

GRI 301-2

Recycled input materials used

ZF frequently uses recycled materials in its production processes. Steel and aluminum constitute the highest weight share of recycled materials ZF uses. This includes steel from scrap steel and aluminum from scrap aluminum.

Furthermore, ZF channels a high percentage of waste back into the material cycle via external recycling procedures, especially scrap metal and metal chips, waste oil, paper and cardboard, wood and demolition waste. As a result of their material composition, ZF products make a disproportionately high contribution to meeting the recycling quotas as stipulated in the EU End-of-Life Vehicle Directive.

In recent years ZF has systematically and significantly increased using processed recycled oils instead of cooling lubricants. The use of secondary raffinates reduced the use of primary raw materials and CO₂ emissions in upstream processes by 132 tons annually.

GRI 301-3

Reclaimed products and their packaging materials

Concerning products, ZF has been committed for decades to remanufacturing procedures and has therefore established a global reclaiming system. Various parts like torque converters, ConAct® and dual-mass flywheels are being remanufactured for industrial use. Remanufacturing reduces ZF's demand for raw materials by up to 90 percent while saving about 90 percent in energy compared to manufacturing a new product. In 2019, our site in Bielefeld (Germany) remanufactured 143,993 clutch pressure plates, 135,644 clutch disks, 46,293 ConAct®, 5,033 torque converters and 1,322 dual-mass flywheels. Moreover, the locations in Frydlant (Czech Republic) and Wrexham (UK) remanufactured 779,303 brake calipers from passenger cars. Frydlant also remanufactured 27,184 steering systems, 31,680 pumps and 3,812 brakes for trucks.

GRI 302 ENERGY 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Managing energy is a top priority for an industrial company such as ZF and a core element within the ZF EHS management system. By this means, all locations regularly evaluate their energy profiles and energetic topics. This involves conducting audits, identifying potential for improvement and defining actions and measures for improving energy efficiency and consumption reduction. In addition to ZF EHS management, all German and European locations are audited externally on a regular basis.

As an integral part of the energy management system, locations define specific targets locally on an annual basis to increase energy efficiency and take appropriate action. Our target regarding energy is to reduce energy consumption by 10 percent relative to sales by 2020 based on the ZF Group performance of 2017. Achievement of our targets is monitored and controlled through key performance indicators within the environmental and energy management system in conformity with ISO 14001 and ISO 50001. ZF is currently elaborating updated targets for the period after 2020, especially in the context of our new ZF Climate Neutrality Strategy. The process includes shifting from a specific energy target related to sales to an absolute reduction target.

The ISO 50001 Corporate Energy Management scheme covered 62 locations in 2019 (2018: 61); 6 locations gained single-site certification according to ISO 50001. Further European locations have conducted external audits to fulfill the European Energy Efficiency Directive (EED) on the basis of country-specific options such as EN 16247 or ESOS (UK).

Detailed energy programs help the locations to achieve their targets. The core elements are behavioral changes, energy supply management, energy data management, and organizational and technical energy efficiency programs.

Campaigns to increase efficiency and reduce energy consumption are planned and implemented at all locations depending on the local consumption footprint and target achievement. These measures, in conjunction with the energy management system, considerably improve energy efficiency worldwide.

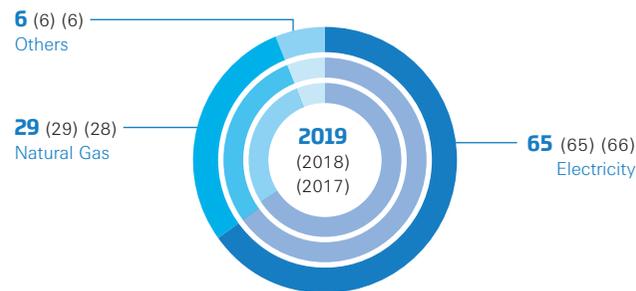
GRI 302-1

Energy consumption within the organization

Energy is mainly used for production processes, especially heat treatment, surface treatment and compressed air. Another significant field of energy use is associated with building and infrastructure management, for example heating, lighting, air conditioning and ventilation. Furthermore, at six locations natural gas and at one location methane is used in combined heat and power plants to generate electricity and heat for our own facilities. Due to the huge variety of production processes used within the ZF Group, the share of energy use differs greatly between locations.

Approximately 65 percent of the energy consumed at ZF comes from purchased electricity. Energy procurement and consumption is therefore a major topic, especially at the ZF production locations. While the major share of energy consumption comes from electricity, natural gas accounts for 29 percent. It is mainly used for heating and production processes and partially in on-site combined heat and power (CHP) plants. The remaining six percent comprise energy from oil, district heating, liquid gas, acetylene and biogas. While the share of renewable energy supply is still low it increased in 2019 to 10 percent of purchased electricity; (2018: 8.3%). Approximately 20 percent of the electricity consumption involves CO₂ reduced emission factors due to special purchasing contracts or on-site production in Combined Heat and Power Plants (CHP).

T.09 Energy consumption 2019 (2018) (2017) in percent



T.10 Energy consumption 2017-2019 in percent of absolute electricity consumption

	2019	2018	2017
Renewables	10	8.3	2

Compared to the previous year absolute energy consumption decreased by 2.9 percent, which equals to minus 118 GWh. This was mainly achieved through over 230 energy efficiency projects, which account for a total decrease of 78 GWh. So the documented energy efficiency project led to a reduction of 1.9 percent of the total energy consumption. See [GRI 302-4](#) for more information.

T.11 Absolute energy consumption 2017-2019

in gigawatt-hours	2019	2018	2017
Electricity	2,606	2,696	2,641
Natural gas	1,177	1,192	1,204
Other ¹	249	262	258
Total	4,032	4,150	4,103

¹ Oil, district heating, liquid gas, acetylene

GRI 302-2

Energy consumption outside of the organization

In 2019, ZF conducted at Group level a screening of Scope 3 emissions for the first time and reported necessary data in the CDP Climate Change Questionnaire 2019. As a result, the scoring, which had been at "Awareness C" level in the past, improved to a "Management B-" level for the first time. See [GRI 302-5](#) for more information.

GRI 302-3

Energy intensity

ZF reduced its energy intensity, measured in MWh per € million sales volume, compared to the year 2017 by 0,6 percent. Compared to the previous year the KPI decreased by 2.5 percent which is mainly caused by waker business performance and reduction in sales. This development resulted mainly from a weaker business performance in the overall automotive industry. Energy consumption could not be reduced to the same extent as business decreased. In total, energy consumption was reduced by 118 GWh (-2.9%), of which 78 GWh (-1,9%) were documented to be achieved by energy efficiency projects. Moreover, a decrease of about 40 GWh is related to decreased business activities.

T.12 Specific energy consumption 2017-2019

in megawatt-hours per € million sales volume	2019	2018	2017 ¹
Electricity	54.6	53.4	54.7
Natural Gas	24.6	23.6	24.9
Others ¹	5.2	5.2	5.3
Total	84.4	82.2	84.9

¹ Oil, district heating, liquid gas, acetylene

GRI 302-4

Reduction of energy consumption

Special programs and actions at site level have brought about a constant improvement in energy efficiency. In 2019, ZF implemented more than 230 projects to reduce energy consumption and increase energy efficiency. These were implemented mainly in the areas of plant engineering, process optimization and building technology. In 2019 energy consumption was reduced with several programs with a focus on regional energy workshops, rollout of a metering concept and energy basics as well as reduction projects aiming at, for example, compressed air.

As part of the Energy Basics rollout, each site is expected to establish and maintain standards to improve employee awareness and behavioral changes as well as, for example, demand management or peak load management. For each aspect a guidance document was added to the ZF EHS Management System. In the field of compressed air, an initiative from Purchasing Spare Parts, Machine Inventory and EHS aimed at standardizing technology; this allowed for an energy-optimized compressed air management.

In order to further reduce energy consumption for heat generation, we are continuously increasing heat recovery from industrial and washing processes.

The team from Gliwice (Poland) received a ZF Excellence Award for developing an ecological way of heating municipal water. This way, not only was gas consumption reduced, but the working environment were also improved. The idea is as simple as it is smart: Large temperature fluctuations during the sealing process was caused by evaporation from open tanks. Firstly, the team mounted flaps on the sealing tank of the anodizing line to reduce water consumption and humidity. Secondly, they installed a heat exchanger and a boiler, where gas is used to heat water and for eloxation. This way, the waste heat from the compressors could be used to heat the water, which reduced gas consumption by 27 percent.

Our team in Marysville (USA) identified an opportunity for gas savings because the generator stack was burning off large amounts endothermic gas. By realizing control improvements at the endothermic generator and carburizing furnace the location saved 6.5 GWh of gas which led to a reduction of more than 1,300 tons of CO₂ emissions.

Within the huge variety of measures taken, 230 projects were reported to save approximately 78 GWh in 2019. This is enough energy to supply more than 19,400 households with 4,000 kWh/a on average.

GRI 302-5

Reductions in energy requirements of products and services

As a technology and cost leader, ZF aims to meet the demands of the mobility megatrends of tomorrow, such as efficiency, integrated safety and automated driving. Following our Vision Zero, ZF products are intended to make a strong contribution to reducing emissions and accidents to zero. Accordingly, the Group has set a clear technology focus with

its guiding principle  "See – Think – Act". The company's product and technology planning follows market and product roadmaps, which are constantly updated.

To achieve current and future climate goals and to eliminate particulates, CO₂ and noise in cities, public transport systems have to be rethought. ZF's  AxTrax AVE electric portal axle makes it easier for bus manufacturers and public transport authorities to switch over to quiet, zero local emission drives. This driven axle can be operated not only entirely electrically by battery or overhead lines, but also in hybrid or fuel cell configurations. The AxTrax AVE electric portal axle was honored with the 2019 EBUS Award in the category "Drives for Battery Buses", as it stands out due to its powerful, compact design and its flexible energy source configuration options. The award is sponsored by the Forum für Verkehr und Logistik e.V., an association that promotes electromobility of buses in public transport.

In 2019, ZF also demonstrated that plug-in hybrids (PHEV) can be considered as true electric vehicles: Solely on electrical power, the  ZF EVplus concept vehicle runs more than 100 kilometers under real-life conditions. This is a sufficient range for most drivers to cover their commuting distances and daily drives – on just one battery charge. The EVplus concept vehicle is based on a volume production passenger car with an 8-speed plug-in hybrid transmission from ZF.

As a worldwide leader in marine propulsion systems, supplying systems and components for all types of ships, ZF Marine offers a range of  "hybrid-ready" transmissions to address the market needs. Our systems can be integrated into all types of fast craft, from coast guard vessels to fast offshore supply vessels. The resulting environmental protection extends to fuel savings, lower CO₂ emissions and noise reduction. ZF has also combined this transmission with our CeTrax, an electric drive. The scope of supply can be further expanded with input shafts, fixed-pitch propellers and controls produced by

ZF. Hybrid and purely electric, emission-reduced and climate-neutral ferries powered with ZF technology already operate in Tasmania, Sweden and Switzerland.

GRI 303 WATER 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Water is used at ZF locations for production, e.g. for surface treatment processes, washing, rinsing and cleaning, as a coolant, or for non-production purposes such as sanitary water, drinking water, in the canteen or during construction projects.

In 2019, all sites were assessed for their water risk using the WWF Water Risk Filter. Currently none of our sites is located in an area that is rated as water-scarce. Nevertheless, we regard the water consumption of all our sites for production as a major environmental issue and the use of freshwater could become increasingly restricted in the future. Therefore, the ZF water management objective goes beyond reducing consumption in risk areas: We want to constantly reduce specific water consumption throughout the Group. The target is therefore part of our environmental objectives for 2018 to 2020. All sources of water are considered. Location-specific projects focus on the reuse of water as well as on conserving water from all water. Progress is monitored and managed in line with our environmental management system at the individual locations and at Group level. In 2020 the water risk approach will be extended to locations in water-stressed areas.

GRI 303-1

Water withdrawal by source

The water supply at ZF locations is adapted to local circumstances and mainly comes from municipal sources. At some locations water from rivers or groundwater is used for cooling processes without any chemical change. Over the last year, the absolute consumption decreased by 6 percent.

Besides various projects for reducing overall consumption, ZF makes use of available water treatment and reuse technologies to reduce freshwater consumption.

T. 13 Absolute water consumption 2017-2019

in million cubic meters	2019	2018	2017
Ground and surface water	6,408	7,421	6,694
Municipal water	3,824	4,016	4,190
Rainwater	16	15	12
Total	10,248	11,452	10,896

T. 14 Specific water consumption 2017-2019

in cubic meters per € million sales volume	2019	2018	2017
Ground and surface water	134.1	148.1	140.4
Municipal water	80.1	80.2	87.9
Rainwater	0.3	0.3	0.3
Total	214.5	228.6	228.6

GRI 303-2

Water sources significantly affected by withdrawal of water

Some of our production locations, e.g. in Brazil and Mexico, are in so-called "water-stressed areas". Permits for water withdrawal for production are occasionally restricted in these areas. If water scarcity persists, the situation could worsen or

spread to other regions. Resource scarcity results in the need for increased investment or expenses to cover the technical modernization of production equipment.

GRI 303-3

Water recycled and reused

ZF makes full use of all technical methods for saving water in production processes, for example cascade rinsing systems for cleaning processes or process water recycling. The significantly increased amount of water recycled or reused (absolute and specific) bears out the positive impact of our efforts. We will initiate further projects in 2020.

At our site in Pamplona (Spain), oil components are now separated out of emulsions. The recovered oil can be delivered back to a refinery and water can be used again for the preparation of cooling lubricant. This way, the water savings amount to 1,500 m³ annually.

T. 15 Absolute water recycled/reused 2017-2019

in cubic meters	2019	2018	2017
Recycled / -reused	88,872	90,349	75,721

T. 16 Specific water recycled/reused 2017-2019

in cubic meters per € million sales volume	2019	2018	2017
Recycled/reused	1.86	1.81	1.59

GRI 305 EMISSIONS 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Fighting climate change and dealing with its consequences is one of the most urgent challenges at our present time. As substantial action is needed, carmakers and their suppliers are called upon to make their contribution.

The reduction of emissions resulting from energy consumption at production facilities is regulated through our environmental and energy management system. The target here is to reduce CO₂ emissions by 10 percent relative to sales by 2020, based on 2017 including direct and indirect emissions caused by ZF operations. Our environmental targets are currently being revised.

In 2017, the calculation of Scope 1+2 emissions was based on the VDA emission factors from 2015, while the calculation of the 2018 and 2019 emissions used the revised VDA emission factors from 2017. ZF has been annually reporting climate data within the CDP reporting scheme since 2016. Data include all GHGs allocated by types (CO₂, methane, ...) and per countries where we are operating. In 2019, ZF achieved the scoring level "Management B-".

ZF Climate Neutrality Strategy

As climate protection has become one of the most urgent issues of our time, ZF makes its contribution by bundling and strengthening current measures in a climate strategy: Our goal is to become climate-neutral – from Scope 1 to Scope 3 – not later than 2040 and already halve our emissions from production by 2030 compared to 2018. In doing so, the company is supporting the goals of the Paris Climate Agreement, which aims to limit global warming to 1.5 degrees. Setting an absolute long-term target allows for the identification of a clear reduction path.

In addition to CO₂ emissions, ZF will also manage emissions such as methane and various hydrocarbons. These often do not occur in as large quantities as CO₂ but are much more effective in the atmosphere. We are therefore initially concentrating on our locations, including all production, administrative and research facilities, because this is where we have the greatest influence in bringing about the change we need. Reducing emissions at the sites extends to all Scope 1+2 emissions, which include emissions caused by our own power plants and emergency power generators or those that arise from the use of purchased electricity or company vehicles.

The most challenging part is to achieve climate neutrality along the value chain. That means for the entire climate balance, including all pre-products and the associated transport routes, but also for the product, the vehicle itself, and its use and disposal. Since many of these sources are not directly under the control of ZF (Scope 3 emissions), success in this area can only be achieved and with greater effort. Nevertheless, these emissions will also be reduced. For this purpose, in the reporting year we compiled a first screening of Scope 3 emissions as the basis for a Corporate Carbon Footprint and to identify the materiality of relevant categories.

Supply Chain Program

Regarding procurement-related emissions, ZF's strategy is to buy where the supplied materials or components are needed if possible. It therefore follows the "local for local" principle, which helps to avoid the impacts of transportation. As a consequence, ZF decided to be responsible for all transport carried out from suppliers to ZF plants.

For us, this is the best way to ensure that transportation is organized efficiently and that environmental factors are systematically taken into account. As part of our freight management, we are making a concerted effort to pool transport and increase the full truck load (FTL) quota to avoid unnecessary transport.

A new tender is currently being issued for local freight transport at the Friedrichshafen site. The shift to alternative means of transport aims at the use of low-emission transport and alternative drive technologies as well as the selection of suitable vehicles for the respective applications (e.g. gas trucks, and later also hybrid vehicles and e-vehicles).

In addition, the use of sustainable logistics service providers is to be reinforced. To this end, a concept takes into account the emission evaluation in the award process to external companies as well as the evaluation of sustainability aspects of service providers used.

GRI 305-1

Direct (Scope 1) GHG emissions

Direct emissions include emissions from energy consumed at the sites, including natural gas, and fuels such as diesel, gasoline, biogas, acetylene or liquid gas.

Absolute direct (Scope 1) CO₂ emissions fell by about 1.7 percent compared to the previous year from 266,000 tons in 2018 to 262,000 tons in 2019. The reduction in energy consumption did not lead to the same reduction in CO₂ emissions. This is because absolute energy consumption decreased mainly in regions with lower emission factors but increased in regions with higher emission factors, e.g. Eastern Europe and Asia Pacific.

T.17 Absolute CO₂ emissions 2017-2019

in thousand tons	2019	2018	2017
Scope 1	262	266	266
Scope 2	1,323	1,361	1,334
Total	1,585	1,627	1,600

GRI 305-2**Energy indirect (Scope 2) GHG emissions**

Absolute indirect CO₂ (Scope 2) emissions fell by about 2.8 percent compared to the previous year from 1,1361,000 tons in 2018 to 1,323,000 tons in 2019. Indirect emissions include emissions from purchased electricity and all kinds of district heat. Emission profiles of purchased energies are part of the evaluation in the procurement process. In the reporting year, 35 locations (in Austria, Belgium, Brazil, Germany, Mexico and Spain) had special contracts to purchase green energy instead of standard electricity. To calculate these emissions specific factors of each site were used instead of the VDA emissions factors. For details see GRI 305-5.

GRI 305-3**Other indirect (Scope 3) GHG emissions**

Nevertheless, the majority of emissions in our value chain are generated during the utilization phase of our products. This is why, as part of our emission reduction efforts, we are focusing on developing products that contribute to cutting vehicle emissions. Therefore, the revised environmental objectives from 2018 to 2020 support our Vision Zero: aiming for CO₂ reduction in the development of new products through carbon footprint and lifecycle assessments.

Our approach for Scope 3 emissions focuses on the supplies and suppliers with the highest CO₂ emission levels in the life cycle perspective. Scope 3 emissions are not yet part of this report, but ZF is working on Scope 3 emissions and will work on specific measures in the near future regarding not

only purchasing goods and services, but also transportation. See  GRI 302-5 for more information on emissions from products and services.

In 2019, all relevant global domain functions worked together to conduct a comprehensive initial screening of ZF's Scope 3 carbon footprint. During the screening in alignment with the WRI/WBCSD GHG Protocol two kinds of material emissions were identified:

Material for ZF as main source of Scope 3 emissions	Material for ZF due to stakeholder expectations
Category 1: Purchased goods and services	Category 2: Capital goods
Category 11: Use of sold products	Category 4+9: Upstream and downstream transport
	Category 6: Business travel
	Category 7: Employee commuting

GRI 305-4**GHG emissions intensity**

The GHG emissions intensity results directly from the energy intensity and the footprint of each country where energy is purchased and used. In addition, the production footprint is strongly influenced by customer needs as well as national production and purchasing requirements.

Overall, CO₂ emissions were reduced by 2,6 percent or 42 thousand tons, mainly due to the reduction of energy consumption by 2,9 percent compared to the previous year.

Although ZF reduced absolute CO₂ emissions, the KPI CO₂ emissions related to sales increased and ZF is moving away from the 2020 target. Compared to 2017 the KPI increased by 0.1% which is mainly caused by weaker business performance and reduction in sales. CO₂ reductions is mainly reached due to reduction of energy consumption. In total CO₂ emissions were reduced by 42 thousand tons, thereof 37 thousand tons were documented to be achieved by more than 230 energy efficiency projects.

T.18 Specific CO₂ emissions 2017-2019

in tons per € million sales volume	2019	2018	2017
Scope 1	5.5	5.3	5.5
Scope 2	27.7	27.0	27.6
Total	33.2	32.3	33.1

GRI 305-5**Reduction of GHG emissions**

ZF is working on continuously reducing GHG emissions. Improvements result from numerous initiatives and projects to increase efficiency and raise awareness at a local level. All projects for reducing energy consumption or increasing energy efficiency also lead to a reduction in emissions.

Over 230 energy efficiency projects were implemented at ZF locations around the world. These were mainly in the areas of plant engineering, process optimization and building technol-

ogy. As in previous years, ZF expanded photovoltaic systems and installed a new PV plant in Rayong (Thailand) in 2019. In addition, PV systems are currently being planned at locations in Schweinfurt and Auerbach, Germany, or in Chennai, India.

The location Bielefeld (Germany) has been purchasing 100 percent of its electricity from renewables since 2018. A total of 35 locations in Spain, Austria, Brazil, Belgium, Mexico and Germany purchased electricity from renewables or with reduced CO₂ emissions.

Because realization of efficiency measures at various fields of technology, ZF was able to reduce CO₂ emissions by 42 thousand tons in the previous year. For details on projects see  GRI 302-4.

GRI 305-6

Emissions of ozone-depleting substances (ODS)

ZF locations worldwide manage their ODS emissions at local level in line with our environmental management system and according to local legal requirements. At our locations, ODSs are relevant to air conditioning processes and equipment. To ensure appropriate handling they engage qualified contractors for maintenance and service of the coolant equipment.

The most relevant ODSs in operation processes are volatile organic compounds (VOC), mainly used in surface treatment processes. For detailed absolute and specific emissions of solvents (VOCs) see GRI 305-7.

GRI 305-7

Nitrogen oxides (NO_x), sulphur oxides (SO_x), and other significant air emissions

A major percentage of ZF's VOC emissions originate from large painting and degreasing facilities. Wherever possible, we are continuing the transition to water-based paints and aqueous degreasing procedures so as to reduce VOC emis-

sions from these processes. Wherever water-based paints cannot be used for reasons of product quality, the captured exhaust flows from these facilities are technically treated to minimize VOC emissions.

Another approach to improving environmental performance is to change air filters from active carbon adsorption to thermal oxidation. This way, solvents can be oxidized effectively and solid particles extracted. Further potential ways to reduce VOCs in paint processes are being evaluated in certain products from the off-highway segment, bearing in mind the specific high corrosion resistance and resistance to mechanical stress requirements.

T.19 Absolute VOC, NO_x and SO_x emissions 2017-2019

in tons	2019	2018	2017
VOC	765	1,123	1,014
SO _x	3,875	2,984	4,068
NO _x	2,384	2,224	2,675

T.20 Specific VOC, NO_x and SO_x emissions 2017-2019

in kilograms per € million sales volume	2019	2018	2017
VOC	16	22	21
SO _x	81	60	85
NO _x	50	44	56

GRI 306 EFFLUENTS AND WASTE 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Our environmental management system aims at continually reducing the volume of wastewater and waste. In the year under report, there were no particular external influences or trends impacting our effluents or waste volumes.

Wastewater at ZF is usually discharged into the public sewer system and treated at local wastewater treatment plants connected to the system. Direct drainage into surface water only occurs at a few locations lacking public infrastructure. In these cases, water is drained only if approved by the authorities and is treated in conformity with state-of-the-art technology. Threshold values are strictly monitored here. ZF is committed to installing water-saving equipment that exceeds these statutory requirements. The amount of waste for disposal relative to sales of the current year is to be lower than for the previous year.

ZF is also constantly working towards decreasing the volume of waste sent for disposal and hazardous waste, by altering processes, optimizing procedures and substituting hazardous substances in operations. Another focus lies on minimizing landfilling of hazardous waste.

Relevant processes at ZF with a potential risk for the release of hazardous substances are essentially surface treatment, machining with metal working fluids and painting. Preventive technical measures in place at the locations ensure that hazardous substances cannot spill into the ground and endanger the groundwater, even in the event of a potential release resulting from a breakdown. A Group-wide reporting obligation has been introduced to cover the eventuality of a release.

Collecting data of pollutant loads has not proved to be effective since our locations have a wide range of different pollutants and threshold values. The most common pollutant loads are salts and metals.

GRI 306-1

Water discharge by quality and destination

The total and specific volumes of wastewater at ZF locations decreased. While a slight change was recorded for sanitary wastewater, lower treated and untreated process wastewater volumes contributed most to the overall decrease of wastewater.

Using water treatment technologies, ZF reduces not only freshwater consumption, but also effluents. The production process then uses the recycled water for washing, rinsing and cleaning operations and for the application of cooling lubricants.

T.21 Absolute wastewater 2017-2019

in million cubic meters	2019	2018	2017
Sanitary wastewater	2.161	2.266 ¹	1.483
Treated process wastewater	1.161	1.252	1.411
Untreated process wastewater	5.658	6.722	6.104
Total	8.980	10.240	8.998

¹ Due to new environmental reporting requirements for the Active & Passive Safety Technology Division, the combined KPIs for raw water at some locations of ZF in 2017 were not yet consistent

T.22 Specific wastewater 2017-2019

in cubic meters per € million sales volume	2019	2018	2017
Sanitary wastewater	45	45	31
Treated process wastewater	24	25	30
Untreated process wastewater	118	134	128
Total	187	204	189

GRI 306-2

Waste by type and disposal method

While the total amount of waste decreased by 2 percent, the specific amount of waste increased by 2 percent in 2019 compared to the previous year.

We initiated several projects worldwide to avoid waste or recycle waste better in the future. For example, our location in Sorocaba (Brazil) started separating pallets for reuse and shipment to our Itu site, thus optimizing truck space that is left in the freight to send parts to the aftermarket. This separation enabled an average of 300 pallets per month to be reused. Besides saving trees, optimized freight space reduces CO₂ emissions.

At our location in Lebanon (USA) all worm and valve components were shipped to our customers in cardboard containers with wood and pallets. Based on calculations from the Department of Forestry, 658 trees are required to produce packaging just for worm and valve demand. By replacing the cardboard and pallets with a returnable solution for safe transport to the customer, three environmental benefits were achieved:

- reducing the number of trees harvested to produce packaging supplies
- reduction in waste discarded – less waste going to landfills
- reduction in deliveries and thus lower emissions due to the extra space

T.23 Absolute waste 2017-2019

in tons	2019	2018	2017
Recycled non-hazardous	512,735	515,176	508,053
Recycled hazardous	33,458	38,208	34,856
Total recycled	546,193	553,384	543,190
Disposal non-hazardous	27,824	28,710	35,436
Disposal hazardous	29,650	37,250	35,772
Total disposal	57,474	65,960	71,208
Total	603,667	619,344	614,398

T. 24 Specific waste 2017-2019

in tons per € million sales volume	2019	2018	2017
Recycled non-hazardous	10.73	10.28	10.65
Recycled hazardous	0.7	0.76	0.73
Total recycled	11.43	11.05	11.39
Disposal non-hazardous	0.58	0.57	0.74
Disposal hazardous	0.62	0.74	0.75
Total disposal	1.2	1.32	1.49
Total	12.63	12.37	12.88

GRI 306-3

Significant spills

In 2019, as in the years before, no significant spills with impact on the environment were reported.

GRI 306-4

Transport of hazardous waste

ZF does not export hazardous waste from one country to another. Our waste management is organized locally.

GRI 306-5

Water bodies affected by water discharges and/or runoff

No bodies of water were significantly affected by wastewater drainage.

GRI 307 ENVIRONMENTAL COMPLIANCE 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

We continue to operate responsibly as a business and a manufacturer of ZF products by constantly striving to comply globally with legal requirements and internal standards.

In the context of environmental management, compliance is a core issue. Due to various local requirements, legal developments are pursued and evaluated and – if necessary – measures implemented at all locations and levels of the ZF Group. Processes and events that are relevant to compliance must be reported.

GRI 307-1

Non-compliance with environmental laws and regulations

ZF was involved in over 56 remediation projects, whose causes date back at least a decade. The processing of these projects is carried out jointly with the relevant local authorities. The costs for these projects was in excess of €7.4 million. Furthermore, no major violations were reported in 2019.

GRI 308 SUPPLIER ENVIRONMENTAL ASSESSMENT 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

When selecting suppliers, ZF carefully reviews their environmental management. Furthermore, product-related environmental protection elements are addressed in the Supplier Quality Directive ( QD 83). The directive also aims at sub-suppliers and includes aspects such as REACH, logistics and packaging specification. See  GRI 204 for more details on the management approach for procurement, supplier standards and assessment.

Capacity building

We set up the ZF Supplier Academy to create a strategic co-operation and qualification platform in order to promote and support cooperation with our production material suppliers. ZF suppliers have the opportunity to take part in seminars held in their regions. Participation provides suppliers with an in-depth insight into ZF requirements, standards, guidelines and procedures so that they can subsequently apply these effectively at their companies.

GRI 308-1

New suppliers that were screened using environmental criteria

In the reporting year, all new ZF suppliers underwent self-assessment following sustainability criteria. No indications of infringements of our principles of environmental protection, human rights, labor practices, forced labor, child labor or freedom of association were identified.

GRI 308-2

Negative environmental impacts in the supply chain and actions taken

China continues to introduce stricter regulations and related measures with regard to violation of environmental laws and regulations. ZF considered these in updating EHS requirements for the approval process of new suppliers in China. For existing suppliers with potential environmental risks, the Purchasing and Supplier Management team is undertaking preventive actions.

SOCIAL

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

As part of the changing market environment, ZF is responding to megatrends, strong growth in the Asia-Pacific region and North America, technological and demographic change, and worldwide population growth. At the same time, highly qualified personnel are key to the company's long-term success. Therefore, attracting and systematically further developing personnel is one of ZF's major challenges. This is why ZF is positioning itself as a globally attractive employer.

Preparing for future challenges

Our Management System (ZF MS) was created to provide both theoretical guidance and practical instruction for effective cooperation. It aims at shaping our way of working in terms of speed, simplicity and target focus. As core elements of the ZF MS, the four equally important principles "Innovation Approach", "Customer Focus", "Commitment to People" and "Result Orientation" form the ZF Charter. These principles provide direction and guidance to ZF employees regarding expected behavior and mindset. They also define what is important to us, how we do business and what makes us special:

- **Innovation Approach:** We develop pioneering products and technologies that help us achieve our strategic goals – and are financially rewarding. Our employees and business units alike all strive to develop innovative and creative solutions. We think like entrepreneurs. This also means we take risks and learn from our successes and failures.
- **Customer Focus:** We win over our customers with our quality and our passion, offering them clear added value. This applies to internal and external customers alike. At the same time, we always aim to be profitable – and act accordingly, in every part of our organization.
- **Commitment to People:** We support and encourage our employees in the fulfillment of their duties and responsibilities. In return, we expect commitment and performance. We provide constructive feedback and foster a culture of trust.
- **Result Orientation:** We set ourselves challenging goals and measure what we achieve. We deliver as promised, and value agility. By finding the right balance between quality and speed, we ensure that we succeed in what we set out to do.

GRI 401 EMPLOYMENT 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Responsible, supportive and fair – that's the kind of employer ZF aims to be. We want to create a corporate culture that strengthens collaboration, trust and entrepreneurship. And we are convinced that this approach also leads to better financial results. We provide support and make offers, but at the same time ask for our employees' dedication and commitment. We want to create a work environment that rewards high performance and team work. Fairness, as we see it, provides benefits for employees and employer alike.

The transformation in the automotive industry as well as the implementation of the corporate strategy "Next Generation Mobility" requires a high level of commitment from the employees in the company and the willingness to adapt to new developments. To ensure that they can orient themselves clearly in this changing environment, we have developed a central roadmap for the Group that brings together all strategically relevant internal initiatives of the Group and links them to concrete sets of measures such as "Agile@ZF" or "smarter@work".

This central roadmap is embedded in a broad personnel development landscape and will help us to firmly establish ourselves among the most attractive engineering employers worldwide in the coming years. We want our employees to actively shape the future of mobility. We strive for a balanced gender ratio, promote an international workforce, seek a broad spectrum of experience and expertise, and must be well prepared for demographic change.

GRI 401-1**New employee hires and employee turnover**

In Germany alone, ZF hires approximately 600 new apprentices per year. As the implementation process of new HR software tools has not yet been completed, other parameters are currently not reported on for the Group but reporting is envisaged for our next sustainability report.

T. 04 Employee turnover for 2017-2019

as percent of headcount	2019	2018	2017
Europe	2.51	4.75	4.6
North America	31.92	37.93	35.4
South America	1.37	2.59	2.3
Asia-Pacific ¹	5.41	14.74	15.3
India ¹	7.09	0.73	-
Africa	0.69	1.50	1.7
Total	10.12	13.91	13.3

¹ As of 2018, India is not listed as part of Asia-Pacific but as a separate region

GRI 401-2**Benefits provided to full-time employees that are not provided to temporary or part-time employees**

ZF employees with part-time, full-time, permanent or temporary employment contracts are provided access to the same benefit programs. Health and insurance benefits play a central role in ZF's offering to employees. Of course, benefits vary according to local standards, regulations and market practice. Benefit programs for contractors and agency temps are treated according to the type of contractual engagement with ZF and according to local regulations.

Provisions for pensions are set up for obligations from vested benefits and current pensions for entitled current and former employees of the consolidated ZF Group and their surviving dependents. For details on the provisions for pensions see  GRI 201-3.

GRI 401-3**Parental leave**

At the end of December 2019, a total of 490 employees took parental leave (up to three years) in Germany; of this number, 124 were male and 366 female. 564 female and 1626 male employees took parental leave for a short period (up to one year) in 2019. Using parental leave for a short period, in most cases two months, is very popular among parents.

GRI 402 LABOR/MANAGEMENT RELATIONS 2016**GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)**

The common interest of employees, employee representatives and company management is to sustain our international competitiveness and achieve sustainable commercial success. Confronting the challenges of globalization, we strive for collaboration at all levels based on mutual respect.

A trusting cooperation under the Works Constitution Act is a fundamental factor in our corporate culture. This applies to all employee representative committees such as the individual works councils and committees, including the General Works Council, the Group Works Council and the European Works Council as well as the individual contact persons on the employer's side.

GRI 402-1**Minimum notice periods regarding operational changes**

All legal obligations are respected. Employee and employer representatives regularly interact in an atmosphere of trust. Employee representatives are therefore comprehensively informed in a timely manner about changes in the company.

Fundamental questions concerning the company's development are discussed in communications and at meetings. The discontinuation and relocation of companies or sub-units, investments and other changes to the organization are significant topics of discussion.

GRI 403 OCCUPATIONAL HEALTH AND SAFETY 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

Our employees' safety, health and well-being are core values at ZF. They are therefore an integral part of the company's culture and strategy. As we are aiming for appreciable value to our employees and other stakeholders, the vision is to manage our Environment, Health and Safety (EHS) performance to occupy a leading position in the automotive industry. Our EHS Policy describes the mission, execution and responsibilities in fulfilling this vision. An EHS Management System contains detailed stipulations in order to strengthen EHS processes throughout the company and is subject to annual revision.

To measure the implementation and effectiveness of the management system, half-yearly self-assessments have been performed at each location and audits carried out by members of the global EHS team approximately every three years.

The ZF Group has defined targets to further protect, preserve and promote health, well-being and job satisfaction. Progress in target achievement is frequently measured, monitored and managed. The targets for 2019 and 2020 were released by the BoM in March 2019 and communicated company-wide.

While compliance with legal and regulatory requirements is the foundation of all our activities, we have implemented our own Group-wide EHS standards (ZF EHS Management System). We aim to meet or exceed customer requirements but also to prevent EHS risks.

In addition, ZF believes that safe behavior cannot be achieved by technical or organizational measures alone. Safety Excellence programs have therefore been implemented at all levels of the organization. These programs are constantly enhanced

to build Safety Leadership and engage employees in the prevention of work-related injuries and illnesses. They form the basis for the world-class performance and the safety culture that we are striving for.

Organizational structure

The three-dimensional Environment, Health & Safety (EHS) organization of ZF comprises the following elements:

- Centers of Excellence developing program elements,
- Regional teams with focus on site service and legislation and
- ZF-internal business partners to coordinate all EHS aspects in the division or business unit.

The International Health Group with focus on Asia-Pacific has been launched.

Managing safety

Aiming for constant improvement, all ZF locations apply our internal management system which was established in 2018. Locations may grant certification on a voluntary basis within our Integrated Management System (IMS) for occupational health, safety, environment and energy, which conforms to the international standards OHSAS 18001/ ISO 45001. However, if stipulated by customer requirements or if locations fall significantly short of their accident reduction targets, they are expected to join the certification scheme. In 2019, 75 locations (in 2018: 71) were matrix-certified, and a further 30 locations hold a single-site certification. Almost all of our employees and workers are covered by our internal management system, and about 40 percent are covered by a certified management system.

First of all, the EHS Management System focuses on the prevention and minimization of risks and impacts related to Health and Safety. Periodical risk assessments are performed to calculate the level of risk based on the severity and prob-

ability of potential harm, applying methods similar to failure mode and effects analysis (FMEA). Workstations and all related activities, for example, are subject to these assessments. On the basis of the results, preventive measures are defined and implemented – applying the hierarchy of controls, which means first endeavoring to eliminate or substitute hazards, then devising technical control measures to contain hazards, and finally organizational measures or personal protective equipment. Reassessments are performed to confirm effectiveness.

Particular attention is given to non-routine activities, where most severe accidents occur. Key criteria are considered for occupational health and safety protection in the planning and procurement of machinery and equipment. Our objective is to promote a global standard for machine safety. The ZF organization is supported by a Group-wide machinery safety expert team as well as an interdisciplinary team from Production, Purchasing and EHS that define and publish ZF's technical delivery specifications for the supply chain.

All employees and their representatives are involved in the continuous improvement of health and safety in the workplace and are subject to regular qualification measures. Staff are motivated to report near misses and unsafe situations at the daily shop floor meetings and to participate in activities such as risk assessments, kaizen workshops and suggestion schemes. ZF has established a policy against reprisals and the employees receive feedback on how their reported information is handled. Also, we have established the ZF TruStline where issues reported by employees are treated strictly confidentially.

The locations have developed employee reward schemes as required by the EHS Management System, to recognize their contributions to improving safety. Implementation of employee involvement and employee reporting is subject to internal audits. At the sensing session (an interview of

non-supervisory employees with no presence of managers or supervisors), for example, which is performed during the Corporate EHS audits, employees can express how they are becoming involved in Health and Safety issues and if there are any concerns. The origin of employee statements is kept confidential. In case of unacceptable risk, employees have the right to stop activities and talk to their supervisor and/or Safety officer and/or Safety representative. As part of the Safety Leadership program, all leaders are made aware of this possibility and train appropriate responses.

Incidents causing injury and near misses with the potential to result in severe accidents or fatalities are deeply investigated using root cause analysis, the 5 Why or 8D method. To prevent accidents from occurring in the future, information is shared among the worldwide locations using online Safety Alerts, with a summary of the event, the root causes and preventive measures taken; these are posted on the EHS intranet.

In 2019 we continued to improve the EHS performance of the supply chain, especially in relation to suppliers providing onsite services at the locations (contractor activities). The process which was defined in 2018 to better manage contractor qualification and performance was tested at eight pilot locations and lessons learned were considered at the other locations during the global rollout. Contractors are selected according to their proven ability to perform safety-critical activities. Tight cooperation between trained ZF supervisors and contractors, e.g. discussing contractors' risk assessments and control measures, proved to be an important component for improving the safety of contractor employees. Supplier EHS days also fostered the cooperation at the pilot locations and will be repeated at further sites.

One of the focus areas for ZF in 2019 was to improve the safety of internal transport by reducing the potential risk to pedestrians and the number of incidents compared with the previous year by 20 percent, using:

- Risk assessment
- Improved segregation of pedestrians and vehicles
- Improved safety technology in equipment
- Minimized use of rider-operated fork-lift trucks in manufacturing areas
- Effective training of drivers and pedestrians

More than 90 percent of our locations reported to meet the target.

Safety Excellence

The Safety Excellence program is ongoing and comprises three key areas: Safety Leadership, Employee Involvement and Continuous Improvement of Functional EHS Programs. This program aims to sustainably foster the same culture of shared values regarding health and safety for every employee and at every location. To build a culture in which safety is a value, ZF encourages and empowers employees to make a positive impact on their work environment.

Safety leadership

Safety Leadership (SL) is a global program (launched in 2017) to improve leader's awareness of safety and their ability to consider safety in daily business (e.g. acting as role models and involving employees). In 2019, the implementation continued in Germany focusing on site level. Outside Germany, the rollout continued in all regions. In the reporting year, 3,488 leaders participated in 307 workshops delivered by Safety Leadership Coaches – trained employees from EHS and production. Overall, 10,554 leaders have now participated in 917 workshops since the start of the program.

Module 1 focuses on the transformation to a sustainable safety culture, presenting nine Safety Leadership Elements and introducing five Safety Basics. Module 2 focuses on hazards, risk assessment, incident investigation and managing at-risk behavior.

Employee Involvement

Behavior Based Safety (BBS) aims to increase employee involvement in safety by making employees more aware of how an individual's behavior at work largely determines safety outcomes. About 120 (2018: 100) locations have implemented this process of safety coaching, with employees coaching their colleagues in working safely. In 2019, a total of 22 sites from different divisions and regions were added, and a number of sites started to prepare the rollout in early 2020, when approximately another 20 sites will be added to the BBS program. Train-the-trainer training will be performed in early 2020 to ensure adequate resources for the BBS rollout in Germany.

Continuous Improvement of Functional EHS Programs

The backbone of the Continuous Improvement program is our EHS Management System. Implementation started in 2018 and is expected to cover 90 percent by the end of 2020. Progress is being evaluated using self-assessments and as part of the EHS Corporate Audit Program. The audit program also includes an evaluation of legal compliance, performed by a third party.

As MSDs (musculoskeletal disorders) make a significant contribution to our accident/illness rates, we continue to add locations to our Group's software-based ergonomics program. This includes features such as e-learning, ergonomic risk assessment and best practice solutions; workplace risk assessments are performed by members of a trained location Ergo Team. The goal of performing 1,500 new Ergo Assessments was exceeded by more than 150 percent.

Managing our well-being

In the EHS Management system we have included a standardized element concerning Occupational Health. The procedure is oriented towards ISO 45001 and covers core medical issues as well as health-related interdisciplinary issues. A first worldwide self-evaluation was conducted.

The training units on the topic of “Leadership and Health” in Germany were almost completed in six of ZF’s nine divisions as well as in the corporate functions.

The campaign “Fit im Betrieb” was rolled out at all German locations. The campaign includes a variety of measures like lessons, newsletters, training, a corporate run and active breaks. At least two measures will be conducted at each German location by June 2020. The campaign was supported and promoted via the new intranet “Zoom”. An evaluation of the campaign will take place at the end of the campaign in June 2020.

In connection with the future EU-OSHA campaigns the next ZF health campaign, starting in 2020, will focus on the prevention of work-related musculoskeletal disorders (MSDs).

GRI 403-1

Workers representation in formal joint management – worker health and safety committees

About 60 percent of employees worldwide are covered by national, regional or local labor agreements. The EHS Management System stipulates that site Management Team shall consult with employees and their representatives and encourage them to participate in EHS initiatives and decision-making processes. In some countries this is specified by law. Management shall define the scope of this involvement to satisfy the legal requirements (if any) and to make best use of the employees’ involvement. Employee involvement in EHS Programs shall be supported in activities, teams and

initiatives, such as EHS Committees and Councils. All sites confirmed in their management reviews that they comply with this requirement.

The German Law of Occupational Health and Safety Act stipulates that occupational health and safety committees are to be organized at German locations. Members of the Works Councils are also represented on these committees. Prior to the occupational health and safety committee meetings, specialists in occupational health and safety, medical officers, representatives of the Works Council and responsible executive managers carry out inspections and audits to gain an insight into the current status and requirements for change.

GRI 403-2

Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities

Work-related accidents resulting in lost time are recorded and analyzed in order to monitor safety performance. In 2019, the data included agency workers (workers who are not employees but whose work is controlled by ZF) but due to the current database structure, injury rates and gender cannot be disclosed separately. A new database will be implemented in Q1/2020 and will provide more detailed information. Data on health quotas and absenteeism are not available on corporate level.

In 2019, no employee or agency worker experienced a fatal work-related accident within the ZF Group.

With 1,142 work-related accidents resulting in 16,585 lost working days, on the basis of 300 million hours worked, the Lost Time Accident Rate (LTAR) – accidents per one million working hours – amounted to 3.8. This represents a reduction by 16 percent compared to the previous year. The regions NASA and AP show excellent results, and all regions made

significant improvements. The number and rate of high-consequence work-related injuries as well as recordable injuries, such as restricted cases or injuries beyond first aid, will be determined in our future reporting system and reported from 2020.

The monthly results show a rather stable rate around the target (no very good or bad months), which could be interpreted as a further step toward integrating Safety in our business and improving the safety culture. This rising management attention is mainly the result of our Safety Leadership Program, along with monthly safety reviews and the improved involvement of our employees. The Severity Rate (Lost Working Days per Lost Time Accident) was 14.5 (2018: 17.4).

The most frequent types of injury involved fingers and hands; these were sustained in the areas of assembly and machining.

T.25 Rate of accidents (LTAR)

Accidents with working days lost per one million working hours	2019	2018	2017
EMEA	6.5	7.5	8.8
of which Germany	8.6	9.8	11.5
of which Europe (excl. Germany)	3.9	4.6	5.8
North America (incl. Mexico)	1.5	1.7	2.2
South America	2.9	4.4	4.8
Asia-Pacific	0.6	1.0	1.0
India ¹	0.3		
ZF Group	3.8	4.5	5.5

¹ From 2019 onwards reported as separate region besides Asia Pacific

GRI 403-3**Workers with high incidence or high risk of diseases related to their occupation**

Information on occupational diseases is currently only reported for Germany. There were 12 cases of confirmed occupational diseases at different locations in Germany, but no indications of employee groups with a high rate or risk of disease resulting from their work at ZF during the reporting year. The risks of occupational diseases and work-related health problems typical of the metalworking industry are well known. Preventive measures and contingencies for intervention are in place.

Hearing impairment caused by noise was again the most frequently reported occupational disease among ZF employees. There were 12 potential and eight confirmed cases in 2019. As hearing impairment caused by noise usually develops over years of exposure to noise, the latest figures for occupational diseases identified do not necessarily reflect current working conditions. Strain on the inner ear is also reduced by wearing suitable personal protective equipment (PPE). This hearing protection equipment is available to all employees affected, and wearing it is mandatory in noisy areas.

Apart from hearing impairment, some work-related skin diseases were diagnosed. In 2019, only 25 cases of potential work-related skin diseases were diagnosed and one was confirmed. We provide the required skin protection to prevent work-related skin diseases and stipulate its use in skin protection plans. Whenever employees suspect they have health problems, they can consult the company doctor or medical service during working hours. All employees have the option of undergoing additional health check-ups alongside mandatory health care at ZF. In 2018 we placed particular emphasis on skin health at all German locations in the form of skin protection campaigns. In the metalworking industry, the risk of occupational infectious diseases is negligible. People who

take business trips to countries with increased health risks, including possible infectious diseases, receive obligatory preventive care.

GRI 403-4**Health and safety topics covered in formal agreements with trade unions**

The system of codetermination in place at the German ZF locations also applies to health and safety at work. Close cooperation on these issues occurs between the Works Councils and the Group Works Council. Occupational health and safety issues are part of the Group Directives and guidelines applied at the various locations. In Germany, the approval process for these regulations includes the involvement of employee representatives regarding issues subject to codetermination. On a location level, there are various guidelines on hand that cover occupational health and safety.

GRI 404 TRAINING AND EDUCATION 2016**GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)**

Individual and organizational development, qualification and life-long learning are decisive success factors when it comes to securing a company's long-term future. Our employees require the right skills in order to guarantee that we retain our power of innovation. ZF employees can choose from a wide range of advanced qualification opportunities.

ZF is committed to developing people, management and the organization by focusing on various layers and target groups and it invests accordingly. Talent management, learning and development, educational enhancement and enrichment, and competency management are supported and strategically developed. Applying this holistic approach to management

enables us to systematically monitor and anticipate workforce issues in all corporate areas. This, in turn, allows us to respond to the challenges of demographic change.

All training programs are systematically evaluated. Participants and trainers submit an evaluation after every event as part of a continuous improvement process. These form the basis for regular reviews and appropriate revisions. We select external training providers and trainers according to defined criteria and a selection process carried out jointly by the specialist department and Purchasing.

Increasing digitalization and connectedness in production are making their way into companies under the moniker "Industry 4.0". This is also changing the requirements for apprenticeship. As a result of the project "Apprenticeship 4.0", ZF continues to foster the integration of IT and hybrid qualifications in the internal apprenticeship program. The following job profiles will maintain their importance in the future: qualified IT and electronic specialists (as well as bachelor degrees) and production technologists. The internationalization of apprenticeships remains important for the ZF Group. The ZF site in Saltillo, Mexico was certified as a dual training center by the AHK and DIHK in 2019.

ZF as a learning organization

The knowledge management approach is currently only in place at ZF sites in Germany and does not yet include locations of the Active & Passive Safety Technology Division. The objective is the conscious, responsible and systematic handling of knowledge as a resource. Collaboration rooms, wikis and virtual communication media support the virtual cooperation of employees. Best-practice databases store valuable practical experience and make it available for reuse. Expert forums ensure the targeted exchange of knowledge and experience.

The suggestion and idea management schemes provide employees with a platform for submitting improvement suggestions and ideas. The ideas@ZF project has created the conditions for an idea management process across all locations. This allows ideas to circulate between the German locations. Thanks to the continuous improvement process, specific improvement potential has been identified and implemented.

Knowledge and idea management in the Corporate HR function creates awareness of the effective handling of knowledge and ideas; it provides advice and supports the professionalization of existing activities as well as building new activities in knowledge and idea management.

GRI 404-2

Programs for upgrading employee skills and transition assistance programs

ZF places great importance on education and training, resulting in improved qualifications. In the reporting year, over 600 young people started an apprenticeship or dual study program in Germany. By the end of 2019 our apprentices numbered around 2,300 worldwide. Around 12 percent of these students are completing a dual study program at a university. This young target group can choose from 35 different apprenticeships and Dual University courses of study.

New ways of learning

Within the Center of Expertise 'Global Learning and ZF Academies' an important focus is on global learning topics and the question of how we as an organization need to adapt to be ready for the future and become a learning organization.

An essential component is the extension of our learning mix and the integration of different elements into one common learning architecture. The goal is to offer the right format for

the respective learning needs and target groups and provide workplace-integrated learning offers, such as videos, tutorials and social learning elements combined with instructor-led formats such as face-to-face training or live online training.

Furthermore, it is essential to take a closer look at the effectiveness of the training offers provided. We therefore expanded our business model towards a higher prioritization of business needs and value-based learning approaches. One of our first initiatives is the implementation of a global digital learning life cycle process, with a major focus on consultancy and support of subject-matter experts in the design and creation of digital learning content.

To support the digital transformation at ZF and the necessary cultural change, further specific initiatives and measures are being implemented to shape our learning culture to become more open, connected and collaborative. This includes learning in communities, learning from mistakes and more self-responsible learning elements. Another focal topic is devising initiatives and measures to develop the competencies and skills needed in the future. Here the team expanded its internal and external networks and intensified its collaboration with external partners such as universities and institutes.

The ZF Academies promote advanced specialized training opportunities for managers and employees in all corporate functions. The objective is to achieve systematic and global advanced training of employees with technical training programs derived from the Group strategy. Various internal ZF Academies offer an extensive range of advanced training opportunities for employees in Materials Management, Quality, Finance, IT, Sales, Production, Digital and other associated functions. By further expanding activities of the R&D Academy, we are intensively supporting the transformation process of this area. In addition, we are currently setting up an HR

Academy to focus on qualification and processes dedicated to HR. Target groups are cross-divisional, cross-location and international. The course portfolio is tailored to functional and cross-functional learning needs, thus establishing a globally consistent standard of knowledge and expertise.

Improving qualifications and developing leaders

Throughout 2019 we worked intensively on foundational leadership, which will be made available in 2020.

Since Leadership Excellence is a strategic target of the ZF Group, we continued our "ZF Global Leaders" program until fall 2019. The program comprised level-specific modules with a blend of in-person sessions, virtual learning, self-reflection tools, peer group coaching and work on real cases. It aimed at strengthening the Group's leadership pipeline while at the same time creating a uniform global leadership culture through cross-divisional, cross-functional and cross-regional group composition.

1,288 managers from all over the world have participated in the programs since September 2017. In 2019, 603 managers participated in the ZF Global Leaders Program and 22 new cohorts started. In order to increase benefits regarding innovation and efficiency, ZF started revising the current ZF Global Leaders landscape and designing an improved program in 2020.

Preserving knowledge

In order to retain knowledge in the organization, ZF has created knowledge batons whereby employees who are leaving the company make their practical knowledge available to the organization. Existing expertise is documented on storage media so that knowledge can be shared and exchanged using search engines in which employees can enter specific queries.

In 2016, the ZF Group created a program to allow former employees to contribute their valuable experience and extensive knowledge. The “Senior Professionals” program enables participation in specific projects and matches specialist areas with senior experts. These temporary assignments can be managed with little administrative effort and provide ZF with a flexible and dedicated workforce. In the reporting year, the program included 271 registered experts with 26 work assignments.

In Germany, ZF is pursuing a comprehensive approach to dealing with the challenges of an aging workforce. For example, workplaces are being designed to accommodate these requirements, and emphasis is placed on finding the right work-life balance between career and private life. ZF is also focusing on health management, flexible working time models and lifelong learning.

GRI 404-3

Percentage of employees receiving regular performance and career development reviews

A Short-Term Incentive (STI) is being applied for all managers to foster a culture of innovation and performance, thus leading to stronger target focus. The STI consists of key financial performance indicators and an individual component based on individual targets and personal performance. Assessing the company and individual components ensures comprehensive evaluation of the results achieved throughout the year. The process is transparent and defines the framework for actions and priorities within the Group, and for the behavior and attitude we expect from our managers. The STI will be revised in the course of 2020. It is intended that only Business KPIs will be relevant for the new STI structure.

ZF believes in and values both the personal and professional development of its employees. Consequently, ZF conducts a globally aligned performance review and potential evaluation process (including succession planning) for all managerial employees, including annual feedback meetings between managers and employees. Every managerial employee receives annual feedback on his or her performance. In the reporting year about 5,800 managers received feedback.

In 2019, the potential evaluation process was extended to employees in the non-managerial pay-scale area who have potential for a managerial position. This process was supported by a cloud-based solution.

In 2020, ZF will revise the performance approach to better meet future challenges by improving flexibility, efficiency and agility within the Group. The new process will then replace the existing individual Targets and Performance (iTaP) process. With the alignment of these two processes ZF also intends to create the opportunity to install an employee dialogue with focus on comprehensive feedback and future-oriented skill development.

GRI 405 DIVERSITY AND EQUAL OPPORTUNITY 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

We understand diversity as the key to success, a driver of innovations and a factor in enhancing corporate value. This is why ZF signed up with the Diversity Charter and is among a group of approximately 3,300 signatories dedicated to a welcoming, prejudice-free corporate culture. This voluntary commitment represents our pledge to actively promote diversity within our organization.

Managing diversity

Our HR strategy highlights the issue of diversity as part of the Group strategy. The topic is managed through a dedicated corporate diversity department with the support of regional coordinators. Besides using our intranet, employees can also address diversity topics via the official e-mail address diversity@zf.com.

ZF focuses on particular dimensions to meet strategic challenges and contribute to enhancing the Group’s future competitiveness. These dimensions include a balanced gender ratio, issues such as cultural background and internationality of the workforce, a wide range of experience and expertise as well as responses to demographic change. All of these factors are systematically analyzed and processed on a regular basis, and results are reported to the Board of Management.

The introduction of ZF Career Elements for managers has enabled us to define a binding framework for job and career decisions – ensuring equal opportunity. The modules determine criteria for promoting and supporting multidivisional, multidisciplinary experience and help to internationalize management. The ZF Career Elements were rolled out globally and are well implemented in the organization.

ZF Diversity Day

For the first time ZF held its Diversity Day in May 2019 at locations around the world. The worldwide campaign “Join the Conversation” aimed at taking notice of employees’ voices and opinions on the subject of diversity, as well as to encouraging debate about what drives diversity in the company and what positive impact it has for business. The events at the three headquarters Friedrichshafen (Germany), Livonia (USA) and Shanghai (China) took place with keynote speeches, panel discussions and bar champs. Further ZF locations also participated and celebrated worldwide.

Employee Resource Groups

Networking and experience exchange are very important success factors. ZF fosters collaboration among employees from different departments, different areas of expertise, countries and backgrounds, since this is the best way to promote new ideas and innovative solutions. With Employee Resource Groups (ERGs) in our social intranet we build competencies in various areas of interest and thereby strengthen networked cooperation. These groups include (Wo)men@ZF, OUT@ZF and Diversity@ZF.

Mentoring women and strengthening STEM

We believe that women are equal to men. To counterbalance structural disadvantages of women in society, ZF introduced the (Wo)men@ZF mentoring program in 2018. With twenty participants receiving a structured strength-based mentoring it has started successfully. A new run launched at the end of 2019. The mentoring program aims to give employees new perspectives, expand their network at ZF and work on their careers.

As part of ZF's approach to managing diversity we have set a focus to attract women for careers in STEM (Science, Technology, Engineering, Math) professions. ZF is proud to be a corporate partner of the university networks Femtec and UNITECH, whose students want to become highly qualified, internationally experienced STEM graduates with access to prime entry positions.

UNITECH International is a European network of top engineering universities and multinational companies offering scholarships to selected students. In 2019, ZF was able to recruit more students from these talent pools for internships, theses and final positions. Due to a refocusing of our STEM activities and networks ZF will defer the UNITECH cooperation after 2019.

We are also a partner company of the highly renowned Femtec Association, which was founded by the EAF Berlin and the Technical University of Berlin in 2001. Femtec is an international career platform for women in natural sciences and engineering. The organization recruits talented young female students, qualifies excellent candidates for a management career and offers distinguished career perspectives in cooperation with the partner companies. Through its involvement in the Femtec Network, ZF offers a glimpse into the working world at a technology company. ZF thus offers plant tours or specific projects, for example. During this year's Innovation Workshop ("Innovationswerkstatt"), carried out with and for ZF, the Femtec participants dealt with questions and ideas for automated driving.

Empowering equal opportunity

The compatibility of work and family is an important driver for promoting equal opportunities and employee satisfaction. This is why one of the ZF Career Elements is a "social career element", which covers parental leave, leave to care for relatives and other types of community and family commitment.

Since 2006, the ZF location in Friedrichshafen has been certified as a family-friendly company in Germany. As part of the "career and family" ("berufundfamilie") audit, family-related targets and measures have been firmly established. The audit is a widely recognized branding and an excellent instrument for increasing employer attractiveness and employees' commitment. It provides our employees with a framework that allows them to reconcile their work, family and private life. A culture of cooperation and partnership on the part of all concerned is of great importance to us and will allow all parties involved to equally benefit from this certification. Our focus here is on a principle of give and take.

Since 2018, the existing audit has been extended to other major locations in Germany: Besides Friedrichshafen, now also Schweinfurt, Lemförde, Passau and Saarbrücken have participated.

Additionally, family-friendly minimum standards were defined and consistently implemented by an expert body for work, family and private life. Having actively implemented the aspect of career and family care for many years, we have also extended childcare places and options for short-term care throughout the Group. Another important element is providing daycare for about 700 employees' children during school vacations in Germany. To name a few more exemplary measures, these include operating agreements on mobile work, contact points for work and family at all major German ZF locations, connection of employee partners in family-related time out, well-established counseling services for professional and private crisis situations, various childcare services, support services and information on the subject of care as well as care solutions.

Diversity ranking

In a recent study conducted by the Financial Times and Statista, a German online portal specialized in statistics, ZF Friedrichshafen AG ranked tenth among 700 companies.

The survey included 80,000 employees from 10,000 privately held and publicly listed companies with at least 250 employees. The research considered all types of diversity and covered ten European countries: Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Sweden, Switzerland and the UK.

GRI 405-1

Diversity of governance bodies and employees

Regarding age diversity, from a global perspective demographic change comes in many different forms. While western industrialized countries are primarily confronted with the challenges of an aging population, people in developing and newly industrialized countries are much younger. Since ZF is a global player with about 241 locations in 41 countries, the age structure of the company's workforce is very heterogeneous and is strongly dependent on the history of each particular ZF location.

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

At the first managerial level (executive vice president/senior vice president) and the second managerial level (vice president) below the Board of Management, the percentage of women is planned to increase to 15.0 percent in each case.

For vacancies regarding the Board of Management, a quota of 10.0 percent female Board of Management members is envisaged. The appointment of Sabine Jaskula as member of the Board of Management in 2018 for the HR and Legal Corporate Function means that this target has already been met.

T. 06 ZF employees by gender¹ 2017-2019

headcount	2019	2018	2017
Men	108,424	65,680	64,071
Women	39,373	12,619	11,959

1 2017 and 2018 without Active & Passive Safety Technology Division; included in 2019

T. 05 ZF employees by region and gender¹ 2017-2019

in percent	Women			Men		
	2019	2018	2017	2019	2018	2017
Europe	22.89	14.30	13.85	77.10	85.70	86.19
of which Germany	14.07	13.15	12.93	85.93	86.85	86.99
North America	40.38	27.46	26.62	59.61	72.54	73.98
South America	13.60	9.17	9.1	96.40	90.93	91.49
Asia-Pacific ²	21.67	16.63	16.91	78.32	83.37	81.11
Africa	28.42	16.25	14.73	71.58	83.75	84.93
Total	26.64	16.12	15.73	73.36	83.88	84.27

1 2017 and 2018 without Active & Passive Safety Technology Division; included in 2019

2 Including India

T. 07 Management diversity by age 2019

in percent	Managers in the first, second and third management levels below Board of Management	All other management groups
< 30 years	0.00	0.23
30-50	38.51	61.09
> 50 years	61.49	38.69

For vacancies regarding the Supervisory Board, a quota of 30 percent was set. The quota is currently 10 percent.

The percentage of older employees is much higher in Europe, whereas the workforce in other regions is younger on average.

In 2019, the proportion of women in management positions in the Group amounted to 11.7 percent.

Since 2006, ZF Friedrichshafen AG has been compliant with the statutory requirements for employees with disabilities and recorded the rate for Germany. In 2019, the proportion of employees with disabilities amounted to 5.7 percent. This level exceeded the five percent minimum that legislation stipulates for the company. As a result, it was not necessary to make any compensation payments.

GRI 405-2

Ratio of basic salary and remuneration of women to men

Remuneration at ZF is based on compensation structures. While in the Active & Passive Safety Technology Division compensation structures are historically based on a global job classification system, in other ZF entities the compensation structure for managers is based on a global grading system. Compensation structures below management levels are based either on collective pay-scale agreements or on local grading systems.

Job classification, grading systems and collective pay-scale agreements are intended to minimize the risk of discriminating against women on compensation levels. Entities of the Active & Passive Safety Technology Division have been fully integrated into ZF's grading process for management

positions since mid-2017. A global compensation database has been progressively introduced for a three-year period, which will be completed in 2021. The planned compensation database will enable ZF – among other benefits – to report and monitor equal remuneration as well as potential gender gaps worldwide. ZF is an equal opportunity employer and has appointed a global diversity manager to monitor equal treatment among employees.

GRI 406 NON-DISCRIMINATION 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

ZF is present in many countries of the world and embraces a wide diversity of cultures and people. We foster the exchange of thoughts, ideas and methods as well as understanding between cultures and people. Our ZF Charter and ZF Leadership Principles contain a definitive statement on the issue of diversity: Employees at ZF are not discriminated against on the basis of skin color, gender, age, nationality, religious denomination, social background, disability or sexual orientation. This applies to the recruitment of new employees, the existing employment relationship and professional advancement at ZF. The only traits that are important are performance, personality, skills and qualifications. For further details on our values see [GRI 102-16](#), regarding managing compliance see [GRI 205](#).

GRI 406-1

Incidents of discrimination and corrective actions taken

There were no confirmed incidents of discrimination in the reporting year.

GRI 414 SUPPLIER SOCIAL ASSESSMENT 2016

GRI 103: Management Approach 2016 (incl. 103-1, 103-2, 103-3)

ZF has an integrated approach regarding supplier environmental and social assessments; see [GRI 204](#) for further details on our management approach with suppliers.

To meet the requirement following the provisions of the Dodd Frank Act, Sec. 1502, and to ensure a conflict-free supply chain, ZF requested all relevant production material suppliers to disclose the origin of their resources. Gold, coltan, cassiterite, wolframite and its derivatives such as tantalum, tin or tungsten from the Democratic Republic of the Congo (DRC) and adjacent countries, as used in company products, are considered as conflict minerals since they finance conflicts.

ZF is using a web-based solution for the reporting and identification of conflict minerals along the entire supply chain. As part of the tool-assisted supplier inquiry program, a total feedback of more than 50 percent was recorded in the reporting year 2019. We intend to increase the feedback rate from suppliers in 2020. The result of the inquiries is that there is no indication that ZF products are directly affected by sourced products that finance conflicts in DRC regions. At all suppliers who indicated potential high-risk smelters in their supply chain, ZF conducts a follow-up and requests these suppliers to eliminate critical smelters from their supply chain. ZF also requests an assurance from new suppliers that they do not source from the identified smelters. As these minerals are necessary for several technical functions and purposes of some of our products, ZF is fully committed to further cleaning its supply chain.

GRI 414-1**New suppliers that were screened using social criteria**

In the course of the reporting year, 100 percent of new ZF suppliers underwent self-assessments according to defined sustainability criteria by ZF. No indications of infringements against our principles of environmental protection, human rights, labor practices, forced labor, child labor or freedom of association were identified. We will continue to apply and extend this procedure consistently in the future.

GRI 416 CUSTOMER HEALTH AND SAFETY 2016**GRI 103: Management Approach 2016
(incl. 103-1, 103-2, 103-3)**

In providing products and services for people, ZF works toward improving customer health and safety in many ways. Consequently, we are committed to delivering the best quality and reliability in our products.

The ZF4Q quality strategy is derived from the Group strategy, and the ZF Quality Management System is based on three elements:

- Quality Planning for prevention,
- Quality Assurance to secure the current volume production, and
- Quality Management to shape processes and structures.

The goal is to implement all processes, both industrial and business-related, at a high level of maturity and evaluate them with a view to ongoing improvements, in line with the ZF Production System.

With the advancement of complex programmable electronics, functional safety has become increasingly important in product safety, as overall safety depends on the correct functioning of safety-related systems and other risk reduction measures. In recent years ZF has followed up its commitment to promoting functional safety as part of the ZF Vision Zero: Zero Accidents – Zero Emissions.

Considering full compliance with the law as the foundation of our work, we are constantly striving to maintain our product quality at the highest level despite increasing product complexity. Therefore, a certified ZF quality management system, consistent quality controls and regularly optimized processes support us in this endeavor. In addition, we established a Product Safety and Regulatory Office in 2019. It analyzes, evaluates, and tracks all relevant quality incidents and associated risks and reports its findings directly to the member of the Board of Management responsible for quality.

The guideline DG 06-16 supports our ZF4Q strategy and is also used in acquisitions and majority shareholdings. This guideline describes the application of safety standards (e.g. IEC 61508, ISO 26262) during product development and supports the development of safe products. This directive is consistent with Safety of the Intended Functionality (SOTIF) principles.

The Functional Safety Directive establishes functional safety processes at ZF and

- specifies functional safety as an objective,
- creates awareness of the potential safety effects of errors, and
- establishes responsibility for actions, consistent analysis and mitigation of problems on a sound technical basis.

Each division is responsible for training employees on this directive and developing an organization with clear areas of authority, responsibilities and functional safety processes.

See – Think – Act

In addition, our products allow for improving safety in mobility. With the updated Group strategy, ZF has charted the course for the future. By adhering to the  “See – Think – Act” principle and our Vision Zero, ZF intends to make a strong contribution to future mobility with its products and services – reducing emissions and accidents to zero.

ZF aims to meet the demands of the mobility megatrends of tomorrow, such as efficiency, integrated safety and automated driving. With its “See – Think – Act” guiding principle, the Group has set a clear technology focus. The company’s product and technology planning is based on market and product roadmaps which are continuously updated. Development has also focused on sensors for environment recognition, electronic control units, occupant safety systems and automated driving functions.

ZF’s “See – Think – Act” approach seeks to enhance the safety of its products.

See – Technology such as forward-looking cameras and 360-degree radar sensors monitor traffic situations and road conditions, seeking to reduce risks to drivers, occupants and pedestrians.

Think – The central control unit processes information and is capable of activating safety functions, such as automatic emergency braking or airbag deployment.  cubiX, a new control system for actuators and components, networks these units using software and sets out to optimize driving behavior. It is the link between Think and Act.

Act – Actuators turn electric commands from the control units into mechanical movements, such as braking maneuvers. Recuperation makes it possible to convert part of the kinetic energy back to electrical energy, which can be used to charge the battery of a hybrid or electric vehicle.

GRI 416-1**Assessment of the health and safety impacts of product and service categories**

ZF’s Global Development and Product Evolution Process (GD PEP) establishes quality and safety management procedures for ZF’s products and services. Group directives implement processes for adapting specifications to specific products. Appropriate testing is done at different points in the course of the project. In the development process, service concepts are also designed and then implemented by trained customer service personnel.

Our commitment to product quality continues in manufacturing. ZF then has processes in place to monitor products in the field and work with customers when potential issues arise. These efforts promote stable processes in production at ZF manufacturing locations worldwide.

To ensure highest quality and reliability, ZF is using the combined potential of recent technological developments. With the help of industrial computer tomography as well as ultrasound and X-ray examinations, components or construction stages in the development and production phases are tested non-destructively and in an environmentally friendly manner. The results are displayed three-dimensionally. Computer

tomography in particular allows considerable reduction of time and material expenditure, e.g. for microporosity testing. In addition, this non-destructive testing technology allows for observation of assembly states of internal components and the measurement of semi-finished products that are difficult to access. Meaningful results can be obtained with very few test setups and without additional impact on the environment.

IMPRINT

By signing the United Nations Global Compact in May 2012, ZF committed itself to actively support ten principles of responsible business.

UN Global Compact Principles	Relevant GRI Disclosures
Human rights	
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and	 102-16, 205, 414
Principle 2: make sure that they are not complicit in human rights abuses.	 102-16, 205, 414
Labour	
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;	 102-41, 402, 414
Principle 4: the elimination of all forms of forced and compulsory labour;	 102-16, 204, 205, 414
Principle 5: the effective abolition of child labour; and	 102-16, 205, 414
Principle 6: the elimination of discrimination in respect of employment and occupation.	 102-8, 102-16, 205, 405, 414
Environment	
Principle 7: Businesses should support a precautionary approach to environmental challenges;	 102-11, 308
Principle 8: undertake initiatives to promote greater environmental responsibility; and	 301, 302, 303, 305, 306, 307, 308
Principle 9: encourage the development and diffusion of environmentally friendly technologies.	 301, 302, 303, 305, 306, 307, 308
Anti-corruption	
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.	 102-16, 205, 414

ZF Friedrichshafen AG
D-88038 Friedrichshafen
Germany
Phone +49 7541 77-0
Fax +49 7541 77-908000
www.zf.com

Contact

ZF Friedrichshafen AG
Corporate Governance Sustainability
Löwentaler Straße 20
D-88046 Friedrichshafen
Email: sustainability@zf.com

Editorial deadline

March 2020

Consultancy, text and layout

akzente kommunikation und beratung gmbh,
D-80469 Munich, Germany