



NEXT GENERATION

MOBILITY

FOR THE NEXT GENERATION

2018

3 ABOUT THE REPORT**5 GENERAL DISCLOSURES**

- 6 Organizational Profile
- 10 Strategy
- 12 ZF Sustainability Program
- 16 Ethics and Integrity
- 17 Governance
- 18 Stakeholder Engagement
- 19 Reporting Practice

23 ECONOMIC

- 23 Economic Performance
- 25 Indirect Economic Impacts
- 26 Procurement Practices
- 27 Anti-corruption

30 ENVIRONMENT

- 30 Materials
- 32 Energy
- 34 Water
- 36 Emissions
- 38 Effluents and Waste
- 40 Environmental Compliance
- 40 Supplier Environmental Assessment

41 SOCIAL

- 41 Employment
- 42 Labor/Management Relations
- 43 Occupational Health and Safety
- 46 Training and Education
- 49 Diversity and Equal Opportunity
- 51 Non-discrimination
- 51 Supplier Social Assessment
- 52 Customer Health and Safety

53 IMPRINT

CONTENTS

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

 [Table of contents](#)

 [Search](#)

 [Print](#)

 [Internal references](#)

 [External references](#)

ABOUT THE REPORT

This is the seventh edition of the Sustainability Report published by ZF Friedrichshafen AG; it is based on the fiscal year 2018. Our Sustainability Report is published annually and was not submitted for an external assurance.

Since the integration process of the Active & Passive Safety Technology Division was concluded in 2018, ZF conducted a new materiality analysis in cooperation with a sustainability consultancy. As a result, we also revised our sustainability program. Strategic objectives correspond to the identified material topics of ZF.

The following GRI disclosures are based on the Standards (2016) of the Global Reporting Initiative (GRI). 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. The process for determining the material issues is described on page 20 of the report. 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.

The report is intended to offer transparency, with a particular focus on our sustainability activities and objectives. At the same time, the report represents our progress report to the United Nations Global Compact, which we joined in May 2012. 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 and principles.



UN GLOBAL COMPACT
COMMUNICATION ON PROGRESS

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.



GRI Empowering Sustainable Decisions

Materiality Disclosures
ZF Friedrichshafen AG

March 2019
Service



€36.9 BILLION

Revenue



148,969

Employees



€2.5 BILLION

Research & Development



80%

Cars and light commercial vehicles < 6t



12%

Commercial vehicles > 6t



8%

Construction, agricultural machinery, marine craft, aircraft, special and rail vehicles, wind power

GRI Content Index

GRI 101: Foundation 2016

GRI 102: GENERAL DISCLOSURES 2016

ORGANIZATIONAL PROFILE

GRI 102-1

Name of the organization

ZF Friedrichshafen AG

GRI 102-2

Activities, brands, products, and services

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 environ-

mental sensors, such as camera and radar (see), electronic control units (think) and intelligent mechatronics in driveline, chassis and steering (act).

The Group also offers a wide range of services that are marketed mainly by the ZF Aftermarket organization. These services primarily involve the spare parts business for driveline and chassis technology as well as maintenance and repair services. 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
- ZF OPENMATICS: connectivity and diagnostics solutions for passenger cars, trucks, industrial applications, manufacturers, fleets and end consumers. Solutions for intralogistics and asset tracking.

GRI 102-3

Location of headquarters

Friedrichshafen, Germany

GRI 102-4

Location of operations

As of 2018, ZF has 20 main development locations and operates at 230 locations in 40 countries. The Group has an international service network of about 120 service locations and 650 service points that offer ZF customers an extensive range of services worldwide.

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 (47%), North America (28%) 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, wind power (8%) account for the minor shares.

GRI 102-7**Scale of the organization**

At the end of 2018, ZF had a workforce of 148,969 employees at approximately 230 locations and 20 main development locations. ZF had a portfolio of several thousand products, over 6,400 single brands and generated sales of €36.929 million in 2018. For detailed liabilities and equity, please see [the Consolidated statement of financial position](#), p. 31 in the 2018 Annual Report.

GRI 102-8**Information on employees and other workers**

On December 31, 2018, ZF employees worldwide numbered 148,969. This represents an increase of 1.93 percent over the previous year.

The year-on-year increase in the number of employees took place in all regions except Africa. The small increase in the total number of employees results from the sale of the Vehicle Control Systems business unit (Body Control Systems). It was completed in April 2018 and accounts for around 4,500 employees worldwide. To support ZF's Next Generation Mobility strategy a technology center in Hyderabad (India) was established. 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.

Almost two-thirds of the Group's employees work in Europe, most of them in Germany, and 96 percent of employees have regular contracts with the ZF Group. The percentage of women employed by the ZF Group is 16,1, with the North America region showing the highest proportion with 27,4 percent. The Active & Passive Safety Technology Division is not included in this data, as gender is currently not being reported in regard to region or contract type. In 2018, ZF had a total of 12,421 External Agency Workers.

EMPLOYEE STRUCTURE WORLDWIDE

Number of people ¹	2018	2017	2016
ZF Group (total)	148,969	146,148	136,820
Europe	86,388	85,294	81,667
of which Germany	50,794	50,618	49,094
North America	36,762	35,885	31,900
South America	5,509	5,470	5,118
Asia-Pacific ²	17,396	18,367	16,974
India ²	1,980	–	–
Africa	934	1,133	1,161
Employee category³			
Direct	78,281	77,797	72,109
Indirect	70,688	68,352	64,711
Work contracts			
Regular ⁴	143,198	141,954	133,802
Limited ⁴	5,771	4,194	3,018
Full-time	146,383	143,513	134,339
Part-time	2,586	2,635	2,481
Apprentices and External Agency Workers⁵			
Apprentices	2,756	2,856	2,800
External Agency Workers	12,421	15,195	14,137

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 separate region.

3 Direct and indirect participation in value creation processes.

4 The corporate wording changed from "permanent" employees to "regular", and "temporary" employees to "limited".

5 The corporate wording changed from "temporary workers" to "external agency workers"

EMPLOYEES BY REGION 2018

Number of people	Regular	Limited	Full-time	Part-time
ZF Group (total)	143,198	5,771	146,383	2,586
Europe	82,620	3,768	83,806	2,582
of which Germany	48,580	2,214	48,476	2,318
North America	36,269	493	36,761	1
South America	5,509	0	5,509	0
Asia-Pacific	16,207	1,189	17,393	3
India	1,659	321	1,980	0
Africa	934	0	934	0

GRI 102-9

Supply chain

Solely for the procurement of production materials, ZF maintains a global network consisting of approximately 7,000 suppliers, ranging from small family businesses through to large groups.

The purchasing volume for production materials totaled €20.1 billion in 2018 and includes directed buy volumes. The value of non-production materials amounted to some €6.1 billion.

Since ZF manufactures products at 230 locations in 40 countries 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 54 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

A core element of ZF's environmental management system is the evaluation of environmental risks. In the operation of facilities, the precautionary principle based on the result of the risk evaluation is an essential part of the Environment, Health and Safety (EHS) management system. All locations conduct environmental aspect assessments and risk assessments for their respective facilities and processes in a local context on a regular basis. Internal and external audits are also conducted. All locations follow the principle "prevention before reaction" and therefore use processes to minimize risks.

Risk assessment and evaluation are carried out prior to the introduction of procedures and substances.

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.

Environmental due diligence is conducted as part of the acquisition process to minimize liability and financial risks.

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 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 Global Compact Network
- German Association of the Automotive Industry e.V. (VDA)
- German Association of Electrical Engineering and the Electronics Industry (ZVEI) (the Auerbach plant, Electronic Systems business unit is a member)
- German Engineering Federation e.V. (VDMA)
- German Federation for Motor Trades and Repairs
- 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

“Clean and safe mobility.
Automated, comfortable and affordable.
For everyone, everywhere.”

Dear readers,

The entire automotive industry is facing a fundamental transition. Carmakers and their supply chains are being challenged, balancing multiple technological trends like electric mobility or the increasing autonomy and connectivity of vehicles. At the same time, we need to look after the people being impacted by these trends by upholding and promoting human rights in the supply chain and qualifying our employees for future tasks.

As the world is rapidly developing, and quicker than many observers anticipated, we adjusted our strategy towards “Next Generation Mobility”: with a strengthened focus on our core technology domains – Automated Driving, Vehicle Motion Control, Integrated Safety and Electric Mobility – as well as a flexible, agile and open business culture.

At the same time, we are determined to strengthen our sustainability performance. Therefore, during the summer of 2018, a profound materiality analysis served as the basis for not just updating our Sustainability Report but for overhauling our sustainability program.

More strategic steps were resolved, like stepping up our supply chain management and increasing our decarbonization efforts to contribute towards a low carbon economy. In a first step, the Board of Management signed a new EHS policy and the EHS management system underwent major revision. Also, several departments are implementing new reporting tools to provide smarter data and improve target tracking.

Since 2012, ZF has been a signatory to the United Nations Global Compact, promoting its ten principles in the areas of human rights, labour standards, environmental protection and fighting corruption. In the light of major challenges facing us and our industry, we are positioning ourselves to answer them in an agile and decisive manner. With this report we wish to inform you of our progress; 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.

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

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

More detailed information about our general approach regarding risk management can be found in the [2018 Annual Report](#), p. 38.

The context for our sustainability considerations is to a large extent shaped by global megatrends. For instance, progressive globalization has a major impact on ZF's sales and sourcing markets and therefore requires stronger international focus in regard to structures and competencies. In addition, demographic change and increasing urbanization are leading to changes in consumer behavior – with a fundamentally growing demand in 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.

ZF SUSTAINABILITY PROGRAM

The sustainability program presented here was revised following the updated materiality analysis during the reporting year 2018. Strategic objectives correspond to the identified material topics of ZF. 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
P R O D U C T S		
Product safety: Zero accidents and zero fatalities through smart product solutions and highest quality assurance	ZF will develop an integrated concept for functional safety and SOTIF with regards to technologies of the future.	New target
	ZF will develop a concept to align our systems expertise with benefits for all segments.	New target
Upstream and downstream emissions: Slowing down climate change and working towards healthier environments	Vision: Zero Emission ZF will continue to improve product efficiency and as a result reduce CO ₂ emissions.	Projects: EVD2 (PassCar); CeTrax (city buses; commercial vehicles); AxTrax (city buses)
	CO ₂ reduction in tons in the course of the development of new products, using carbon footprinting and life cycle assessments. Review of the target by 2020.	Target was rolled out to Divisions together with a new program for product-related environmental protection, which is part of the development process acc. to GD PEP.
	By 2020, the existing monitoring system will be extended to upstream and downstream emissions.	New target
	By 2020, a new initiative will be introduced worldwide to reduce the highest CO ₂ emitting supplies and suppliers within the product life cycle.	ZF Supply Chain Management is taking part in an initiative by BMW on CO ₂ transparency in steel and aluminum supplies. Logistics: A pilot was set up for local logistics to compare CO ₂ effects of combustion engine, gas and electrical trucks in context of new logistics contract.
Material efficiency of products: Reducing the use of raw materials and realizing a circular economy	Demonstrate environmental compatibility in product development, taking life cycle aspects into consideration (GD PEP in combination with ZFN 9005)	Recyclability of ZF products as part of ZFN 9005 assessment.
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	New ZF Product Strategy Process Demonstrate environmental compatibility in product development

Strategic Objective	Targets	Actions/Status
S U P P L Y C H A I N		
Standards in the Supply Chain: We aim for an implemented supply chain sustainability management by 2025.	Increase coverage on sustainability-related certificates (e.g. ISO 14001) within the ZF supplier base Increase CSR self-assessment for new suppliers	ISO 14001 is required for new sourcing decisions for environmentally critically parts. 100% implementation of CSR Assessments for new suppliers. No new supplier approval without a CSR Assessment.
E M P L O Y E E S		
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 & IT employers in our strategic markets. By 2020, the turnover rate for the Group will be lower than 12% (compared to 13.3 in 2017). By 2025, functional excellence will be established through standardized operational processes. By 2025, more than 90% of our employees would recommend ZF as an attractive employer, based on internal employer surveys.	Fostering and increasing university cooperations; Trendence/Universum rankings in combination with International ZF Benchmark Study in strategic markets. Overall target achievement by 2018 was 50%. With a turnover rate of 13.9 the target was not yet achieved. Major recruiting and learning processes reviewed and standardized. Global rollout supported by a new digital HR platform in early 2019. The next Global Employee Survey is being planned to take place in early 2020.
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	By 2025, a global and innovative learning culture and a new leadership style will be established across divisions, functions and regions. Re-inventing leadership style	New open content networks and new digital learning formats have been made available and a learning culture analysis was kicked off in 2018. Target definitions and actions will be subsequently derived. A learning culture analysis was kicked off in 2018. Target definitions and actions will be subsequently derived.
Safety at work and health protection: In order to support the ZF Strategy 2025 through following our "Vision Zero", 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 2019: 4.2) Safety Leadership & Behavior Based Safety (BBS): Conduct 200 Safety Leadership workshops worldwide per year. Add 15 sites to the ZF global Behavior Based Safety program in 2019 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%	Near-miss reporting, safety alerts, root cause analysis and Safety Leadership program led to an improvement of 16% (5.5 -> 4.5) in 2018. Approximately 345 workshops were conducted by internal Safety Leadership Coaches. Globally five sites in total were added to the BBS program. New target

Strategic Objective	Targets	Actions/Status
<p>Occupational health management: We aim to ensure the protection of the health, and to promote the well-being, of our employees worldwide</p>	<p>Developing and conducting a health campaign with a focus on office workers</p> <p>Continuing the program "Leadership and Health" in the involved sites. Roll out the program "Leadership and Health" at additional sites in Germany.</p> <p>Establishing an "International Health Group" to work on health issues which are internationally relevant</p> <p>Initiate Health Management standards worldwide</p>	<p>Founding a project task force, developing a campaign concept, delivering campaign material, conducting the campaign, reporting the activities</p> <p>Conducting trainings at all German sites. Reporting of participation rate. Supporting the rollout at additional sites.</p> <p>Nomination of participants, constitutional meeting</p> <p>Information of involved person in charge and expert functions. Perform and analyze first self-assessment.</p>
<p>Compliance: 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</p>	<p>By 2020, all compliance-relevant policies will be harmonized within the entire Group.</p>	<p>New and uniform harmonization process was initiated in 2018.</p>
<p>P R O D U C T I O N</p>		
<p>Emissions of plant operations: Reduce CO₂ emissions caused by plant operations</p>	<p>By 2020, CO₂ emissions will be reduced by 10% relative to sales based on the ZF Group performance of 2017 (including direct emissions caused by ZF operations).</p> <p>By 2020, a well-established and comprehensive CO₂ reduction program will be in place covering energy efficiency and renewable energy.</p> <p>By 2020, the emissions profile of purchased energies will be part of the evaluation during the procurement process.</p> <p>By 2020, energy consumption will be reduced by another 10% relative to sales based on the ZF Group performance of 2017.</p> <p>By 2020, energy productivity will be included in regular operations reviews.</p>	<p>CO₂/energy steering team established. New targets on CO₂ and energy reduction were set up and rolled out. Target achievement by end of 2018: reduction of 7.3%</p> <p>Energy survey was carried out. Start of development of a concept on renewable energy strategy</p> <p>Programs to support locations in  energy efficiency projects</p> <p>Target achievement by end of 2018: reduction of 3.7%</p> <p>Energy efficiency as part of Operational Review process. In 2019 the work on the review of the current target setup will start. Science-based target setting will be evaluated in this context.</p>

Strategic Objective	Targets	Actions/Status
Water: Saving water resources and supporting clean water quality	By 2020, water consumption relative to sales will be lower than the previous year.	Reduction for raw water could not be achieved due to hot summer 2018 (increase for complete water consumption is 0.44%). Reduction for municipal water was achieved. Target achievement by end of 2018: reduction of 7.7%
	By 2020, in water-scarce areas project-related targets will be defined and monitored.	Expert group is currently elaborating definitions and setting up a monitoring system.
Waste: Supporting recycling management and reducing hazardousness of waste	By 2020, the amount of waste for disposal relative to sales will be lower than the previous year.	Alignment with Purchasing in scrap metal program. Program intensifies recycling activities, e.g. in Mexico. Target achievement by end of 2018: reduction of 4%
	A special focus will be placed on minimizing landfilling of hazardous waste.	Sorocaba, Brazil, increased recycling volumes.

ETHICS AND INTEGRITY

GRI 102-16

Values, principles, standards, and norms of behavior



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 relationships with 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 the recent revision of 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. See  GRI 204 for more information on the BPP.

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.

On January 31, 2018, Wolf-Henning Scheider was appointed chief executive officer effective February 1, 2018, succeeding Dr. Konstantin Sauer, who alongside his responsibility as CFO had taken interim charge of the company along with the R&D Corporate Function and the Aftermarket Division. After Jürgen Holeksa resigned his mandate as a member of the Board of Management on September 30, 2018, Wolf-Henning Scheider was appointed director of labor relations effective October 1, 2018. On January 1, 2019, Sabine

Jaskula was appointed to the Board of Management, taking charge of the HR and Legal Corporate Function. On September 30, 2018, Peter John Lake took retirement and left the Group, stepping down as a member of the Board of Management. Dr. Holger Klein was appointed as a member of the Board of Management effective as of October 1, 2018. He assumes responsibility for the Car Chassis Technology and Aftermarket Divisions as well as the Regions of Asia-Pacific and India and the Key Account Management of passenger car customers in these regions.

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

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

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

STAKEHOLDER ENGAGEMENT

GRI 102-40

List of stakeholder groups

There are many significant stakeholders at ZF, including employees, customers, suppliers, the company owners, 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. Approximately 60 percent of our employees worldwide are covered by national, regional or local labor agreements. More precise reporting will be possible in the future as HR tools are currently being implemented.

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, process 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 and suppliers, 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.

TYPES OF STAKEHOLDER COMMUNICATION (GROUPS AND THE 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 hilt, 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" magazine online, 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 International 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, department "Associations & Politics"
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
Communities	Press, ZF website, advertisements, sponsoring, regional events, "vision" online magazine, social 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.

In 2018 we therefore focused on building a new sales organization with the input of our top customers to better serve them and to provide solutions that only a unified sales approach can offer. We will continue to survey our customers' opinions (VOC) in 2019 to ensure that we are fulfilling their expectations.

Employee survey

Since employees collaborate on an everyday basis, feedback and recognition are ever-present. Another element of employee engagement is the comprehensive Global Employee Survey (GES). The objective is to sustainably contribute to company goals through increased transparency and by involving employees on all levels. The first survey took place in 2015 and received over 15,000 suggestions for improvement. One-third of these were put into practice the same year. ZF is currently planning its second GES, to take place early in 2020.

Supplier Award

Around 300 ZF specialists and executive managers, along with representatives from the most important suppliers, met at the Global Supplier Summit at the ZF Forum in Friedrichshafen, the Corporate Headquarters of the Group. The event was an opportunity to share knowledge and discuss strategies on purchasing and logistics. The ZF Materials Management team used the event to honor seven outstanding suppliers in four different categories for their outstanding performance. The award for the best service provision in the digitalization sector premiered in 2018. For 2019, we intend to award in the additional category "Excellence in Sustainability".

ZF Excellence Award

The fourth ZF Excellence Award set a new record with 776 applications from more than 100 locations in 29 countries. Participation across regions, divisions, and departments was very balanced. Of the 15 teams that made it to 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 2018.

GRI 102-44

Key topics and concerns raised

The manifold communication with and involvement of stakeholders clearly shows: With all the challenges that promoting sustainability entails, conflicts of interest and conflicts of goals between

quality aspirations, sustainability and business success arise not just between but also within stakeholder groups. While current customer preferences oppose a product-based sustainability strategy. In terms of product development, advantages on the one hand are always achieved at the expense of weaknesses elsewhere.

The topics of training and further education are currently regarded as additional challenge, since the lack of skilled specialists is aggravated by trends such as rapid technological and demographic change.

Occupational health and safety are seen as an international competitive advantage, and compliance as an increasingly important economic factor. Social commitment helps a company to reinforce the moral awareness of its employees; together with training, every employee must be taught the meaningfulness of his or her work. New leadership cultures and models are also discussed. ZF is addressing many topics and challenges with its updated Sustainability Program.

REPORTING PRACTICE

GRI 102-45

Entities included in the financial statement

In addition to ZF Friedrichshafen AG, 34 domestic and 229 foreign subsidiaries controlled by ZF Friedrichshafen AG are included in the consolidated financial statements.

On August 30, 2017, ZF concluded an agreement with Luxshare Limited to sell its Global Body Control Systems Business Unit after the Supervisory Board of ZF Friedrichshafen AG had granted its consent. The full transfer of the business unit was successfully completed on April 27, 2018. The transfer was implemented partly as a share deal

and partly as an asset deal. In connection with the share deal, five companies left the Consolidated Group. The disposal led to a deconsolidation income of €83 million that was recognized under other income. The Global Body Control Systems Business Unit with its headquarters in Radolfzell (Germany) employs 6,000 people worldwide at 16 locations in eleven countries.

More detailed information about entities belonging to the Group can be found in ZF's 2018 Annual Report, pages 53 and 113.

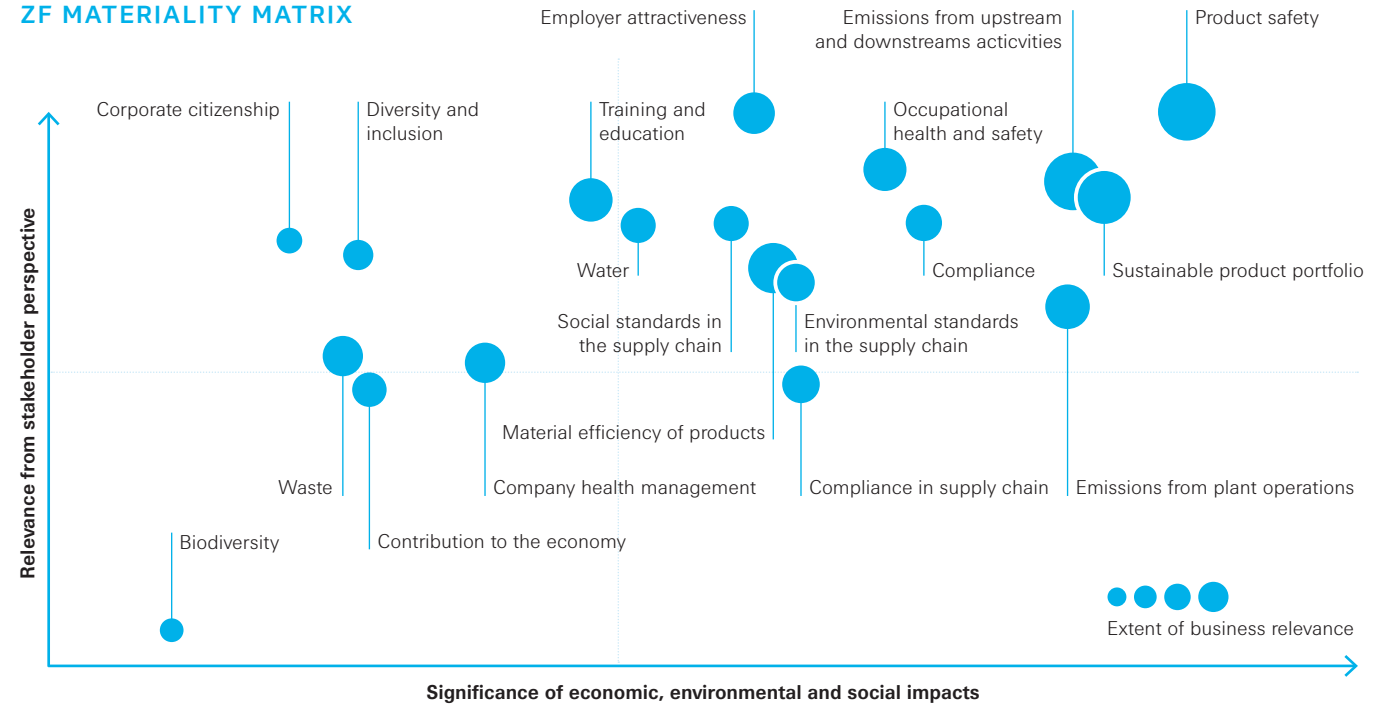
GRI 102-46

Defining report content and topic boundaries

Since the integration process of the Active & Passive Safety Technology Division was concluded by 2018, ZF conducted a new materiality analysis in cooperation with a sustainability consultancy.

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.

ZF MATERIALITY MATRIX



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

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 seventh edition of the Sustainability Report published by ZF Friedrichshafen AG and follows the 2017 Sustainability Report. It is based on the fiscal year 2018.

GRI 102-51**Date of most recent report**

March 2018

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 2016: 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.

MATERIAL TOPICS

ECONOMIC

GRI 201 ECONOMIC PERFORMANCE 2016

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

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

In line with this strategic alignment, ZF significantly increased research and development expenditure in the fiscal year 2018.

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 2018 Annual Report](#), p. 31.

GRI 201-1 Direct economic value generated and distributed

The ZF Group succeeded in increasing sales by 1.3 percent to €36,929 million and invested €2,158 million (2017: €2,230 million) in research and development, which is 5.8 percent of Group sales. The ZF Group overall donated €5.61 million (2017: €6.87 million).

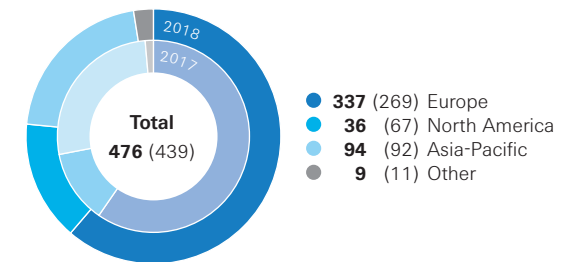
The production materials purchasing volume in 2017 totaled €20.1 billion. This includes directed buy volumes. The value of non-production materials amounted to some €6.1 billion. Overall personnel expenses totaled €4.761 million (2017: €4.669 million), including wages and salaries, social security contributions, benefit expenses and pension expenses. For more details see [the consolidated statement of profit or loss in the 2018 Annual Report](#), p. 31.

ONGOING TAX PAYMENTS BY REGIONS 2016 – 2018

in € million	2018	2017	2016
Europe	337	269	217
North America	36	67	45
Asia-Pacific	94	92	97
Other	9	11	5
Total	476	439	364

ONGOING TAX PAYMENTS BY REGIONS 2018 (2017)

in € million



GRI 201-2 Financial implications and other risks and opportunities due to climate change

One of the main factors resulting from our production activities is the emission of greenhouse gases. Reducing these emissions is therefore a central element of ZF's environmental policy and targets, which are managed worldwide by our environmental management system according to ISO 14001. See [GRI 300](#) for more details on ZF's environmental management approach.

Following the Paris Agreement of 2016, the German Climate Protection Plan 2050 and the COP in Bonn in late 2017, many countries have been working on national regulations and programs to fulfill the conventions. The scope of these impacts on ZF's businesses is currently not fully foreseeable. Moreover, financial implications cannot be quantified while legal requirements are under discussion and not yet conclusively defined.

Operating costs are likely to rise due to increasingly strict legislation with tougher regulations for plant approvals and operations. In China, for example, the 13th five-year plan restricts air pollution to fixed limits by region, which results in locations having to make increasing efforts to ensure they comply with national and local legal requirements.

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.

Reliable 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 carrying out initial projects to identify robust methods for determining the emission values and environmental impacts of selected products and materials.

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. We can mitigate this risk with innovations in hybrid technology, e-mobility and lightweight design. For more information about ZF solutions see [📄 GRI 302-5](#).

Further influences

The opportunities and risks for our wind power sector vary widely since business development is still heavily dependent on subsidies, and overall development on emission-related regulations supporting renewable energies. European companies are facing higher organizational costs due to the obligation and the expanded requirements for statutory and regulatory reporting, e.g. the EU Directive on the disclosure of non-financial information.

Finally, suitable precautionary measures must be taken to minimize the diverse and often increased risks. We are also addressing identified risks with our environmental management system, and our sustainability program has set corresponding environmental targets.

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 2018 Annual Report, p. 60](#).

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

In the fiscal year 2018, €42 million (2017: €18 million) in government grants was received. These were divided as follows: Investment grants were basically received for investments at various locations in the USA, Germany, Czech Republic, Hungary and China. Expense subsidies mainly comprise research subsidies and subsidies for education and vocational training.

GOVERNMENT GRANTS 2016 – 2018

in EUR million	2018	2017	2016
Investment grants	31	10	12
Expense subsidies	11	8	6

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

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 and enthusiasm for MINT 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 a large number of endowed professorships in the Lake Constance region and across the world. Cooperation with renowned universities, for example the Zeppelin University and the Baden-Württemberg Cooperative State University in Friedrichshafen, the University of Ravensburg-Weingarten, the HTWG Constance – University of Applied Sciences, the RWTH Aachen University or the Tongji University in Shanghai, is part of the young talent promotion program.

As a Corporate Partner, ZF further extended its cooperation with the UNITECH Program in 2018. UNITECH International is a European network of top engineering universities and multinational companies. At present, only nine universities from nine different countries are allowed to propose their twenty best students, of which only ten will be accepted. UNITECH students are people who want to become highly qualified, internationally experienced engineering graduates with access to prime international internships and employment positions. In 2017, ZF was able to recruit several students from the UNITECH talent pool for internships, theses and final positions.

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 2018, ZF sponsored 39 university teams. In the up-and-coming Formula Student Driverless race category, ZF supported seven teams. In this category, students face a completely 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 (incl. 103-1, 103-2, 103-3) Management Approach 2016

Good materials management is vitally important for customer satisfaction. Only then can we 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. All suppliers are required to comply with these three sets of principles. 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.

The Board of Management decided to complement the engaged global divisional and business unit management with a strong matrixed regional management in China. Beside other functions, the Regional Materials Management Organization was redefined, effective since January 2018 to drive operational synergies and strengthen local supply.

The cross-functional Sourcing Decision Board enables us to ensure that along with pricing, environmental aspects are also considered in the selection of suppliers.

To minimize impacts of transportation, such as costs or environmental impacts but also aspects of timing, ZF’s strategy is “local for local” – buying where the supplied materials or components are needed. Therefore, we continue to focus our localization activities on Mexico, India, China and Eastern Europe. The objective here is to implement the “local for local” concept with our existing strategic suppliers or to prepare and develop the local supplier base to meet ZF-specific requirements.

Business Partner Principles

All new and existing suppliers are under an obligation to endorse our Business Partner Principles (BPP). A standardized process for the request and confirmation of our BPP includes a tool-based solution to track the information about the current BPP status of each supplier. Acceptance of BPP is taken into consideration in supplier award decisions in the approval process for new suppliers.

The BPP represent values that ZF recognizes, supports and communicates to partners. As guidelines, they specify fundamental sustainability requirements for cooperation with our business partners. They address various topics such as human rights, labor standards, occupational safety and health protection, environmental protection, responsible raw materials procurement, business ethics and compliance. ZF reserves the right to scrutinize business relationships and we consider it our duty to take appropriate action if we identify deviations or violations.

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

Improving supply chains

In line with the principles endorsed by APS 25 we have integrated environmental and social standards (including safety and health) into supplier management and the supplier selection process – evaluating potential new suppliers using supplier self-assessments and audits. The long-term goal is a purchasing strategy that dispenses with procuring materials from critical sources.

During the approval process, ZF requires new potential suppliers to submit a self-assessment using the Supplier Self-Assessment Sustainability template based on the Business Partner Principles.

ZF uses an adapted version of the so-called Self-Assessment Questionnaire on CSR and Sustainability developed by the 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. This Self-Assessment Questionnaire is a part of our Supplier Approval Process.

In 2016, ZF started to use a special tool to manage supplier inquiries about supplier contact data, the existence of a product safety officer, HSE (Health, Safety and Environment), general company data and certificates. The annual update of the master data is handled by our service provider via a managed service. The tool is mandatory for all strategic and accepted suppliers.

GRI 204-1

Proportion of spending on local suppliers


77 percent (2017: 83%) of our global purchases for nonproduction 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 2018 amounted to 54 percent (2017: 54%) for production materials.

GRI 205 ANTI-CORRUPTION 2016

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

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.

In July 2018, with approval of the Board of Management, Corporate Compliance implemented a new ZF Code of Conduct. This applies to the entire ZF Group and replaces the previous ZF Code of Conduct and the Standards of Conduct of the Active & Passive Safety Technology Division. The new ZF Code of Conduct was introduced to all employees via email by Mr. Scheider and Mr. Holeksa, members of the Board of Management.

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:

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

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 in the areas of

- Corruption,
- Antitrust law (in coordination with the ZF legal group),
- Code of Conduct
- Fraud and
- Reputational damage.

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 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 preventive elements of the ZF CMS are complemented by a case management system. This is connected for example to 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.

ZF COMPLIANCE ORGANIZATION

Prevent	Detect & respond
Risk analysis	Notification
Regulations	Investigation
Communication	Monitoring
Training	Remediation & sanctioning
ComplianceHelpdesk	
Business partner due diligence	

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. For more details on ZF’s risk management approach see [Annual Report 2018](#), p. 28.

GRI 205-1

Operations assessed for risks related to corruption

With regard to corruption-related categories, all operations are regularly assessed over a period of about three years. To achieve more precise results, the risk analysis process follows the divergent business models and is performed at business unit level. Three business units were assessed for risks related to corruption in 2018.

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.

In the reporting year, the revised Code of Conduct was communicated to employees by internal publication via the Corporate News, the company intranet and other internal postings. The Code 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 Code. They are also advised on how to ask questions about the Code and how to report any possible violations.

Training opportunities

The roll-out of the Code was supplemented by an online course on the topics covered. While it was made available to all employees, for approximately 17,000 management employees and the Board of Management this course was mandatory. The course was deployed in English, German, Latin American Spanish, Simplified Chinese and Brazilian Portuguese.

Additional compliance topics will be deployed in this same manner for 2019, including Anti-corruption/Anti-bribery. The objective of these online courses is to firmly anchor compliance in employees' consciousness and prevent wrong-doing. The courses convey knowledge and promote ability to act in critical situations. Target groups can be addressed in accordance with the necessities of a topic.

ENVIRONMENT

GRI 103 (incl. 103-1, 103-2, 103-3)

Management Approach 2016

(applicable to all environmental topics)

We are meeting our responsibility toward people and the environment by implementing a range of different environmental protection measures. This responsibility is anchored in ZF's values and protects against entrepreneurial risks – in the areas of compliance, customer relations and reputation – while improving operating efficiency and benefiting the environment.

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.

In the course of integrating the Active & Passive Safety Technology Division, the work of the integration team for Environment, Health and Safety (EHS) led to an update of the environmental policy and targets. Our ZF Sustainability Program provides an overview of our environmental protection targets and actions, which is part of this report. Due to changes in the financial accounting system and organizational changes in the divisional set-up, data for the year 2017 were recalculated to function as the basis for ZF's new target period 2018–2020.

The EHS integration team also revised the EHS management system at large. It is currently being rolled out within the Group and will be implemented after a three-year period. Therefore, a new Group directive was issued in June 2018 to act as a bridging document between policy and the new EHS Management System in order to strengthen EHS processes throughout the company.

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

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.

GRI 301 MATERIALS 2016

GRI 103 (incl. 103-1, 103-2, 103-3)

Management Approach 2016

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. Regarding the Control of Prohibited & Regulated Substances our technical standard ZF 9003 applies in

addition to worldwide laws and regulations. See  GRI 204 for more details on procurement procedures and the general environmental management approach for details on the “design for environment” principle.

At ZF, product-related environmental protection begins with material selection. From the very start, during the product development phase, we consider the total life cycle of a product, including factors such as product materials, utilization phase as well as disposability and recyclability, and design our products accordingly. By reducing material variety, ensuring materials are easily separated and using consistent materials, we continually increase the recyclability of our products. We systematically substitute materials containing hazardous substances. All these principles are embedded in guidelines during the development phase.

The ZF Materials Warehouse provides information on almost all existing materials, and, in the future, will also classify them into approved and preferred materials. It will then only be possible to use a non-approved material after submitting a release application to the Materials Department, which will review the material and check its conformity with set requirements. This procedure optimizes costs, simplifies material selection and guarantees that only materials are used which comply with technical standards and country-specific laws banning certain materials. Materials in the ZF Materials Warehouse will be regularly screened for hazardous substances. This means materials containing hazardous substances can be substituted at the earliest possible stage of the material selection process, reducing the environmental impact of ZF products even before they are manufactured.

Cradle to cradle

Over the years, we have gained valuable insights into closing the loop. Like nature, the cradle-to-cradle concept knows no waste, no renunciation and no restrictions. Biological and technical nutrient cycles provide the right materials at the right time and in the right place.

Ultimately, the result is always better quality. The “from the cradle to the cradle” (C2C) production method directly contrasts with the “from the cradle to the grave” model, in which material flows often ignore resource conservation. From this point of view, the Cradle to Cradle Products Innovation Institute assesses products and processes in the following categories: material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness.

After certification of the MFZ 430 clutch cover and 8HP torque converter for automatic transmissions the ZF plant in Bielefeld (Germany) achieved gold-level certification for remanufacturing clutch disks in 2018. This is the second highest certification level and indicates in terms of a recycling economy that 95 percent of the materials are reused. The Bielefeld plant team is now stepping up its ambition with preparations for certification of the clutch control system ConAct. This ZF product is an entirely new challenge because, for the first time, electronic components are included that contain many different materials subject to the test procedure. For its constant commitment to environmental protection, ZF’s team was honored with the Environment and Climate Protection Award from the city of Bielefeld in 2018.

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 285,000 tons of aluminum and 1,960,000 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 percent steel and 25 percent aluminum. The rest contains lubricating oil (7%), silicon (3%), rubber and plastics (2.2%) and copper (1.5%) as well as other metals, alloys and solvents 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 ZF products. This includes steel from scrap steel and aluminum from scrap aluminum. For standard steel, the minimum global recycling rate is 70 percent.

Recycled oils, for example hydraulic oil, are also used in production. 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.

**GRI 301-3
Reclaimed products and their packaging materials**

To comply with respective legislation, ZF is required to take back packaging. In Germany, ZF fulfills this requirement by, for example, participating in external collection systems that involve taking back and recycling packaging through a dual system, or through sector solutions (for automobile repair workshops or for information technology, communications technology and consumer electronics). Through this approach, we have more than exceeded statutory recycling quotas. Detailed data of the total amount of packaging material used within the ZF Group were not available for this report, since respective reporting follows a different cycle.

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. More than 90 percent of production energy is saved in the remanufacturing of transmissions and other parts. Also, ZF was able to save over 10,000 tons of materials by remanufacturing more than 25,000 gearboxes for trucks, buses, passenger cars and off-road vehicles, and our site in Bielefeld (Germany) remanufactured over 340,000 clutch pressure plates and discs and saves an additional 10,000 tons of material each year. Moreover, the locations in Frydlant and Wrexham remanufactured almost 745,000 brake calipers from passenger cars.

GRI 302 ENERGY 2016

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

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 revised 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.

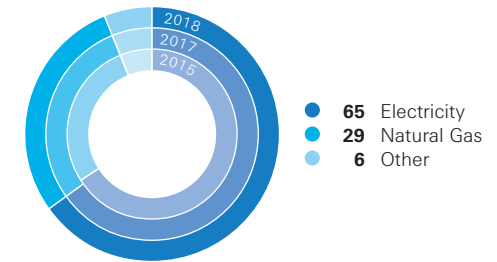
The ISO 50001 Corporate Energy Management scheme covered 61 locations in 2018 (2017: 47); eight locations gained single-site certification according to ISO 50001. Further European locations have conducted external audits to fulfill the European Energy Efficiency Directive (EED) following country specific options like EN 16247, ESOS (UK) or similar.

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.

Actions 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 CONSUMPTION 2016-2018
in percent



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. 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 6 percent comprise energy from oil, district heating, liquid gas, acetylene and biogas. While the share of renewable energy supply is still low it increased to 8.3 percent of purchased energy in 2018. Approximately 12 percent of the electricity consumption involves CO₂-reduced emission factors due to special purchasing contracts or on-site production.

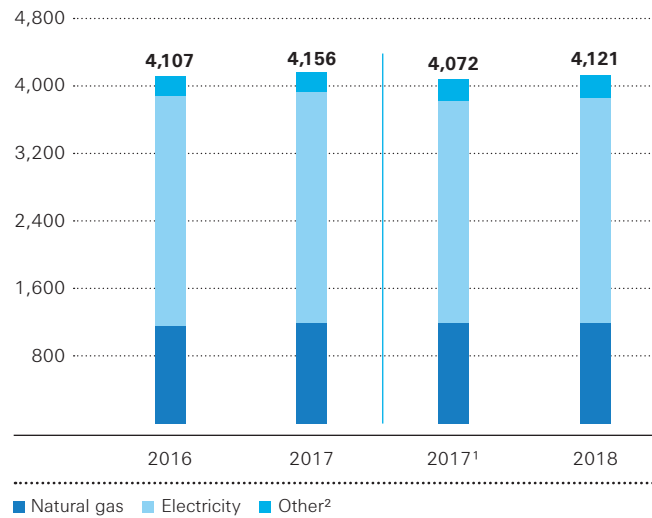
ENERGY CONSUMPTION 2016 – 2018

in percent of absolute energy consumption	2018	2017	2016
Renewables	8.3	2	–

Compared to the previous year the absolute energy consumption increased by 1.2 percent. Energy efficiency programs and measures could not compensate for the increase in energy consumption due to expanded production.

ABSOLUTE ENERGY CONSUMPTION 2016 – 2018

in gigawatt-hours



1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.
2 Oil, district heating, liquid gas, acetylene

GRI 302-2

Energy consumption outside of the organization

The vast majority of energy consumption outside of the organization comes from the use of our products. See [GRI 302-5](#) for more information.

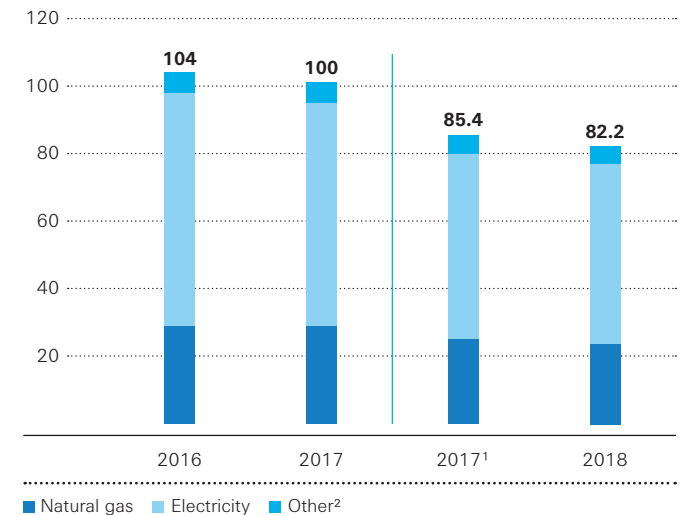
GRI 302-3

Energy intensity

As in previous years, ZF reduced its energy intensity. ZF brought down energy consumption per € million in sales by 3.7 percent in 2018. This improvement in energy performance was reached by increasing production volume and implementing a vast variety of energy efficiency measures.

SPECIFIC ENERGY CONSUMPTION 2016 – 2018

in megawatt-hours per € million in sales



1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.
2 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 2018, ZF implemented more than 165 projects to reduce energy consumption and increase energy efficiency. These were mainly in the areas of plant engineering, process optimization and building technology.

Within the huge variety of measures taken, 165 projects were reported to save approximately 42 GWh in 2018. This is enough energy to supply more than 10,500 households with 4,000 kWh/a on average.

ZF also fosters behavior that reduces energy consumption by empowering employees to identify and label equipment and lights that can be safely turned off when not needed.

In the reporting year, our Częstochowa location achieved all objectives of its project “The Way to Achieve Green Plants”, taking part in the ZF Excellence Award 2017: Greenhouse gases were reduced by 20 percent through measures in heating and heat recovery; energy efficiency increased by 20 percent due to the use of LED lighting, air conditioning optimization and the use of a central cooling system; and the share of renewable energy increased by 20 percent because of the use of photovoltaic modules.

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 all electric not only 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.

ZF’s new eAMT (electrified Automated Manual Transmission) technology is an innovative concept for the hybridization of front-transverse vehicles that integrates the company’s electric axle drive system (eVD) and an automated manual transmission (AMT) into one system. In addition to the hybrid functions of electric drive and recuperation and boost, eAMT also features electric all-wheel drive. ZF software regulates the networking and coordination of the internal combustion engine, electric motor and automated transmission.

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.

GRI 303 WATER 2016**GRI 103 (incl. 103-1, 103-2, 103-3)****Management Approach 2016**

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.

At locations in water-scarce areas, water consumption in production is a major issue as the use of freshwater could become increasingly restricted in the future. However, 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 revised environmental objectives for 2018–2020. All sources of water will be considered. Location-specific projects focus on the reuse of water as well as on conserving water in water-scarce areas. Progress is monitored and managed in line with our environmental management system at the individual locations and at Group level.

GRI 303-1**Water withdrawal**

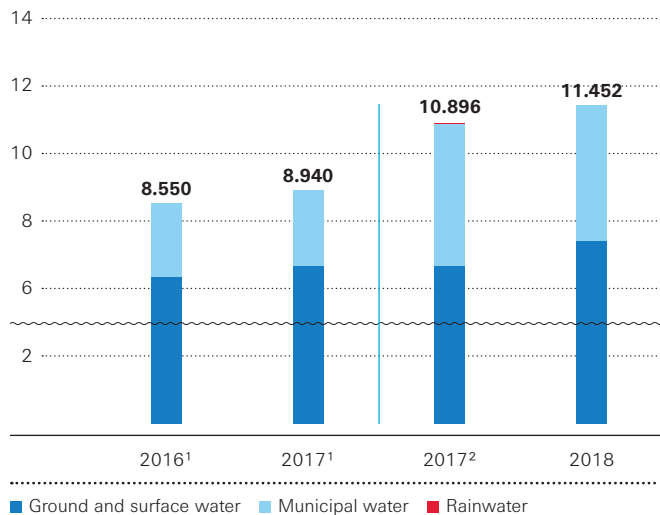
The water supply at ZF locations is adapted to local circumstances and mainly comes from the municipal water supply. At some locations water from rivers or groundwater is used for cooling processes without any chemical change. Over the last year, the absolute consumption increased by 5 percent.

Besides various projects for reducing overall consumption, ZF makes use of available water treatment and reuse technologies to reduce freshwater consumption – as for example the sewage treat-

ment plant in Guadalajara (Mexico), which provides final disinfecting with ozone to ensure that the reprocessed water complies with local quality standards. In future, it will also serve to wash and rinse the chromated parts.

ABSOLUTE WATER CONSUMPTION 2016 – 2018

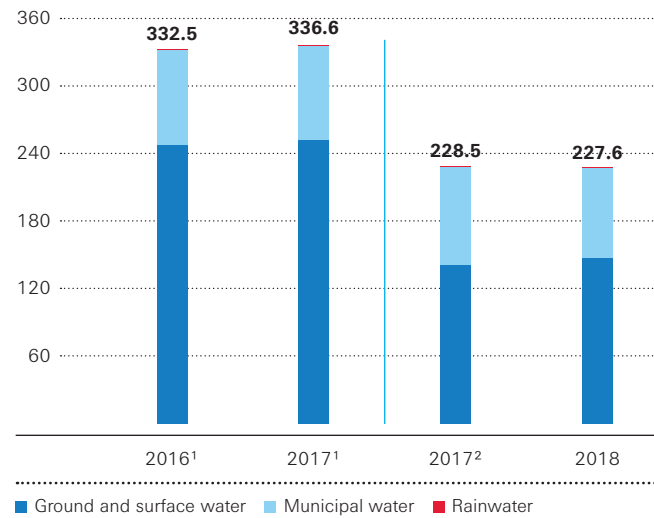
in million cubic meters



1 Without the Active & Passive Safety Technology Division.
 2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

SPECIFIC WATER CONSUMPTION 2016 – 2018

in cubic meters per € million sales



1 Without the Active & Passive Safety Technology Division.
 2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

GRI 303-2

Water sources significantly affected by withdrawal of water

Currently no figures are available for affected water sources. 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.

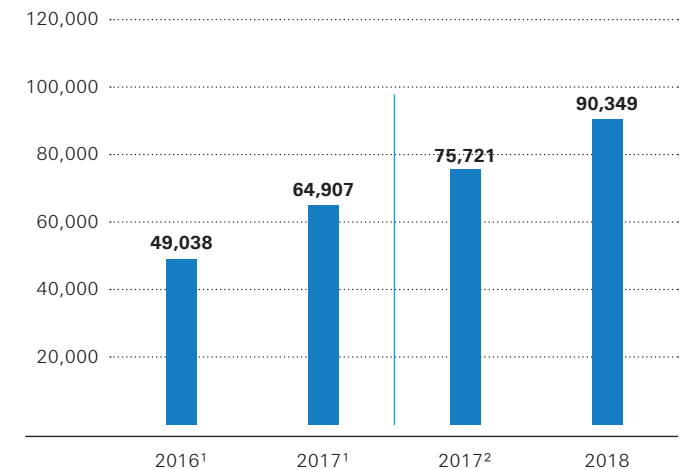
GRI 303-3

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 2019.

ABSOLUTE WATER RECYCLED/REUSED 2016 – 2018

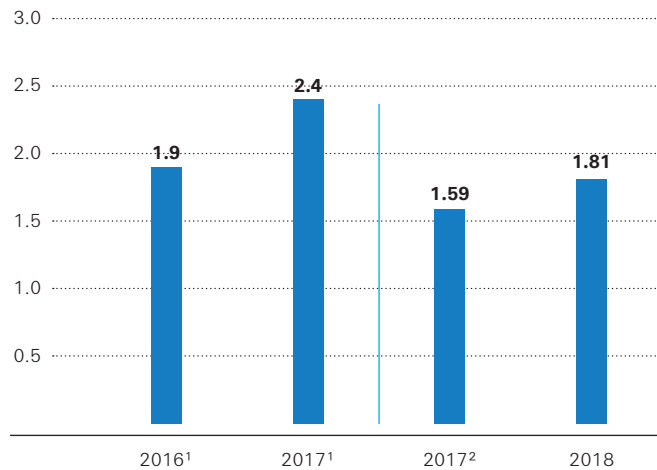
in cubic meters



1 Without the Active & Passive Safety Technology Division.
 2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

SPECIFIC WATER RECYCLED/REUSED 2016 – 2018

in cubic meters per EUR million in sales



1 Without the Active & Passive Safety Technology Division.

2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

Our location at Chennai, India, took part in the ZF Excellence Award 2018 with its “Preservation of Underground Water” project. The aim was to conserve groundwater reserves by reusing water while reducing costs at the same time. Through reverse osmosis the daily water consumption dropped from 37 cubic meters to 20 cubic meters and energy savings of 30 percent were achieved.

GRI 305 EMISSIONS 2016

GRI 103 (incl. 103-1, 103-2, 103-3)

Management Approach 2016

Our environmental and energy management system manages the reduction of emissions resulting from energy consumption at production facilities. Regarding production, the target 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. Emission profiles of purchased energies are part of the evaluation in the procurement process.

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. For more information see [GRI 302-5](#).

In 2016 and 2017, the emissions calculation was based on the VDA emission factors from 2015; for the 2018 calculation we used the revised VDA emission factors from 2017. In 2016, ZF joined the CDP reporting scheme in 2016.

Regarding procurement-related emissions, ZF’s strategy is to buy where the supplied materials or components are needed. 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, liquid gas and others.

Absolute CO₂ emissions fell by about 2.6 percent, although energy consumption rose slightly due to increased production (+1.19%). Direct emissions (Scope 1) remained almost constant (2017 adjusted: 264,461 MWh; 2018: 264,761 MWh). The reduction was mainly achieved by purchasing more electricity from renewable sources, especially in Spain and Brazil but also at locations in Germany or Austria.

ABSOLUTE CO₂ EMISSIONS¹ 2016 – 2018

in thousand tons	2018	2017 ²	2017	2016
Scope 1	265	264	253	–
Scope 2 – market-based	1,290	1,332	1,393	–
Total	1,555	1,596	1,646	1,570

1 Scope 1 + 2 emissions have only been reported since 2017 due to changing calculation methods in recent years.

2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30

GRI 305-2

Energy indirect (Scope 2) GHG emissions

Indirect emissions include emissions from purchased electricity and all kinds of district heat. The Scope 2 value “market based” was calculated using VDA emission factors for sites that use “standard electricity” and specific emission factors for sites that have a “green electricity” contract.

The increase in absolute energy consumption due to expanded production led not to a rise in absolute Scope 2 fossil CO₂ emissions in 2018.

GRI 305-3

Other indirect (Scope 3) GHG emissions

Our approach for Scope 3 emissions focuses on the supplies and suppliers with highest CO₂ emission levels in the life-cycle perspective. Scope 3 emissions are not yet part of this report, as only partially available data would not adequately represent ZF. See [ZF GRI 302-5](#) for more information on emissions from products and services.

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.

Since 2018, our absorption chiller at Plant 2 in Friedrichshafen has been in full operation. The resulting CO₂ savings amount to approximately 500 t/a through the replacement in the electricity procurement by natural gas and avoidance of electricity procurement for conventional refrigeration.

Although energy consumption rose slightly due to increased production (+1.19%), direct emissions (scope 1) remained almost constant (2017 adjusted: 264,461 MWh; 2018: 264,761 MWh).

Overall, and for the first time, CO₂ emissions were reduced by 2.6 percent despite increasing energy consumption, mainly in the area of indirect emissions (Scope 2). These fell by around 3.1 percent (2017 adjusted: 1,331 thousand tons; 2018: 1,290 thousand tons).

The reduction was mainly achieved by purchasing more electricity from renewable sources.

SPECIFIC CO₂ EMISSIONS¹ 2016 – 2018

in tons per € million sale	2018	2017 ²	2017	2016
Scope 1	5.3	5.5	6	–
Scope 2 – market-based	25.8	27.9	33.7	–
Total	31.0	33.5	39.8	40

1 Scope 1 + 2 emissions have only been reported since 2017 due to changing calculation methods in recent years.

2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

GRI 305-5

Reduction of GHG emissions

ZF’s strategy focuses on continuously reducing GHG emissions. The 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 led to a reduction in emissions.

Over 165 energy efficiency projects were implemented at ZF locations around the world. These were mainly in the areas of plant engineering, process optimization and building technology. The installation of a photovoltaic field in Bouthéon with 10,300 photovoltaic panels will finally lead to an overall production of 3,000 MWh.

The location Bielefeld (Germany) has been purchasing 100 percent of its electricity from renewables since 2018. A total of 19 locations (in Spain, Austria, Brazil, Belgium and Germany) purchased electricity from renewables or with reduced CO₂ emissions, leading to a total reduction of approximately 90,000 tons of CO₂.

Because these measures and growing purchase of renewable energy, ZF was able to avoid an increase in absolute emissions in 2018. 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 ZF locations, ODSs are relevant to air conditioning processes and equipment. Therefore, locations engage qualified contractors for the maintenance and service of coolant equipment to ensure appropriate handling.

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), sulfur 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 emissions 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.

ABSOLUTE VOC, NO_x AND SO_x EMISSIONS 2016 – 2018

in tons	2018 ¹	2017 ²	2017	2016
VOC	1,123	1,014 ³	1,014	886
SO _x	2,984	4,068 ¹	4,350	4,226
NO _x	2,224	2,675 ¹	2,821	2,755

1 Data for 2018 now include the Active & Passive Safety Technology Division.
 2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.
 3 Without the Active & Passive Safety Technology Division.

SPECIFIC VOC, NO_x AND SO_x EMISSIONS 2016 – 2018

in kilograms per € million in sales	2018 ¹	2017 ²	2017	2016
VOC	22	21 ³	25	34
SO _x	60	85 ¹	105	107
NO _x	44	56 ¹	68	70

1 Data for 2018 now include the Active & Passive Safety Technology Division.
 2 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.
 3 Without the Active & Passive Safety Technology Division.

GRI 306 EFFLUENTS AND WASTE 2016

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

Wastewater at ZF is usually discharged into the public sewer system and treated at local wastewater treatment plants connected to the system. However, our environmental management system aims at continually reducing the volume of wastewater and waste. 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 constantly working toward decreasing the volume of waste sent for disposal and hazardous waste by altering processes, optimizing procedures and substituting hazardous substances in operations. In addition, our revised environmental objectives are aiming at minimizing hazardous substances in products by substitution. Another focus lies on minimizing landfilling of hazardous waste.

The relevant processes at ZF with a potential risk for the release of hazardous substances are essentially surface treatment, carbide treatment, magnesium machining and hardening. 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.

GRI 306-1

Water discharge by quality and destination

The total and specific volumes of wastewater at ZF locations increased based on the use of raw water. The use of water from municipal supply decreased. The increase of raw water use was due to the hot summer in 2018 (e.g. the higher temperature of water from the Main river, which led to higher water requirements for cooling processes).

Using water treatment technologies, ZF reduces not only fresh-water 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.

ABSOLUTE WASTE WATER 2016 – 2018

in million cubic meters	2018	2017 ¹	2017 ²	2016 ²
Sanitary wastewater	2.266 ³	1.483	1.472	1.551
Treated process wastewater	1.252	1.411	0.831	0.870
Untreated process wastewater	6.722	6.104	6.085	5.638
Total	10.241	8.999	8.389	8.059

1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

2 Without the Active & Passive Safety Technology Division

3 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.

SPECIFIC WASTE WATER 2016 – 2018

in cubic meters per € million in sales	2018	2017 ¹	2017 ²	2016 ²
Sanitary wastewater	45	31	55	60
Treated process wastewater	25	30	31	34
Untreated process wastewater	134	128	229	219
Total	204	189	316	314

1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

2 Without the Active & Passive Safety Technology Division

GRI 306-2

Waste by type and disposal method

While the total amount of waste rose by 0.8 percent due to an increase in production, the specific amount of waste decreased by 4 percent in 2018 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, increased its recycling volumes to reduce the amount of waste that would otherwise have landed on landfills by 310 tons a year. Necessary transportation by disposal truck was also reduced from 170 to 45 entrances and exits per month by compressing the collected recyclables and thereby reducing their volume.

ABSOLUTE WASTE 2016 – 2018

in tons	2018	2017 ¹	2017	2016
Recycled non-hazardous	515,176	508,053	534,807	507,062
Recycled hazardous	38,208	34,856	43,254	41,180
Total recycled	553,384	543,190	578,061	548,243
Disposal non-hazardous	28,710	35,436	33,654	34,075
Disposal hazardous	37,250	35,772	40,373	36,895
Total disposal	65,960	71,208	74,027	70,970
Total	619,344	614,398	652,088	619,213

1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

SPECIFIC WASTE 2016 – 2018

in tons per € million in sales	2018	2017 ¹	2017	2016
Recycled non-hazardous	10.28	10.65	12.93	12.83
Recycled hazardous	0.76	0.73	1.05	1.04
Total recycled	11.05	11.39	13.97	13.88
Disposal non-hazardous	0.57	0.74	0.81	0.86
Disposal hazardous	0.74	0.75	0.98	0.93
Total disposal	1.32	1.49	1.79	1.80
Total	12.36	12.88	15.76	15.68

1 Data for the year 2017 were recalculated for reasons mentioned in the management approach, page 30.

GRI 306-3**Significant spills**

In 2018, 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 (incl. 103-1, 103-2, 103-3)**Management Approach 2016**

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 55 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 amounted to €8 million in 2018.

Furthermore, no major violations were reported in 2018.

GRI 308 SUPPLIER ENVIRONMENTAL ASSESSMENT 2016

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

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 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 cooperation 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 them effectively at their companies. Since the end of 2017, suppliers of the Active & Passive Safety Technology Division have been able to participate in seminars as a result of the integration process.

GRI 308-1**New suppliers that were screened using environmental criteria**

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

GRI 308-2**Negative environmental impacts in the supply chain and actions taken**

In China, the government took more strict measures in 2018 towards violation of environmental laws and regulations. ZF informed its supply base to comply with EHS regulations and organized appropriate training and self-assessment for selected suppliers. For suppliers with potential environmental risks, the Purchasing and Supplier Management team is taking preventive action. EHS requirements were implemented in the approval process for new suppliers in China.

SOCIAL

GRI 103 (incl. 103-1, 103-2, 103-3)

Management Approach 2016 (applicable to all social topics)

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 (incl. 103-1, 103-2, 103-3)

Management Approach 2016

Responsible, supportive and fair – that's the kind of employer ZF aims to be. We want to create a corporate culture that strengthens collaboration and trust. 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. Fairness, as we see it, provides benefits for employees and employer alike.

ZF is looking for qualified experts in all markets. Once hired, they enjoy attractive working conditions and qualification opportunities at all our company locations worldwide. The varied cultural backgrounds of our employees, their competencies and their diligence and motivation shape our corporate culture and are the key to our success.

In order to develop and produce intelligent mechanical products, ZF still requires employees from traditional occupations. Due to changing mobility habits, however, employees and graduates in the software and IT fields are becoming increasingly relevant to the

automotive industry. This is why the HR Department is stepping up its global activities in attracting such graduates or people who have completed vocational training in the respective fields. For further employer branding, the campaign “What’s next?”, which was rolled out in 2017, was extended in 2018 with testimonials in India and Eastern Europe. The intention was to strengthen our global visibility as an attractive employer. Good results have been achieved since the roll-out, e.g. for China and Germany, by individual benchmarks and employer rankings.

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

ZF hires approximately 600 new apprentices in Germany per year. Other parameters are currently not reported on for the Group in total.

EMPLOYEE TURNOVER FOR 2016 – 2018

as percent of headcount	2018	2017	2016
Europe	4.75	4.6	6
North America	37.93	35.4	22.2
South America	2.59	2.3	2.2
Asia-Pacific ¹	14.74	15.3	10.3
India ¹	0.73	–	–
Africa	1.50	1.7	2.7
Total	13.91	13.3	9.2

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](#).

Following the acquisition of TRW, ZF is in the process of analyzing the key benefit programs in the major countries and locations. The benefits analysis for the USA has been completed and benefits harmonization in the USA will be completed by 2018.

**GRI 401-3
Parental leave**

At the end of December 2018, a total of 671 employees took parental leave (up to three years) in Germany; of this number, 300 were male and 371 female. 170 female and 1,504 male employees took parental leave for a short period (up to one year) in 2018. Using parental leave for a short period, in most cases two months, is very popular among parents. A 12-month retention after returning and data for other countries in which ZF is active cannot yet be reported. Reporting systems are currently being implemented.

**GRI 402 LABOR/
MANAGEMENT
RELATIONS 2016**

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

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

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.

In March 2018 the Board of Management signed a new EHS Policy describing the mission, execution and responsibilities in fulfilling this vision. A new Group directive was issued in June to act as a bridging document between policy and the new EHS Management System in order to strengthen EHS processes throughout the company.

The new EHS management system was launched for the combined company as a result of our "best of both" approach, in which experienced specialists evaluated topic-specific best practices, standards and opportunities for cost reduction and synergies. Procedures, specific requirements and guidelines were therefore defined. To measure the implementation and effectiveness of the management system, half-yearly self-assessments are to be 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 of ZF and the Active & Passive Safety Technology Division were harmonized during the course of 2018 and communicated in January 2019.

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 the combined company comprises the following elements:

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

The Health Committee and the Interdisciplinary Expert Group (IEG) were extended to the Active & Passive Safety Technology Division in 2018. Additionally, an International Health group is to be established in 2019.

Managing safety

Aiming for constant improvement, all ZF locations apply our new internal management system. 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 2018, 71 locations (in 2017: 60) were matrix-certified.

First of all, the new EHS Management System focuses on the prevention and minimization of risks and impacts related to Health and Safety. Periodical risk assessments are performed calculating the level of risk based on the severity and probability of potential harm, applying methods similar to failure mode and effects analysis (FMEA). Work stations 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. Re-assessments 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. The ZF organization is supported by a Group-wide machinery safety expert team.

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, ZF has established a 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.

One of the focus areas for ZF in 2018 was to improve the EHS performance of the supply chain, especially in relation to suppliers providing onsite services at the locations (contractor activities). A process has been defined and is being implemented to better manage

contractor qualification and performance. Selection criteria have been defined and Purchasing pointed out ZF's expectations regarding health and safety to our contractors. Contractors are selected according to their proven ability to perform safety-critical activities. To ensure contractor activities are safely performed, risk assessments are carried out and control measures defined and agreed upon, and supervision is provided in order to ensure implementation. Violations can lead to removal from the list of approved contractors. Work permit processes have been defined for safety-critical activities.

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

The Safety Leadership (SL) Core Team continued to focus on the rollout of the Safety Leadership program. In 2018 the implementation continued in Germany focusing on site level. Outside Germany, the rollout continued in all regions. In the reporting year, 4,223 leaders participated in 346 workshops delivered by Safety Leadership Coaches – trained employees from EHS and production. Overall 6,646 leaders have now participated in 570 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. SL coaches received training to conduct workshops in Module 2 that focus on hazards, risk assessment, incident investigation and managing at-risk behavior.

Safety basics were implemented to support the program and make it visible to the employees. These consist of rules related to the use of safety shoes, high-visibility clothing and mobile devices, unique safety flyers for visitors and envisioning accident-free days at the locations.

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 100 (2017: 113) locations have implemented this process of safety coaching, with employees coaching their colleagues in working safely. While five sites from different divisions and regions were added in 2018, the overall number decreased compared to 2017 as a result of divestitures.

Continuous improvement of functional EHS programs

The backbone of the Continuous Improvement program is our new EHS Management System which is currently being implemented. The status of implementation 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. Safety improvement programs are being developed and rolled out for the combined company based on the best-of-both approach. For example, since the ergonomics program plays a pivotal role at ZF, a software-based ergonomics program was successfully launched. It includes features such as e-learning, ergonomic risk assessment and best practice solutions.

Managing our well-being

In the new EHS Management system we have included a new standardized element concerning Occupational Health. The procedure is oriented towards ISO 45001 and covers Core Medical Issues as well as Health-Related Interdisciplinary Issues.

Mandatory standards for training courses on leadership and health were rolled out in Germany, and measures for the rollout in the Active & Passive Safety Technology Division were prepared. The training on the basis of the defined curriculum is on track, and participation of all leaders (except for the Active & Passive Safety Technology Division) is planned to be completed by the end of 2019.

The integration of the Active & Passive Safety Technology Division into the Interdisciplinary Expert Group on Health Management (IEG) is being realized. An Occupational Medicine expert group on "Skin Protection" was constituted in 2018.

Various preventive activities were carried out at all locations. While the focus in 2018 was on "Skin Protection" diseases, the emphasis will lie on "Fit at Work" in 2019.

GRI 403-1

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

The new 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 sup-

ported 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 2018, 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 is currently being implemented. Due to confidentiality constraints, health-related figures regarding absenteeism are not reported on.

In 2018, no employee or agency worker faced a fatal work-related accident within the ZF Group. Unfortunately, one accident of a contractor employee resulted in a fatality while performing work at a site in Austria. As described before, a new contractor management process has been implemented.

With 1,329 work-related accidents resulting in 23,137 lost working days, on the basis of nearly 3 million hours worked, the Lost Time Accident Rate (LTAR) – accidents per one million working hours – amounted to 4.5. This represents a reduction of 18 percent compared to the previous year. The number and rate of high-consequence work-related injuries will be determined in our future reporting system. While the LTAR in the Active & Passive Safety Technology Division still shows an excellent performance rate of 1.7, other ZF divisions are also showing considerable improvements. For example, our locations in Germany were able to reduce the LTAR by 15 percent. This can be interpreted as the result of high management attention due to the Safety Leadership Program, along with monthly safety reviews. The Severity Rate (Lost Working Days per Lost Time Accident) was 17.4 (2017: 19.8).

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

RATE OF ACCIDENTS 2016 – 2018

(LTAR) Accidents with working days lost per one million working hours	2018	2017	2016
EMEA	7.5	8.8	10.5
of which Germany	9.8	11.5	14.2
of which Europe excl. Germany	4.6	5.8	5.9
North America incl. Mexico	1.7	2.2	2.6
South America	4.4	4.8	6.0
Asia-Pacific	1.0	1.0	1.1
ZF Group	4.5	5.5	6.5

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

Information on occupational diseases are reported for Germany, this year for the first time including locations of the Active & Passive Safety Technology Division. There were 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 31 potential and 13 confirmed cases in 2018. 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 2018, 54 cases of potential work-related skin diseases were diagnosed but only 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 (incl. 103-1, 103-2, 103-3)
Management Approach 2016**

Individual and organizational development, qualification and lifelong 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, educa-

tional 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.

The corporate HR Development and the HR Development departments in the individual divisions, regions and technical departments work closely together. By shifting to a new Human Resources target operating model between Centers of Expertise, HR Business Partners and HR Operations, we strengthen our customer, functional and operational excellence. We thereby ensure standardized operational processes in HR Development as well as innovation and business orientation.

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 has integrated new content specifically focused on electronics, IT and hybrid qualifications into the internal apprenticeship program. The following job profiles will gain importance in the future: qualified IT specialists and production technologists. In 2018, Lemförde, Düsseldorf and Friedrichshafen added the job profile "Qualified IT Specialist" to their current portfolios and Saarbrücken includes the job profile "Production Technologist" in its current offer. In addition, the qualification of vocational trainers has been identified as a main enabler to promote the implementation of "Apprenticeship 4.0" at ZF. For this reason,

a ZF Vocational Trainer Day for all vocational trainers in Germany was held in early 2018. As a follow-up activity, a design thinking workshop was conducted with trainers and apprentices in order to develop a platform for sharing and exchanging learning content as well as didactic and training materials. Furthermore, in April 2018 the new position “Vocational Training” was established, which aims to generate synergies between all ZF sites worldwide and strengthen cooperation regarding vocational training activities. The internationalization of apprenticeships is also becoming more important for the ZF Group as a whole, and there are several initiatives in place for expanding the apprenticeship model outside of Germany. One example is the ZF site in Mexico, Saltillo, which has been certified as a recognized training company (“anerkannter Ausbildungsbetrieb”) since 2018 and offers the job profiles “Toolmaker” and “Mechatronic Technician” in its dual education system.

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, about 618 young people started an apprenticeship or dual study program at ZF in Germany. By the end of 2018 our apprentices numbered around 2,800 worldwide, including students from the Active & Passive Safety Technology Division. Around 25 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

The Global ZF Campus has been transformed to a global Center of Expertise – Global Learning and ZF Academies. This implies a stronger focus on global learning topics and the question of how we as an organization need to adapt to be ready for the future.

A new essential component of the global Learning portfolio is the extension of our learning mix and the integration of different elements into one common learning concept/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 F2F 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 on business needs and value-based learning approaches. One of our first initiatives is the implementation of a global digital learning life cycle process, with greater focus on consultancy and support of subject matter experts in the creation of digital learning formats.

To support the digital transformation at ZF and the necessary cultural change, further specific initiatives and measures are being implemented to develop our learning culture with a view to being more open, connected and collaborative. This includes learning in communities, learning from mistakes and more self-responsible learning elements. Another topic is that of providing the right offers to develop the competencies/skills needed in the future. Here the team expanded its internal and external network 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. We are currently expanding activities and setting up an R&D academy to ensure our readiness for future technologies as well as 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

We have again extended our international training capacities. For example, we have intensified our cooperation with colleges and universities in China, the USA and several European countries. Further successes have also been achieved in internationalizing our trainee program.

Since leadership excellence is a strategic target of the ZF Group, we continued our “ZF Global Leaders” program through 2018. This comprises level-specific modules with a blend of in-person sessions, virtual learning, self-reflection tools and peer group coaching and work on real cases. The objective of ZF Global Leaders is to provide leadership with different development opportunities and to prepare candidates for transition to the next management level. The ZF Global Leaders landscape fosters a global mindset and strong collaboration. Over time it also aims at creating a uniform global leadership culture through cross-divisional, cross-functional and cross-regional group composition. Further targets are strengthening the company’s leadership pipeline and providing consistent global leadership development throughout the various management levels. The goals and content of the program are based on the Group strategy and are linked to the ZF Management System with its ZF Charter and ZF’s leadership principles – thereby encouraging new ways of working together.

Almost 700 future managers from all over the world have participated in the programs since September 2017. For 2019 we are also planning a significant number of groups to ensure the development of our potential candidates.

Besides ZF Global Leaders we are increasing our international training portfolio for the entire management group and are currently developing global content training courses with a strong focus on virtual training elements. The most relevant topics are “Virtual Leadership”, “Leading in a Matrix”, “Agile Leadership” and “Artificial Intelligence in the Context of Digitalization”. The revised training offer will be available as of 2019.

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 247 registered experts with 32 work assignments.

In Germany, ZF is pursuing a comprehensive approach to deal 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 family. 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

ZF emphasizes the importance of personal and professional development for all employees. Individual performance and development opportunities are discussed and documented on an annual basis according to the HR process cycle for non-managerial employees. Figures by gender and employee category are currently not available.

As part of the integration of the Active & Passive Safety Technology Division in 2017, a new potential and succession planning process applicable for managerial employees in the Group was defined. This new process was implemented for pilot groups in 2017 and was rolled out for all managerial employees in 2018. The process is supported by a cloud-based IT solution. In 2019, it is planned to extend this process to employees in the pay scale who have potential for a managerial position.

A Short-Term Incentive (STI) was rolled out Group-wide for all managers in 2017. The system is intended to foster a culture of innovation and performance, resulting in a 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 a comprehensive evaluation of the results achieved throughout the year. The process is transparent and defines the framework for our actions and priorities, and for the behavior and attitudes we expect from the combined company’s managers. The Individual Target Agreement and Performance Process (iTAP) has been moved to a cloud-based IT solution. The iTAP process includes an annual feedback meeting between managers and supervisors.

GRI 405 DIVERSITY AND EQUAL OPPORTUNITY 2016

GRI 103 (incl. 103-1, 103-2, 103-3)

Management Approach 2016

We believe that diversity and its appreciation have a positive impact on society and how people work together. That is why we signed up with the Diversity Charter and now belong to a group of approximately 3,000 signatories dedicated to a welcoming, prejudice-free corporate culture. This voluntary commitment represents our pledge to actively promote diversity within our organization.

In 2018 we implemented a follow-up mentoring program for women and men who are interested in pushing their careers forward and expanding their networks. We started in October with 20 participants. The structured mentoring will last one year and is open to all employees worldwide.

We have created Employee Resource Groups (ERGs) in “Zoom”, our new intranet, to give employees the opportunity to exchange knowledge and experience worldwide. An example of an ERG is our community Women@ZF with over 500 participants (status November 2018).

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 approximately 230 locations in 40 countries, the age structure of the company’s workforce is very heterogeneous and is strongly dependent on the history of each particular ZF location.

Managing diversity

ZF understands diversity as the key to success, a driver of innovations and a factor in enhancing corporate value. Our HR strategy therefore highlights the issue of diversity as part of the Group strategy. 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 changes. 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. The modules determine criteria for promoting and supporting multidivisional, multidisciplinary experience and help to internationalize man-

agement. The ZF Career Elements were rolled out globally and are well implemented in the organization.

To increase the number of women in technical professions, ZF has become 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 for STEM (Science, Technology, Engineering, Math) professions, qualifies excellent candidates for a management career and offers distinguished career perspectives to focused female students 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 the Innovation Workshop (“Innovationswerkstatt”) 2018, carried out with and for ZF, the Femtec participants dealt with questions and ideas for automated driving.

ZF EMPLOYEES BY REGION AND GENDER¹ 2016 – 2018

in percent	Women			Men		
	2018	2017	2016	2018	2017	2016
Europe	14.30	13.85	13.81	85.70	86.15	86.19
of which Germany	13.15	12.93	13.01	86.85	87.07	86.99
North America	27.46	26.62	26.02	72.54	73.38	73.98
South America	9.17	9.1	8.51	90.93	90.90	91.49
Asia-Pacific	16.63	16.91	18.89	83.37	83.09	81.11
Africa	16.25	14.73	15.07	83.75	85.24	84.93
Total	16.12	15.73	15.74	83.88	84.27	84.26

¹ Without the Active & Passive Safety Technology Division

ZF EMPLOYEES BY GENDER¹ 2016 – 2018

	2018	2017	2016
Men	65,680	64,071	61,768
Women	12,619	11,959	11,537

¹ Without the Active & Passive Safety Technology Division

The compatibility of work and family at ZF is still an important objective 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 commitments.

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.

In 2018, the existing audit was extended to other major locations of ZF in Germany: Besides Friedrichshafen, also Schweinfurt, MDS Lemförde, Passau and Saarbrücken have participated. The “audit berufundfamilie” 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.

Furthermore, additional 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.

GRI 405-1

Diversity of governance bodies and employees

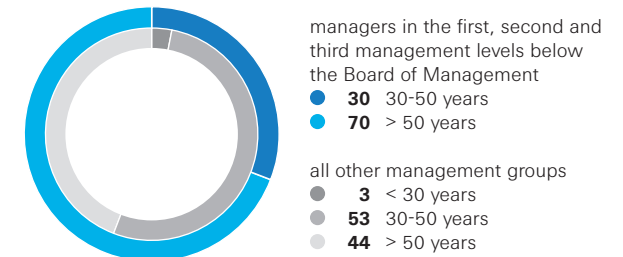
In light of German legislation governing equal representation of women and men in managerial positions in the private and public sectors, targets for the relevant managerial levels have been discussed and set for ZF Friedrichshafen AG to be achieved by June 30, 2022.

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 for the HR and Legal Corporate Function means that this target has already been met.

MANAGEMENT DIVERSITY BY AGE 2018

in percent



For vacancies regarding the Supervisory Board, a quota of 30.0 percent was set. The quota is currently 10.0 percent.

The percentage of older employees is much higher in Germany, whereas the workforce at the international locations is younger on average.

In 2018, the proportion of women in management positions in the Group amounted to 9.78 percent.

Since 2006, ZF Friedrichshafen AG has been compliant with the statutory requirements for employees with disabilities and recorded the rate for Germany. In 2018, the proportion of employees with disabilities amounted to 5.64 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 will be progressively introduced over a three-year period. 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 appointed a global diversity manager to monitor equal treatment among employees.

GRI 406

NON-DISCRIMINATION

2016

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

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](#) and 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 (incl. 103-1, 103-2, 103-3)
Management Approach 2016

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 62 percent was recorded in the reporting year. We intend to increase the feedback rate from suppliers in 2019. The results of the inquiry indicate that the reviewed supply chains potentially source products that finance conflicts in DRC regions. A high-risk smelter follow-up is conducted for the suppliers whose feedback indicated potential high-risk smelters, to constantly minimize any risks. We actively request the corresponding suppliers to eliminate critical smelters within their supply chains and ensure that new suppliers do not source from identified smelters. As these minerals are necessary for several functions and purposes of some of our products, ZF is clearly committed to further cleansing its supply chain.

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

During the course of the reporting year, 100 percent of new ZF suppliers underwent self-assessment 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 this procedure consistently in the future.

GRI 416

CUSTOMER HEALTH AND SAFETY 2016

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

In providing products and services for people, ZF works toward improving customer health and safety in many ways. This is founded on quality and reliability, which are of utmost importance as with other end customer products. Therefore, our 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. ZF is committed to promoting functional safety as a priority. Each division is responsible for training employees on this directive and developing an organization with clear areas of authority, responsibilities and functional safety processes.

Our new DG 06-16 Functional Safety guideline was approved in 2018 and the deriving process is being applied in the Group worldwide, replacing former guidelines of ZF and the Active & Passive Safety Technology Division. 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.

See – Think – Act

In addition, our products allow for improving safety in mobility. With the updated Group strategy, ZF has chartered 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.

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.

ZF’s 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.

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, 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

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