

## C0. Introduction

### C0.1

**(C0.1) Give a general description and introduction to your organization.**

#### COMPANY PROFILE

ZF is a global technology company supplying systems for passenger cars, commercial vehicles, and industrial technology. With its comprehensive product portfolio, the company offers integrated solutions for established vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. Digital networking and automation are focal points of ZF system development as it transitions to becoming a software- and cloud-based company. ZF allows vehicles to see, think and act.

ZF achieved sales of €38.3 billion with 157,500 employees worldwide. The company spent eight percent of its sales on research and development in 2021. Our main markets are Europe, North America, and the Region of Asia-Pacific, with China as the core market and India as the growth market. Founded in 1915, ZF has evolved from a supplier specialized in aviation technology to a global mobility technology company.

#### CORPORATE STRUCTURE

ZF Friedrichshafen AG is a corporation headquartered in Friedrichshafen (Germany). The Zeppelin Foundation owns 93.8% of the company. These shares are managed by the city of Friedrichshafen. The remaining 6.2% is owned by the Dr. Jürgen and Irmgard Ulderup Foundation, Lemförde (Germany). The shareholders exercise their voting rights at the annual shareholders' meeting. In order to manage our business activities in a way that is as customer-oriented, market-specific and innovative as possible, we are working in a global network consisting of divisions, regions, and corporate functions. The corporate functions and divisions are managed by the Board of Management.

The same applies to the responsibilities regarding the Regions of North America, South America, Asia-Pacific and India. The regions provide local guidelines as well as corresponding services for the local business activities. In the ZF Group, business activities by product segments are organized by divisions. The divisions Active Safety Systems, Car Chassis Technology, Electrified Powertrain Technology (established through the merger of the Car Powertrain Technology Division and the E-Mobility Division as of January 1, 2021), Electronics and ADAS as well as the Passive Safety Systems Division operate in the passenger car sector. As of January 1, 2022, the Commercial Vehicle Control Systems Division was merged with the Commercial Vehicle Technology Division to form the new Commercial Vehicle Solutions Division. Thus, ZF has positioned itself as a global systems supplier in the commercial vehicle market.

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

The Aftermarket Division makes our OEM expertise available to the aftermarket, drawing on a global service network of more than 15,000 workshop partners. Our offers include services for fleets, exchange units and maintenance, as well as intelligent connectivity solutions plus upgrades and retrofits for more efficiency, comfort and safety. In addition, we develop workshop concepts that provide the technical knowhow needed for the diagnosis, maintenance, and repair of components.

#### CORPORATE STRATEGY

In taking the company forward, ZF's strategic focus is on electrification, digital networking, and automation. ZF is therefore continuously further advancing its portfolio beyond the 4 plus 1 technology fields, which the company combines using integrated solutions: Automated Driving, Electric Mobility, Vehicle Motion Control, Integrated Safety, +1 Digitalization, Networking and Software.

Sustainability is an integral part of the corporate strategy. ZF wants to be fully climate-neutral over all scopes by 2040. Upstream supply chains are included in the targets as well. By 2030, the company wants to reduce CO2 emissions at ZF locations by 80% compared to 2019. In its sustainability efforts, ZF focuses on the following three dimensions: climate and nature, people, lasting values.

### C0.2

**(C0.2) State the start and end date of the year for which you are reporting data.**

|                | Start date     | End date         | Indicate if you are providing emissions data for past reporting years | Select the number of past reporting years you will be providing emissions data for |
|----------------|----------------|------------------|---|--|
| Reporting year | January 1 2021 | December 31 2021 | Yes   | 1 year   |

### C0.3

(C0.3) Select the countries/areas in which you operate.

- Argentina
- Australia
- Austria
- Belgium
- Brazil
- Canada
- China
- Czechia
- Denmark
- France
- Germany
- Hungary
- India
- Italy
- Japan
- Malaysia
- Mexico
- Netherlands
- Poland
- Portugal
- Republic of Korea
- Romania
- Russian Federation
- Serbia
- Singapore
- Slovakia
- South Africa
- Spain
- Switzerland
- Taiwan, China
- Thailand
- Turkey
- United Arab Emirates
- United Kingdom of Great Britain and Northern Ireland
- United States of America
- Viet Nam

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

- EUR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

- Operational control

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

| Indicate whether you are able to provide a unique identifier for your organization | Provide your unique identifier |
|--|--------------------------------|
| Yes, an ISIN code  | DE000A14J7G6                   |

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

- Yes

C1.1a

**(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.**

| Position of individual(s)  | Please explain  |
|--|---|
| Chief Executive Officer (CEO)  | Commitment of CEO: Since 2020, ZF has been a member of the World Economic Forum's "Alliance of CEO Climate Leaders" to underline "Sustainability as a Top Priority" at ZF. The "Alliance of CEO Climate Leaders" holds the position that the private sector is responsible for actively participating in efforts to reduce greenhouse gas emissions worldwide and shape the global transition to a climate-resistant economy, generating only low carbon emissions. By joining the Alliance of CEO Climate Leaders, ZF takes responsibility and seeks to use its position of influence to drive climate protection. |
| Other, please specify (Board member)                                   | Member of the Board of Management Chief Human Rights Officer, HR and Legal, Director of Labor Relations, Responsible for Environment & Sustainability The sustainability department is located in the human resources domain. The Senior Vice President for sustainability, environment, health and safety directly reports to the Chief Human Resources Officer. The sustainability department is responsible for sustainability strategy and reporting, serves as the internal contact point for all sustainability-related questions, advises the Board of Management and manages the stakeholder dialogue.      |
| Other, please specify (Senior Vice President)                          | Senior Vice President Sustainability and EHS Statement: "Sustainability at ZF is not only about complying with regulations. It is an integral part of our strategy. By embedding sustainability in processes and decision-making, we interlink our long-term business success with our responsibility for society and the environment."   |
| Other, please specify (Head of Sustainability Management Supply Chain) | Head of Sustainability Management Supply Chain Statement: Sustainability criteria for suppliers, as mandatory part of our sourcing process, is our central steering element. Our next step now is to intensify our monitoring of, and collaboration with, suppliers to improve our joint sustainability performance. By thus we cannot only significantly reduce upstream emissions, but also build resilient and sustainable supply chains.  |

**C1.1b**

**(C1.1b) Provide further details on the board's oversight of climate-related issues.**

| Frequency with which climate-related issues are a scheduled agenda item | Governance mechanisms into which climate-related issues are integrated   | Scope of board-level oversight | Please explain  |
|---|--|--------------------------------|---|
| Scheduled – all meetings  | Reviewing and guiding strategy<br>Reviewing and guiding major plans of action<br>Reviewing and guiding risk management policies<br>Reviewing and guiding annual budgets<br>Reviewing and guiding business plans<br>Setting performance objectives<br>Monitoring implementation and performance of objectives<br>Overseeing major capital expenditures, acquisitions and divestitures<br>Monitoring and overseeing progress against goals and targets for addressing climate-related issues | <Not Applicable>               | Sustainability Ambition Committee (bi-weekly) In coordinating sustainability topics within the company, the sustainability department is supported by a cross-divisional and cross-functional committee. Comprised of the sustainability leads of all divisions and the most material corporate domain functions, this group meets on a bi-weekly basis. Through the sustainability department the committee regularly reports into senior management up to the Board of management. The tasks of the sustainability department include: • Developing and implementing an appropriate sustainability strategy and monitoring progress for the ZF Group. In this endeavour, it assists the Board of Management in fulfilling its responsibility for oversight of relevant sustainability and corporate social responsibility aspects of the company. • Regularly reviewing the materiality matrix. • Drawing up an annual review of ZF's sustainability strategy. • Anchoring the top issues in the sustainability program as well as in the respective departmental strategy and management. • Regularly reviewing the appropriateness and effectiveness of ZF's strategy, targets and measures. • Providing regular progress reports on target achievements or related measures. • Monitoring external trends and requirements and recommending additional actions in response. • Within the context of risk management, identifying, assessing and managing risks associated with sustainability issues. • Reviewing and approving the annual Sustainability Report. • Coordinating the internal and external communication of sustainability – stakeholder dialogue. To gain an overview of newly arising company topics and to elaborate initial starting points for dealing with them, the team may establish working groups that will then address specific tasks in depth. |

| Frequency with which climate-related issues are a scheduled agenda item | Governance mechanisms into which climate-related issues are integrated   | Scope of board-level oversight | Please explain  |
|---|--|--------------------------------|---|
| Scheduled – some meetings   | Reviewing and guiding strategy<br>Reviewing and guiding major plans of action<br>Reviewing and guiding risk management policies<br>Reviewing and guiding annual budgets<br>Reviewing and guiding business plans<br>Setting performance objectives<br>Monitoring implementation and performance of objectives<br>Overseeing major capital expenditures, acquisitions and divestitures<br>Monitoring and overseeing progress against goals and targets for addressing climate-related issues | <Not Applicable>               | Board of Management The complete Board of Management has climate-related topics on the agenda on a regular basis (for information, discussion and/or decision). Commitment to climate neutrality by 2040 is an integrative part of ZF "Next Generation Mobility". Climate protection and the related neutrality strategy are fully integrated into the Strategic Planning Process of the group. |
| Scheduled – all meetings  | Reviewing and guiding strategy<br>Reviewing and guiding major plans of action<br>Reviewing and guiding risk management policies<br>Reviewing and guiding business plans<br>Monitoring implementation and performance of objectives<br>Monitoring and overseeing progress against goals and targets for addressing climate-related issues<br>Other, please specify (monitoring investment on divisional level)  | <Not Applicable>               | Environmental Managers Committee (monthly) This steering committee for environmental issues covers energy and emission topics, with a semi-annual Management Review to Member of BoM. For instance it is setting performance objectives including target break-down to divisional and locational levels.  |

## C1.1d

**(C1.1d) Does your organization have at least one board member with competence on climate-related issues?**

|       | Board member(s) have competence on climate-related issues | Criteria used to assess competence of board member(s) on climate-related issues  | Primary reason for no board-level competence on climate-related issues | Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future |
|-------|---|--|--|---|
| Row 1 | Yes   | The CEO of the company has a deep routed competence in climate-related issues. He is an active member of the "Alliance of CEO Climate Leaders" within the World Economic Forum (WEF) as well as an active member of the "First Movers Coalition" within the WEF which aims to jump-start the demand for zero-emission technologies by committing their support with long-term supply agreements. | <Not Applicable>   | <Not Applicable>  |

**C1.2****(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.**

| Name of the position(s) and/or committee(s)                          | Reporting line   | Responsibility  | Coverage of responsibility | Frequency of reporting to the board on climate-related issues |
|--|------------------|---|----------------------------|---|
| Other, please specify (Senior Vice President Sustainability and EHS) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable>           | Quarterly   |
| Other committee, please specify (Sustainability Ambition committee)  | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable>           | More frequently than quarterly                                |
| Environment/ Sustainability manager                                  | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable>           | Half-yearly   |
| Other, please specify (Environmental managers committee)             | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable>           | Half-yearly   |
| Environmental, Health, and Safety manager                            | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable>           | Half-yearly   |

**C1.2a****(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).**

1. Sustainability Ambition committee: cross-divisional and cross-functional coordination inside ZF Group; Very high meeting cadence, frequently reporting to BoM through the sustainability department.
2. Environmental, Health and Safety manager: semi-annual Management Review to Member of Board of Management (BoM) and at least monthly report meetings
3. Environmental managers committee: worldwide coordination of divisions, business units, locations, and their manager
4. Environmental/ Sustainability manager: semi-annual Management Review to Member of BoM and at least monthly meetings with Vice President Corporate Environmental Protection

**C1.3****(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

|       | Provide incentives for the management of climate-related issues | Comment   |
|-------|---|---|
| Row 1 | Yes   | With the clear 2040 climate neutrality target being explicitly integrated into the company strategy, climate is on the highest possible management agenda. Environmental performance metrics are managed by targets. Climate is the one of the major environmental and sustainability challenges and is part of ZFs ESG strategy. ZF measures the Corporate Carbon Footprint of the Company including up- and downstream CO2 emissions (scope 1, 2, 3). By a climate ambition project ZF developed a climate strategy to achieve climate neutrality for all scopes (1, 2, 3) by 2040 and to reduce CO2 emissions from ZF locations (scope 1&2) by 80% until 2030. The targets are confirmed by the board of management and cascaded down to divisions and functions and are part of the strategic and operative planning processes. From 2023 onwards, achievement of CO2 reduction targets (Scope 1 & 2) will be a part of the long-term incentive system for all global ZF managers, starting from the Board of Management. |

**C1.3a**

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

| Entitled to incentive                     | Type of incentive   | Activity incentivized                                 | Comment  |
|---|---------------------|---|--|
| Environmental, health, and safety manager | Monetary reward     | Emissions reduction target<br>Energy reduction target | Energy and emission reductions targets represent the core competence and responsibility of ZF environmental managers   |
| All employees                             | Non-monetary reward | Other (please specify) (ZF Excellence Award)          | Greenhouse gas emissions reductions are included in Excellence Award Category: Health, Safety, Environment and Social Affairs  |
| Management group                          | Monetary reward     | Emissions reduction target                            | From 2023 onwards, achievement of CO2 reduction targets (Scope 1 & 2) will be a part of the long-term incentive system for ZF managers. The targets are fully aligned with the reduction pathway towards ambitious 2040 climate neutrality target of the ZF Group. |

## C2. Risks and opportunities

### C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

#### C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

|             | From (years) | To (years) | Comment  |
|-------------|--------------|------------|--|
| Short-term  | 1            | 3          | The risk management of ZF Friedrichshafen AG standardized throughout the Group is implemented as part of an integrated governance, risk and compliance (GRC) approach. The aim of the integrated GRC approach is to synchronize and promote the activities and cooperation of the core governance functions. In addition to Group Risk Management, this system includes the Compliance organization, the internal control system, and as an independent supervisory body, Corporate Audit. Our risk situation is now more transparent. We document, monitor, and manage risks in a structured way, taking account of both strategic and operational risks and aggregating the overall risk landscape. Within the GRC approach sustainability topics including climate-related risks and opportunities are considered and evaluated, too. ZF Corporate Environmental, Health and Safety Targets 2021 - 2025. Time horizon of operational financial planning: 1-3 years.   |
| Medium-term | 3            | 10         | The risk management of ZF Friedrichshafen AG standardized throughout the Group is implemented as part of an integrated governance, risk and compliance (GRC) approach. The aim of the integrated GRC approach is to synchronize and promote the activities and cooperation of the core governance functions. In addition to Group Risk Management, this system includes the Compliance organization, the internal control system, and as an independent supervisory body, Corporate Audit. Our risk situation is now more transparent. We document, monitor and manage risks in a structured way, taking account of both strategic and operational risks and aggregating the overall risk landscape. Within the GRC approach sustainability topics including climate-related risks and opportunities are considered and evaluated, too. ZF Climate Neutrality Strategy 2040 (including interim mid-term target 2030) As climate protection has become one of the most urgent issues of our time, ZF makes its contribution by bundling and strengthening current measures in a climate strategy: Our goal is to become climate neutral — from Scope 1 to Scope 3 – not later than 2040 and already reduce our emissions from production by 80% until 2030 compared to 2019. Time horizon of strategic financial planning: 7 years. |
| Long-term   | 11           | 20         | ZF Climate Neutrality Strategy 2040 As climate protection has become one of the most urgent issues of our time, ZF makes its contribution by bundling and strengthening current measures in a climate strategy: Our goal is to become climate neutral — from Scope 1 to Scope 3 – not later than 2040. In doing so, the company is supporting the goals of the Paris Climate Agreement, which aims to limit global warming to 1.5 degree. Setting an absolute long-term target allows for the identification of a clear reduction path.  |

#### C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

We define risks as deviation from our planning. All risks that exceed critical limits and existential risks shall be identified at an early stage by all employees and evaluated, adequately, treated and reported by risk owners globally, regionally and locally along the value chain in divisions (including allocated reporting units, hereinafter "RU"), Global Domain Functions (hereinafter "GDF") and regions. The definitions of EHS and climate-related risks are based on dedicated risk assessments.

Once a year, strategic risks that have a long-term impact on ZF are assessed. Significant risks for the Group are identified by means of thresholds defined by the Board of Management with regard to probability of occurrence and potential extent of damage impact. Impacts can be evaluated quantitatively and qualitatively and are clustered at various levels (on group, divisional, site level). We include opportunities if they have a direct material link to a risk.

The Enterprise Risk Management process applies to all employees of ZF Friedrichshafen AG and all of its directly and indirectly controlled subsidiaries (collectively, the "ZF Group").

Due to the increased and strategic importance, ZF has started a comprehensive scenario analysis in line with the TCFD recommendations to improve the view on climate-related risks and opportunities throughout the value chain.

### C2.2

## (C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

### Value chain stage(s) covered

Direct operations  
Upstream  
Downstream

### Risk management process

Integrated into multi-disciplinary company-wide risk management process

### Frequency of assessment

More than once a year

### Time horizon(s) covered

Short-term  
Medium-term  
Long-term

### Description of process

ZF Enterprise Risk Management At least every three months and ad hoc, if required, the corporate functions and operational reporting units identify, assess, and report operational risks. All risks are assigned to risk categories in the ZF risk catalogue to enable all types of risks along the value chain to be recognized. Climate- and water-related risks are integrated in ZF risk catalogue and are allocated to the specific risk category. Once a year, strategic risks that have a long-term impact on ZF are assessed. Significant risks for the Group are identified by means of thresholds defined by the Board of Management with regard to probability of occurrence and potential extent of damage. Within the scope of Enterprise Risk Management, we include opportunities if they have a direct material link to a risk. Risks and their impacts are chiefly assessed using quantitative criteria differentiated according to their gross risk value (before risk treatment) and net risk value (after risk treatment). With the possibility of a qualitative risk assessment using our GRC consequence matrix, also non-quantifiable or difficult-to-quantify risks in our risk landscape are considered and managed. Based on the risk assessment, we strive to reduce or completely avert risks by means of appropriate countermeasures and to seize associated opportunities. For each individual risk classified as major, the responsible risk managers initiate measures. These are also documented and tracked in the Group's reporting. Interdependencies between risks and aggregation effects are taken into account. The Board of Management and the Risk Committee continuously monitor ZF's opportunity and risk situation. Group Risk Management is tasked with continuously tracking the development of all identified major risks and the status of the risk treatment measures initiated. The aforementioned activities ensure that risks and opportunities are continuously analysed throughout the Group. In this way, we want to increase risk awareness inside our organization and establish the framework for further developing our corporate risk culture. Climate-related risk management As part of the environmental management system in accordance with ISO 14001, respective risks and opportunities are assessed at site and Group level and reported as part of the management review. This procedure will be adapted to the new enterprise risk management standard in 2021 considering ZF ESG strategy. The context for our sustainability considerations is to a large extent shaped by global megatrends. Climate change, demographic change and increasing urbanization are leading to changes in consumer behaviour – with a fundamentally growing demand for finite resources, which is leading to increased conflict. Several trends require a technology shift toward efficiency and resource conservation, which ZF is pushing for by continually reducing CO<sub>2</sub> and noise emissions, for example. A product strategy for a sustainable and circular product portfolio is in implementation. 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 and 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. 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 EHS Management System The globally integrated ZF Corporate Environmental Protection and Energy Management System (ZF EHS Management System) acc. to the following international standards: ISO 14001/ ISO 50001/ ISO 18001 with policy and objectives on group level enables ZF to monitor, evaluate and steer climate change risks and opportunities on group level. The analyses of impacts, efficiencies and measures of improvement are reported semi-annually to a member of Board of Management (management review). Moreover, there is a process steered by the controlling department in place with interfaces to EHS-management system: Risk management, fundamentals on the early recognition and elimination of existential risks and risks above critical limits (with interfaces to climate change risks and opportunities on group and locational level).

## C2.2a

### (C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

|                     | Relevance & inclusion     | Please explain  |
|---------------------|---------------------------|---|
| Current regulation  | Relevant, always included | e.g. air pollution limits, increase operational costs for alignment of facilities considered in risk assessment of ZF Groups EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001   |
| Emerging regulation | Relevant, always included | e.g. expansion of reporting obligations, increase operational costs considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001  |
| Technology          | Relevant, always included | e.g. reduced demand for goods/ services of certain technologies Periodically adaption of ZF strategy, strategy activation process and product development process. Cascading down from board level, the contents of ZF strategy are circulated to all levels in the corporate hierarchy. Conducted a qualitative scenario analysis (in early 2022) to identify transitional climate-related risks and opportunities, quantitative scenario analysis is ongoing to quantify these risks and opportunities. |
| Legal               | Relevant, always included | e.g. fuel/ energy taxes and regulations, increase operational costs considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001 and product development process.   |
| Market              | Relevant, always included | e.g. expansion of customers reporting requirements of non-financial data, increase operational costs considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001 Conducted a qualitative scenario analysis (in early 2022) to identify transitional climate-related risks and opportunities, quantitative scenario analysis is ongoing to quantify these risks and opportunities.  |
| Reputation          | Relevant, always included | e.g. transformation of automotive industry considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001   |
| Acute physical      | Relevant, always included | e.g. floods and droughts considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001 Conducted a qualitative scenario analysis (in early 2022) to identify physical climate-related risks, quantitative scenario analysis on site-level is ongoing to quantify these risks.  |
| Chronic physical    | Relevant, always included | e.g. induced changes in natural resources considered in risk assessment of ZF EHS management system acc. ISO 14001/ ISO 50001/ ISO 18001 Conducted a qualitative scenario analysis (in early 2022) to identify physical climate-related risks, quantitative scenario analysis on site-level is ongoing to quantify these risks.   |

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

|                |  |
|----------------|--|
| Acute physical | Other, please specify (Cyclone, Drought, Flood ) |
|----------------|--|

Primary potential financial impact

Other, please specify (Decreased revenues due to potentially affected supply chains or reduced production capacity )

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Risks and opportunities due to climate change A key development in the analysis of risks is the intensified consideration of climate change impacts. In this connection, we follow the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The further integration of the TCFD recommendations is performed in parallel with the further implementation of ZF's climate neutrality strategy. As part of these efforts, scenario analyses are initiated in 2022. First results of qualitative scenario analysis indicate flooding events and tropical cyclones as significant physical risks along ZF's value chain. A more profound analysis including quantification of the effects is ongoing. ESG and TCFD integration into ZF's ERM approach is under implementation.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Business interruptions and failures in production due to damaged plants / production equipment caused by extreme weather (storms, floods). In extreme cases this could cause significant losses due to disruption in production and/or the supply chain. Impact of extreme weather events in the 2.7 C scenario on preselected, critical ZF sites will be determined as a focus area for further analysis and for the financial quantification of physical climate related risks. Financial impact figures are confidential/ only for internal use.

Cost of response to risk

Description of response and explanation of cost calculation

ZF is analysing climate related risks in the TCFD (Task Force on Climate Related Financial Disclosures) project during the ESG program and various cross-functional resilience projects. The resulting risks are addressed in the EHS Management System, and the environmental targets defined in the ZF Sustainability program incl. technical responses. Close alignment with ERM (Enterprise Risk Management) takes place. Suitable precautionary measures are taken to minimize the increased risk of losses at the locations and in the supply chain caused by increasing extreme weather situations and natural disasters. Because global warming is changing the energy balance of the atmosphere, periods of extreme heat, heavy rainfall, and flooding can become more frequent and more intensive. That is why a sustainable corporate development includes early precautions against extreme weather and natural disasters. Insurance costs and costs for prevention measures are confidential/ only for internal use.

Comment

no further comments

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

|        |                                 |
|--------|---------------------------------|
| Market | Increased cost of raw materials |
|--------|---------------------------------|



**Primary potential financial impact**

Increased direct costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Price development of raw materials The year 2021 was an extraordinarily challenging year, marked by global delivery bottlenecks and the Covid-19 pandemic. 2021 was characterized by extreme volatility, scarcity of materials and increasing energy, raw material and logistics costs. The adjusted EBIT of €1.9 billion (2020: €1.0 billion) is mainly influenced by sales growth and negatively affected by the significant increase in raw material prices and freight costs. Existing supply bottlenecks, combined with high raw material prices and rising logistics costs as well as the resulting higher price levels, dampen growth expectations for 2022. The purchase of raw materials is the biggest cost factor for ZF. Raw materials are extracted in regions potentially affected by climate-related risks. At the same time, technological, regulatory and market changes are expected to lead to significant changes in the availability and price of important raw materials (e.g. steel). ZF will quantify the magnitude of these changes in these deep dives considering scenario analyses.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)****Potential financial impact figure – maximum (currency)****Explanation of financial impact figure**

Impact of raw material price development in the 1.5 C and 2.7 C scenarios on ZF's procurement costs, margins (depending on cost pass through) and sales (depending on price sensitivity) were identified as one focus area for further analysis and are further investigated for the financial quantification of climate related risks. Financial impact figures are confidential/ only for internal use.

**Cost of response to risk****Description of response and explanation of cost calculation**

Raw material price risk Raw material price risk (raw material inflation) is the risk of price increases for acquisition of raw materials used for ZF products. ZF is working on setting up a structured raw material hedging program. ZF is analysing climate related risks in the TCFD (Task Force on Climate Related Financial Disclosures) project in the course of the ESG program and various cross-functional Resilience projects. Costs are confidential and for internal uses only.

**Comment**

no further comments

**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

|        |                            |
|--------|----------------------------|
| Market | Changing customer behavior |
|--------|----------------------------|

**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Development of Passenger Cars Market As a global supplier, especially for the automotive and industrial sectors, we are furthermore subject to cyclical demand fluctuations. Therefore, there is a general possibility for all our business units and divisions that markets, or market conditions develop more favourably or unfavourably and thus lead to positive or negative deviations from operational planning. Our logistics early-warning system and requirements-oriented production planning enable us to respond flexibly to fluctuations in demand. Risks may ensue not only from the various market developments in the product segments and regions, but also from the ramp-up of new products and the breakthrough of disruptive technologies. As an automotive supplier, we continue to be faced with high capital investments and intensive price pressure from vehicle manufacturers. We want to respond to these market and customer risks with our diversified customer and product portfolio as well as our global market presence. In the area of mobility, stricter regulations on exhaust gas and consumption values of vehicles in the EU and Asia lead to changes in consumer behaviour. We expect the share of hybrid and battery electric vehicles to continue to increase, which will have a negative impact on the sales of combustion vehicles and their components. As announced in 2020, ZF is in the transition to electrical drives and will no longer develop driveline components for pure combustion engine vehicles.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)****Potential financial impact figure – maximum (currency)****Explanation of financial impact figure**

Global demand for passenger cars is driven by population and GDP growth across climate scenarios. Market: According to IEA/ IPCC, the demand growth in the 1.5°C scenario is + 40% by 2050 compared to today, which is mainly attributed to alternative technologies, while combustion engines decline, compared to 100% in the 2.7°C scenario. A significant shift from conventional drivetrains to alternative drivetrains will occur in the 1.5°C scenario with more than 50% Battery Electric Vehicles in 2030 compared to only 17% in the 2.7°C scenario. While China, India, ASEAN countries see the highest demand growth, introduction of battery electric vehicles in developed markets is highest because of ease of access to infrastructure. A currently good competitive position in components that are still required in alternative powertrains ensures access to future growth; position in components becoming idle in alternative powertrains are assumed to lose volume in line with the technology advance of the 1.5°C scenario. Financial impact figures are confidential/ only for internal use.

**Cost of response to risk****Description of response and explanation of cost calculation**

Description of response: As announced in 2020, ZF will no longer develop driveline components for pure combustion engine vehicles, while transitioning to electrical drives. Explanation of cost calculation: Costs are confidential and for internal uses only.

**Comment**

no further comment

**Identifier**

Risk 4

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type & Primary climate-related risk driver**

|        |                            |
|--------|----------------------------|
| Market | Changing customer behavior |
|--------|----------------------------|

**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Climate risk type mapped to traditional financial services industry risk classification**

&lt;Not Applicable&gt;

**Company-specific description**

Development of Commercial Vehicles Market As a global supplier, especially for the automotive and industrial sectors, we are furthermore subject to cyclical demand fluctuations. Therefore, there is a general possibility for all our business units and divisions that markets or market conditions develop more favourably or unfavourably and thus lead to positive or negative deviations from operational planning. Our logistics early-warning system and requirements-oriented production planning enable us to respond flexibly to fluctuations in demand. Risks may ensue not only from the various market developments in the product segments and regions, but also from the ramp-up of new products and the breakthrough of disruptive technologies. The acquisition of brake specialist WABCO increased ZF's revenue share of commercial vehicle products and services. A reduction in the global production of commercial vehicles caused by either supply shortages or a reduced demand due to a widespread economic downturn/recession directly influences ZF's sales. With the acquisition of WABCO, we expanded our commercial vehicle expertise as well as our technical aftermarket portfolio. The integration into our organization and processes as the new Commercial Vehicle Control Systems Division was implemented consistently in 2021. We have thus created the prerequisites for the merger of this division with the Commercial Vehicle Technology Division, which has become effective at the beginning of 2022. The commercial vehicle industry is facing a somewhat weaker year: Global production is expected to slow down. China contributes significantly to this weak development since regulation measures led to a pull-forward effect in 2020. The expected growth in Europe, North America and India can only partially compensate for this.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)****Potential financial impact figure – maximum (currency)****Explanation of financial impact figure**

Global demand for transportation is driven by population and GDP growth across climate scenarios. Market: In the 1.5°C scenario demand for trucking increases from ~26.000 bn tkm to ~60.000 bn tkm until 2050 incl. shifts to alternative powertrains (mainly electric/hybrid) even though some transportation shifts towards rail. This growth is mainly driven by GDP and population growth increasing demand for transportation in general. Measures to decarbonize the economy slow truck transport volume growth through modal shift to rail. Financial impact figures are confidential/ only for internal use.

**Cost of response to risk****Description of response and explanation of cost calculation**

Description of response: ZF Commercial Vehicle Solutions By joining forces in the newly created Commercial Vehicle Solutions Division, we want to position ourselves even better as a systems supplier in the commercial vehicle sector and significantly expand our portfolio to include advanced driver assistance systems and autonomous functions for commercial vehicles which will be decisive topics for the future. Moreover, by means of structural changes, ZF continues to adapt capacities worldwide to adjust to weaker demand and to anticipate the ever faster transformation to electromobility. Through a network of partnerships and alliances, we continue to adapt our product range to market conditions and expand our activities in pioneering fields. ZF is a key player in driving forward the transformation in the commercial vehicle sector. In

its Commercial Vehicle Solutions Division, ZF is pooling the expertise in the commercial vehicle industry as a globally qualified supplier of commercial vehicle technology systems. The division assumes a leading position in the key technology fields of electric mobility, digitalization, as well as autonomous and connected driving. It also decisively drives forward solutions for safe, sustainable and digitalized transportation. With the new division, ZF is positioning itself as a highly qualified systems supplier in the commercial vehicle sector as well. Through the WABCO acquisition and hence portfolio broadening, ZF diversifies within the commercial vehicle sector and increases its value add per vehicle. Thereby, ZF can partially balance the effects from a reduced global production. Explanation of cost calculation: Costs are confidential and for internal uses only.

#### Comment

no further comments

## C2.4

### (C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

## C2.4a

### (C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

#### Identifier

Opp1

#### Where in the value chain does the opportunity occur?

Direct operations

#### Opportunity type

Products and services

#### Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

#### Primary potential financial impact

Other, please specify (Increased revenues resulting from increased demand for low emission, future-proof and sustainable products and services)

#### Company-specific description

Company-specific opportunities With our Next Generation Mobility strategy, we have defined the Group's long-term orientation and formulated our goals. Our competitiveness will be closely linked to CO2 emissions. Accordingly, we have further refined our action plan to achieve carbon neutrality and embedded it in the corporate strategy. By 2030, ZF intends to achieve important milestones on the road to the climate target – climate neutrality by 2040. To this end, ZF not only focuses on its own plants and products but takes the entire supply chain into account. This includes increasing the energy efficiency of our plants as well as promoting the transformation to green energy, offering sustainable products with a small carbon footprint and simultaneously reducing emissions in the supply chain. Commercial Vehicle Market ZF products already stand out today due to their contribution to an economical utilization of resources. The development of such strong products like the following examples opens up new sales opportunities: Our Get2 rail drive concept that combines the advantages of existing ZF applications. Furthermore, our TraXon modular automatic transmission system for heavy trucks is ready for start of production: It reduces consumption by 6 to 9 percent (up to 12 percent in the hybrid version) compared to manual transmissions. The ZF AVE 130 electric portal axle for purely electric low-floor buses According to the Organisation for Economic Cooperation and Development (OECD), urban traffic accounts for about 40% of climate-damaging emissions caused by passenger transport worldwide. Both the number of city dwellers and their mobility needs will increase significantly in the coming decades. Apart from the consistent electrification of urban transport, intelligent mobility concepts are required for cities to enable them to meet their climate targets and to offer their inhabitants attractive living environments. To meet these increasing demands, we are expanding our range of autonomous and electric shuttle systems. With the next generation of autonomous shuttles, ZF can cover additional applications – such as operating autonomous shuttles in specially designated lanes or as regular road users in general city traffic. With DB Regio, we won a partner in 2021 to provide municipal transport companies or regional transport associations with autonomous shuttles which cater to their demand and plans.

#### Time horizon

Medium-term

#### Likelihood

Very likely

#### Magnitude of impact

Medium-high

#### Are you able to provide a potential financial impact figure?

Yes, an estimated range

#### Potential financial impact figure (currency)

<Not Applicable>

#### Potential financial impact figure – minimum (currency)

#### Potential financial impact figure – maximum (currency)

#### Explanation of financial impact figure

In the 1.5°C scenario demand for trucking increases from ~26.000 bn tkm to ~60.000 bn tkm until 2050 incl. shifts to alternative powertrains (mainly electric/hybrid) even though some transportation shifts towards rail. This growth is mainly driven by GDP and population growth increasing demand for transportation in general. In the 2.7°C scenario growth is stronger reaching >80.000 bn tkm in 2050 All regions' trucking volume will grow mainly in line with their GDP and population growth expectations (i.e. Asia Pacific and Africa particularly high growth rates). Financial impact figures are confidential/ only for internal use.

#### Cost to realize opportunity

3060000000

#### Strategy to realize opportunity and explanation of cost calculation

R&D expenditure remains high In the fiscal year 2021, we invested €3,060 million (2020: €2,516 million; 2019: €2,652 million) in research and development across all technology fields. This corresponds to a sales share of 8.0% (2020: 7.7%; 2019: 7.3%). R&D expenditure is defined as research and development costs according to the

statement of profit and loss plus capitalized development costs, less their depreciation. ZF set ambitious climate targets, that's why ZF has updated the corporate product strategy, even though ZF products were already meeting many of the criteria. As a result, ZF will no longer develop component parts for combustion engine-powered drive systems for pure combustion engine vehicles. Research and development, product development process and committees. Environmental policy and objectives in the individual fields of action, controlled by the certified environmental and energy management system. Group directive DCF 14-03: Development of energy-efficient drive line technology

#### Comment

The reported cost to realize our opportunities of 3.060 Mio € are the R&D expenditure for the entire group including all business units and fields of technology. We do not report separate numbers of R&D for commercial vehicle products or passenger cars products for pure combustion engine vehicles.

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#### Identifier

Opp2

#### Where in the value chain does the opportunity occur?

Direct operations

#### Opportunity type

Products and services

#### Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

#### Primary potential financial impact

Other, please specify (Increased revenues resulting from increased demand for low emission, future-proof and sustainable products and services)

#### Company-specific description

Company-specific opportunities With our Next Generation Mobility strategy, we have defined the Group's long-term orientation and formulated our goals. Our competitiveness will be closely linked to CO2 emissions. Accordingly, we have further refined our action plan to achieve carbon neutrality and embedded it into the corporate strategy. By 2030, ZF intends to achieve important milestones on the road to the climate target – climate neutrality by 2040. To this end, ZF not only focuses on its own plants and products but takes the entire supply chain into account. This includes increasing the energy efficiency of our plants as well as promoting the transformation to green energy, offering sustainable products with a small carbon footprint and simultaneously reducing emissions in the supply chain. Passenger Cars Market The ever-increasing pressure to meet emission standards coupled with the growing demand for clean mobility solutions are intensifying the need for energy-efficient and low- and zero-emission drive solutions. Vehicle manufacturers are required to reduce fleet consumption through their vehicle mix. These factors are reinforcing the trend toward further electrification. We are consistently driving forward the electrification of vehicles. With our Modular eDrive Kit, intended for electric drives, we see ourselves excellently positioned for the comprehensive electrification of the passenger car portfolio. This innovation, the first of its kind, pools the comprehensive expertise of ZF's electric mobility team for system solutions, components and software control units in a flexible and modular platform. The energy efficiency of the Modular eDrive Kit can be increased by additional modules, such as ZF eConnect, a flexible solution for all-wheel drive vehicles. Major opportunities of the consistent modular approach result from shorter development times and the flexibility to serve a broad variety of customer needs.

#### Time horizon

Medium-term

#### Likelihood

Very likely

#### Magnitude of impact

Medium-high

#### Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

#### Potential financial impact figure (currency)

9554000000

#### Potential financial impact figure – minimum (currency)

<Not Applicable>

#### Potential financial impact figure – maximum (currency)

<Not Applicable>

#### Explanation of financial impact figure

The potential impact figure is the revenue of our Division Electrified Powertrain Technology (established through the merger of the Car Powertrain Technology Division and the E-Mobility Division as of January 1, 2021). Growing demand due to a wealthier, larger world population and demand for individualized transport. Current ZF sales share for BEV is in line with the market share (~2.5%), strong increase of electrification in the 1.5°C scenario compared to 2.7°C. Further financial impact figures are confidential/only for internal use.

#### Cost to realize opportunity

3060000000

#### Strategy to realize opportunity and explanation of cost calculation

R&D expenditure remains high In the fiscal year 2021, we invested €3,060 million (2020: €2,516 million; 2019: €2,652 million) in research and development across all technology fields. This corresponds to a sales share of 8.0% (2020: 7.7%; 2019: 7.3%). R&D expenditure is defined as research and development costs according to the statement of profit and loss plus capitalized development costs, less their depreciation. ZF set ambitious climate targets, that's why ZF has updated the corporate product strategy, even though ZF products were already meeting many of the criteria. As a result, ZF will no longer develop component parts for combustion engine-powered drive systems for pure combustion engine vehicles. Research and development, product development process and committees. Environmental policy and objectives in the individual fields of action, controlled by the certified environmental and energy management system. Group directive DCF 14-03: Development of energy-efficient drive line technology

#### Comment

The reported cost to realize our opportunities of 3.060 Mio € are the R&D expenditure for the entire group including all business units and fields of technology. We do not report separate numbers of R&D for commercial vehicle products or passenger cars products.

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#### Identifier

Opp3

#### Where in the value chain does the opportunity occur?

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Company-specific opportunities With our Next Generation Mobility strategy, we have defined the Group's long-term orientation and formulated our goals. Our competitiveness will be closely linked to CO2 emissions. Accordingly, we have further refined our action plan to achieve carbon neutrality and embedded it in the corporate strategy. By 2030, ZF intends to achieve important milestones on the road to the climate target – climate neutrality by 2040. To this end, ZF not only focuses on its own plants and products but takes the entire supply chain into account. This includes increasing the energy efficiency of our plants as well as promoting the transformation to green energy, offering sustainable products with a small carbon footprint and simultaneously reducing emissions in the supply chain. Wind Power Market - Renewable Energy ZF's current portfolio includes projects that focus on the development, manufacture and distribution of wind turbine gear units. Our Wind Power Business Unit is also benefiting from strong market growth. According to International Renewable Energy Agency IRENA, renewable energies would need to climb to 86 percent of electricity generation by 2050 to achieve the objectives of the Paris Agreement. In this scenario, wind energy besides solar energy is set to become one of the biggest drivers of the global energy transition, fulfilling more than one-third of total electricity demand, and this at strongly increasing energy generation needs.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)****Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The share of renewable energy, and thus wind power both on and offshore, as part of the global power mix is significantly higher in the 1.5°C scenario compared to the 2.7°C scenario. Main drivers for electricity demand in both scenarios are population growth, electrification (especially in mobility) and general access to electricity in developing countries. Financial impact figures are confidential/ only for internal use.

**Cost to realize opportunity**

856000000

**Strategy to realize opportunity and explanation of cost calculation**

Our Green Project Portfolio - purely electric and renewable electricity The ZF Green Finance Framework (GFF) describes the Eligibility Criteria according to which the Eligible Green Projects are selected to form the Eligible Green Project Portfolio of ZF. The Green Eligibility Criteria have been prepared in accordance with the ICMA and LMA Green Bond and Green Loan documentation and take into consideration the EU classification system for sustainable economic activities (the EU Taxonomy) as published in the Draft Delegated Act for climate change mitigation and climate change adaption activities of November 2020 and the EU Green Bond Standard. ZF has established a cross-departmental Green Finance Committee ("GFC"). It is responsible for overseeing the process of selecting, evaluating and monitoring Eligible Green Projects for the Eligible Green Project Portfolio of ZF. The process of evaluation the Eligible Green Project Portfolio comprises various steps and is primarily based on internal project reporting.

**Comment**

In April 2021, ZF issued its first green bond, followed by a second one in October 2021. The proceeds are used for the development, production and sale of products for battery electric vehicles (clean transportation) and for the development, production and sale of gearboxes for wind turbines (renewable energy). For more details, please refer to ZF Green Finance Report 2022: "ZF Next Generation Sustainability"

**Identifier**

Opp4

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

**Primary potential financial impact**

Increased access to capital

**Company-specific description**

Increased capital market accesses Our sustainable actions are an important component of our financing strategy in cooperation with our banks and investors. The sustainability strategy has a direct effect on the valuation of our company by ESG rating agencies. Furthermore, sustainability criteria for financing and sustainable project financing can improve credit terms and broaden the investor base. ZF is convinced that Green Finance Instruments are an effective tool for channelling investments to projects that have environmental benefits and thereby contribute to achieving of the United Nations' Sustainable Development Goals and the Paris Agreement. By issuing Green Finance Instruments, ZF intends to align its funding strategy with its mission, sustainability strategy and objectives. The proceeds from the issuance of each Green Finance Instrument will be used to finance or re-finance, in part or in full, new or existing green projects ("Eligible Green Projects") in accordance with ZF's core businesses and sustainability strategy, falling within one of the eligible categories, meeting the respective Green Eligibility Criteria.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)****Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

In April 2021, ZF issued its first green bond, followed by a second one in October 2021. The proceeds are used for the development, production and sale of products for battery electric vehicles (clean transportation) and for the development, production and sale of gearboxes for wind turbines (renewable energy). Financial impact figures are confidential/ only for internal use.

**Cost to realize opportunity****Strategy to realize opportunity and explanation of cost calculation**

The ZF Green Finance Framework (GFF) describes the Eligibility Criteria according to which the Eligible Green Projects are selected to form the Eligible Green Project Portfolio of ZF. The Green Eligibility Criteria have been prepared in accordance with the ICMA and LMA Green Bond and Green Loan documentation and take into consideration the EU classification system for sustainable economic activities (the EU Taxonomy) as published in the Draft Delegated Act for climate change mitigation and climate change adaptation activities of November 2020 and the EU Green Bond Standard. ZF has established a cross-departmental Green Finance Committee ("GFC"). It is responsible for overseeing the process of selecting, evaluating and monitoring Eligible Green Projects for the Eligible Green Project Portfolio of ZF. The process of evaluation the Eligible Green Project Portfolio comprises various steps and is primarily based on internal project reporting.

**Comment**

For more details, please refer to ZF Green Finance Report 2022: "ZF Next Generation Sustainability"

**Identifier**

Opp5

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Resource efficiency

**Primary climate-related opportunity driver**

Other, please specify (Extended life cycle through after-market & remanufacturing products )

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

Sustainable use of natural raw materials is one of the major challenges facing the automotive industry. With the remanufacturing program, ZF demonstrates its commitment to sustainability and assumes responsibility for the future with its knowledge and innovative power. Remanufacturing saves resources by deploying the principle of circular economy. ZF's service strategy and the ZF Aftermarket portfolio consider various dimensions of the circular economy, such as product recycling, remanufacturing and CO2 equivalents when evaluating total cost of ownership and serviceability. ZF has been using remanufacturing procedures for decades and has therefore established a global return system. Various parts such as torque converters, ConAct® and dual-mass flywheels are remanufactured for industrial use. Remanufacturing reduces ZF's demand for raw materials up to 90% while saving about 90% in energy compared to manufacturing a new product. Industrial remanufacturing is currently implemented at 25 ZF locations. The Bielefeld (Germany) location alone sorts and remanufactures around 50 tons of cores per day. In total, several thousand products of all kinds – from automatic transmissions to various types of mechatronics and hydraulic control units – are remanufactured each year. This does not only prevent many components from being scrapped too early. Their remanufacturing also extends the service life of many vehicles that have long since been phased out of volume production.

**Time horizon**

Medium-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)****Potential financial impact figure – maximum (currency)****Explanation of financial impact figure**

Financial impact figures are confidential/ only for internal use.

**Cost to realize opportunity****Strategy to realize opportunity and explanation of cost calculation**

Within the new ESG strategy, the remanufactured ZF product portfolio shall be expanded in order to achieve a further reduction of product-related emissions. ZF's service strategy and the ZF Aftermarket portfolio consider various dimensions of the circular economy, such as product recycling, remanufacturing and CO2 equivalents when evaluating total cost of ownership and serviceability.

## C3. Business Strategy

### C3.1

#### (C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

##### Row 1

##### Transition plan

Yes, we have a transition plan which aligns with a 1.5°C world

##### Publicly available transition plan

Yes

##### Mechanism by which feedback is collected from shareholders on your transition plan

Our transition plan is voted on at AGMs and we also have an additional feedback mechanism in place

##### Description of feedback mechanism

Sustainability is of strategic importance to ZF. We proactively assume responsibility for sustainable management in all three dimensions. Sustainability was defined as a binding target in our Next Generation Mobility corporate strategy in November 2020. We will make significant investments that are required to improve our environmental performance and prepare for new regulations or customer expectations. ZF has been collecting and reporting non-financial information in detail for years and actively involves different stakeholders. Developments are recorded systematically and early on and considered when coping with the associated risks. Sustainability Ambition Committee (bi-weekly) In coordinating sustainability topics within the company, the sustainability department is supported by a cross-divisional and cross-functional committee. Comprised of the sustainability leads of all divisions and the most material corporate domain functions, this group meets on a bi-weekly basis. Through the sustainability department the committee regularly reports into senior management up to the Board of management. The tasks of the sustainability department include:

- Developing and implementing an appropriate sustainability strategy and monitoring progress for the ZF Group. In this endeavour, it assists the Board of Management in fulfilling its responsibility for oversight of relevant sustainability and corporate social responsibility aspects of the company.
- Regularly reviewing the materiality matrix.
- Drawing up an annual review of ZF's sustainability strategy.
- Anchoring the top issues in the sustainability program as well as in the respective departmental strategy and management.
- Regularly reviewing the appropriateness and effectiveness of ZF's strategy, targets and measures.
- Providing regular progress reports on target achievements or related measures.
- Monitoring external trends and requirements and recommending additional actions in response.
- Within the context of risk management, identifying, assessing and managing risks associated with sustainability issues.
- Reviewing and approving the annual Sustainability Report.
- Coordinating the internal and external communication of sustainability – stakeholder dialogue. To gain an overview of newly arising company topics and to elaborate initial starting points for dealing with them, the steering committee may establish working groups that will then address specific tasks in depth.

##### Frequency of feedback collection

More frequently than annually

##### Attach any relevant documents which detail your transition plan (optional)

ZF Green Finance Report 2022; Annual Report 2021

ZF\_Green\_Finance\_Report\_2022.pdf

ZF\_Annual-Report\_2021.pdf

##### Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future

<Not Applicable>

##### Explain why climate-related risks and opportunities have not influenced your strategy

<Not Applicable>

### C3.2

#### (C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

|       | Use of climate-related scenario analysis to inform strategy             | Primary reason why your organization does not use climate-related scenario analysis to inform its strategy | Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future |
|-------|---|--|---|
| Row 1 | Yes, qualitative, but we plan to add quantitative in the next two years | <Not Applicable>   | <Not Applicable>  |

### C3.2a



**(C3.2a) Provide details of your organization's use of climate-related scenario analysis.**

| Climate-related scenario   |                                | Scenario analysis coverage | Temperature alignment of scenario | Parameters, assumptions, analytical choices   |
|----------------------------|--------------------------------|----------------------------|-----------------------------------|---|
| Transition scenarios       | IEA NZE 2050                   | Company-wide               | <Not Applicable>                  | - conducted a qualitative scenario analysis (in early 2022) to identify transitional climate-related risks and opportunities, quantitative scenario analysis is ongoing to quantify these risks and opportunities - expression of the most ambitious path of decarbonisation envisioned in the IEA scenarios, keeping the world under 1.5° of warming - increasing demand for low carbon products/ raw materials such as green steel or aluminium - strong decarbonization of the transport/ automotive sector with regards to the penetration of EVs - strong increase of renewable energy generation/ electrification, high increase in wind power capacities offshore and onshore - varying growth rates of carbon prices in different regions (e.g. increase to USD 250/ t by 2050 in the EU) - data available for suitable analysis horizons, namely 2030 and 2050 - exogenous demographic and GDP development |
| Transition scenarios       | IEA STEPS (previously IEA NPS) | Company-wide               | <Not Applicable>                  | - conducted a qualitative scenario analysis (in early 2022) to identify transitional climate-related risks and opportunities, quantitative scenario analysis is ongoing to quantify these risks and opportunities - alignment with the currently stated climate policies - significant decarbonization of the transport/ automotive sector with regards to the penetration of EVs, less than NZE 2050 - significant increase of renewable energy generation/ electrification, increase in wind power capacities offshore and onshore, both less than NZE 2050 - moderate growth rates of carbon prices in different regions - exogenous demographic and GDP development   |
| Physical climate scenarios | RCP 4.5                        | Company-wide               | <Not Applicable>                  | - conducted a qualitative scenario analysis (in early 2022) to identify physical climate-related risks, quantitative scenario analysis on site-level is ongoing to quantify these risks - latest science in accordance with the IPCC - includes the SSP (Shared Socioeconomic Pathways) concept of the IPCC - alignment with the emission levels assumed in the IEA stated policies scenario - severe implications by extreme weather events and at the same time a very likely scenario  |

**C3.2b**

**(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.**

**Row 1**

**Focal questions**

- What material climate-related risks and opportunities arise for ZF in different climate scenarios? - How can ZF manage the identified risks and opportunities accordingly? How good is ZF's organisational resilience against the effects of climate change? - How does ZF ensure that all aspects (physical and transitional) are adequately considered in the choice of climate scenarios? - Do we have to adapt our business model, our strategy or our financial planning to mitigate transitional climate-related risks? - Do we have to physically adapt our operations to prepare for physical climate-related risks? - How can we seize the climate-related opportunities presented by the market?

**Results of the climate-related scenario analysis with respect to the focal questions**

- By conducting a qualitative (in early 2022) and quantitative scenario analysis (ongoing), ZF is in the process of improving the understanding of the impacts of climate-related risks and opportunities on the entire value chain - ZF identifies, assesses and manages climate-related risks and opportunities from both transitional and physical aspects of climate change - The qualitative scenario analysis (conducted in early 2022) has yielded the following initial results: • Supply Chain: Significant price increases of carbon-intensive raw materials (e.g. metals), especially in the NZW scenario, could lead to increased procurement costs for ZF • Own Operations: ZF's energy procurement and logistics are not affected by material climate-related risks and opportunities • Markets: o Passenger Cars: Because of the higher total volume of sold passenger cars the STEPS presents the larger market opportunity for ZF as compared to the NZE scenario o Commercial Vehicles: Because of the higher total volume of transportation the STEPS presents the larger market opportunity for ZF as compared to the NZE scenario o Industrial Technology: The NZE presents an opportunity for the sales of wind power applications as wind power capacities significantly increase in the NZE scenario • Physical: o Droughts, floods and tropical cyclones have been identified as the most material physical risks for ZF's value chain. o The upcoming site-level analysis will measure the effects of these risks at ZF's most exposed sites - By integrating the results of the scenario analysis into the ERM system, ZF is developing a comprehensive process to identify, assess and manage climate-related risks and opportunities and strengthen the organisational resilience - The scenario analyses provide a starting point for the integration of climate-related risks and opportunities into the decision making process with regards to the business model and the strategy (e.g. actions in the area of procurement of low carbon products, the assessment of future market developments in the automotive sector or the selection of new locations taking into account physical climate risks) - With the reporting of scenario analysis results ZF ensures that the company meets the requirements and expectations of a variety of regulatory bodies, investors and other stakeholders

**C3.3**



**(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.**

|                                 | Have climate-related risks and opportunities influenced your strategy in this area? | Description of influence   |
|---------------------------------|---|--|
| Products and services           | Yes   | Climate protection has become one of the most urgent issues of our time. ZF set a target to become climate neutral by 2040 at the latest – ten years ahead of the EU requirement. Climate neutral means that all processes, products and services will not increase the CO <sub>2</sub> e load in the atmosphere. ZF addresses all three scopes of the GHG: Scope 3 accounts for indirect emissions generated by purchased goods (Scope 3 “upstream”) and emissions generated by ZF products in the utilization phase (Scope 3 “downstream”), and can therefore not be directly influenced by the Group. Concerning Scope 3 downstream emissions, ZF’s electric powertrain solutions contribute to lower vehicle emissions. However, carbon emissions during the use phase of an electric vehicle depend mainly on the energy mix available in the respective country. ZF is aiming at an improvement of the product carbon footprint for lead product groups representing over 80 percent of sales covering all divisions and focusing on major improvements for new product generations. A significant lever is the use of secondary material in products. The Group intends to increase the share of secondary material. Cleaner mobility The Group’s environmental considerations are massively linked to the context of climate change. Therefore, the “Next Generation Mobility” strategy follows a global focus, aimed at reducing mobility-related carbon emissions, significantly in the short term and achieving “Zero Emissions” in the long term. The decarbonization of the use phase of ZF components and systems is largely outside the Group’s sphere of influence. These emissions are strongly determined by customer preferences for certain products, driving behaviour and the purchased energy mix. ZF’s focus therefore lies on energy efficiency, the weight of ZF products and the increasing use of electrified and fully electric vehicles. ZF’s partnership with the Baden-Württemberg Ministry of Transport for example makes the “Real Lab for Automated Bus Operation in Public Transport in Urban and Rural Areas – RABus” project possible. Electric and automated buses will be tested in Mannheim and Friedrichshafen as part of the regular public transport system. |
| Supply chain and/or value chain | Yes   | ZF uses a risk management process to systematically analyse and evaluate its supply chain about compliance with social and environmental standards and to identify risks early on. For the existing supplier base, ZF carried out an initial risk assessment and prioritization of direct suppliers for production and non-production materials based on country and product-specific risks as well as the annual purchasing volume. This assessment covers around 2,000 suppliers or about 90% of the procurement volume. It helped us to identify suppliers with a potential risk of violating sustainability standards. To achieve transparency and obtain the required information, we therefore request that these suppliers complete the Self-Assessment Questionnaire via NQC Ltd. In addition to the annual risk assessment, ZF has approved a concrete decarbonisation roadmap. To fulfil our responsibility with regard to Scope 3 emissions in line with ZF’s climate neutrality strategy, we want to reduce Scope 3 GHG emissions by 40% per million euro sales by 2030 (Base: 2019). Derived from the roadmap ZF focused on following activities: 1. ZF launched 2021 a new campaign to identify top suppliers causing the largest amounts of greenhouse gases for each product category. Subsequently, the maturity level of the individual suppliers was considered in terms of their respective climate management, use of recycled materials and energy efficiency. Suppliers with a below-average valuation agreed with ZF on selected measures. 2. Furthermore, ZF decided that suppliers have to provide Product Carbon Footprint (PCF) as the PCF will be introduced step by step as a mandatory element for sourcing decisions in the Sourcing Decision Board (SDB) starting in 2022. 3. ZF sustainability expectations were communicated to the suppliers at the Global Supplier Summit in 2020. In addition, individual information letters were sent to each supplier. ZF also launched the ZF Decarbonization Dialogues and started a training initiative that encompasses web-based training, webinars and/or Q&A sessions to qualify both our employees and relevant suppliers.  |
| Investment in R&D               | Yes   | The ZF Group is well aware that in future, to a much larger degree than in the past, access to capital will depend on a company’s ability to substantiate its successful sustainable management. ZF strives to meet upcoming requirements of the EU taxonomy, i.e., demanding that companies classify their investments and revenues by sustainability criteria. ZF has developed a Green Finance Framework (GFF) so it can take advantage of new financing opportunities for projects that contribute to a lower-emission and more climate-friendly economy. The GFF is directed towards the SDGs and corresponds to the ICMA Green Bond Principles and the LMA Green Loan Principles. R&D expenditure remains high In the fiscal year 2021, we invested €3,060 million (2020: €2,516 million; 2019: €2,652 million) in research and development. This corresponds to a sales share of 8.0% (2020: 7.7%; 2019: 7.3%). R&D expenditure is defined as research and development costs according to the statement of profit and loss plus capitalized development costs, less their depreciation. ZF set ambitious climate targets, that’s why ZF has updated the corporate product strategy, even though ZF products were already meeting many of the criteria. As a result, ZF will no longer develop component parts for combustion engine-powered drive systems within passenger cars and commercial vehicles.  |
| Operations                      | Yes   | ZF defined its climate neutrality strategy and set a target to become climate neutral by 2040 at the latest – ten years ahead of the EU requirement. The Greenhouse Gas Protocol (GHG) set a global standard to categorize direct and indirect sources of emissions. Climate neutral means that all processes, products and services will not increase the CO <sub>2</sub> e load in the atmosphere. ZF addresses all three scopes of the GHG: Scopes 1 and 2 can be directly influenced by ZF, as Scope 1 includes direct emissions resulting from the combustion of fossil fuel in ZF’s own production and Scope 2 involves emissions from purchased energy, e.g., electricity. The goal is to become climate neutral by 2040 across all emission categories. Already by 2030, production-related emissions are to be cut by 80 percent, as compared to 2019. Production-related emissions (Scopes 1 and 2) To achieve decarbonization in operations, ZF focuses on two main levers: energy efficiency and the transformation towards green energy. The Group includes all production, administrative and research facilities in its efficiency programs.  |

**C3.4**

**(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

|       | Financial planning elements that have been influenced   | Description of influence  |
|-------|---|---|
| Row 1 | Revenues<br>Direct costs<br>Indirect costs<br>Acquisitions and divestments<br>Access to capital | In the second year of the pandemic, our Next Generation Mobility strategy continued to provide important orientation. In addition to the technological change, we have also continued to drive forward our commitment in the area of sustainability. The structural change in the automotive industry is still happening at a fast pace. People want constantly available, affordable, clean and safe mobility, but the reality looks a little different: traffic jams, emissions and a lack of mobility services. With our Next Generation Mobility strategy, we are developing comprehensive solutions for these challenges. In doing so, we present ourselves as an integrated systems supplier that will play a decisive role in shaping future mobility. Software, networking and artificial intelligence are defining essential functions for mobility. Consequently, numerous new players from other industries are appearing in the mobility market to leverage growth opportunities. This has intensified competition between not only manufacturers but also suppliers. We are getting ready for this by expanding our digital service portfolio and linking it to ZF’s enhanced core competencies. In the field of electric mobility, we have already successfully implemented the strategic realignment. In the meantime, we have become a technology leader with a complete product portfolio that serves all vehicle segments. We will strengthen and expand this position in the coming years. In addition, we are pushing forward our development in the fields of digitalization, software and autonomous driving. Strategic partnerships such as with Microsoft help us turn ZF into a cloud-based mobility service provider. Sustainability – an essential component Sustainability is an integral part of our corporate strategy. We want to be fully climate-neutral with our company by 2040. Upstream supply chains are included in our targets as well. By 2030, we want to reduce CO <sub>2</sub> emissions at ZF locations by 80% compared to 2019. We want to achieve this without the carbon offset instrument. Our climate targets have been evaluated and confirmed by the Science Based Targets initiative (SBTi). Sustainability, however, is more than climate protection. We want to meet the needs of the present without jeopardizing opportunities for future generations. The United Nations has defined 17 Sustainable Development Goals. These are policy objectives designed to ensure sustainable development worldwide at the economic, social and environmental levels. ZF has identified eight of these goals to which our company can make a relevant contribution in the context of our business activities, either by minimizing impacts or by developing new technical solutions with positive effects. In our sustainability efforts, we focus on the following three dimensions: climate and nature, people, enduring values. ZF is a founding member of the World Economic Forum’s (WEF) First Movers Coalition which aims to jumpstart the demand for zero-emission technologies. The advancement of the transformation was not only accompanied by the pandemic risks, but also by geopolitical uncertainties, global trade conflicts and economic downturns, which triggered a massive economic crisis and partly led to significant declines in demand. ZF will continue to feel the aftermath in the coming years, which will make it more difficult to achieve the set targets. In addition to focusing on economic targets, the company also assumes its social and ecological responsibility. The formal inclusion of the climate neutrality target into corporate strategy underlines the consistent commitment to CO <sub>2</sub> -neutral mobility. ZF will no longer develop component parts for combustion engine-powered drive systems for pure combustion engine vehicles. We are preparing for the fact that in Europe, for example, hardly any vehicle with combustion engines will be sold after 2035. Solutions from the new technology fields will account for the current sales contribution of around 25%. Hybrid technology will not be regarded as “green” according to EU taxonomy by starting 2025. Sustainable finance In the context of the EU strategy for financing sustainable growth – Sustainable Finance for short – which is closely linked with the Green Deal, ZF is perceiving increased demand to act and growing request for transparency from financial institutions and rating agencies. ZF is responding to this with its climate strategy and expanded sustainability reporting. ZF strives to meet upcoming requirements of the EU taxonomy, i.e., demanding that companies classify their investments and revenues by sustainability criteria. The ZF Group is well aware that in the future, to a much larger degree than in the past, access to capital will come to depend on a company’s ability to substantiate its successful sustainable management. ZF has also developed a Green Finance Framework (GFF) so it can take advantage of new financing opportunities for projects that contribute to a lower-emission and more climate-friendly economy. The GFF is directed towards the Sustainable Development Goals (SDGs) and corresponds to the ICMA Green Bond Principles and the LMA Green Loan Principles. |

## C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's transition to a 1.5°C world?

Yes

### C3.5a

(C3.5a) Quantify the percentage share of your spending/revenue that is aligned with your organization's transition to a 1.5°C world.

**Financial Metric**

Other, please specify (ZF is issuing green bonds which are related directly to green activities. These are in line with a transition to a 1.5°C world scenario. Total spent was 1.349 Mio €. This was 3,5% of our total turnover in 2021. )

**Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)**

3.5

**Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)**

**Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)**

**Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world**

The Green Eligibility Criteria have been prepared in accordance with the ICMA and LMA Green Bond and Green Loan documentation and take into consideration the EU classification system for sustainable economic activities (the EU Taxonomy) as published in the Draft Delegated Act for climate change mitigation and climate change adaptation activities of November 2020 and the EU. Percentage share of selected financial metric for the years 2025 and 2030 are for internal use only and not communicated publicly yet. For further details, please refer to attached ZF Green Finance Report 2022.

**Financial Metric**

Other, please specify (R&D expenditure)

**Percentage share of selected financial metric aligned with a 1.5°C world in the reporting year (%)**

8

**Percentage share of selected financial metric planned to align with a 1.5°C world in 2025 (%)**

**Percentage share of selected financial metric planned to align with a 1.5°C world in 2030 (%)**

**Describe the methodology used to identify spending/revenue that is aligned with a 1.5°C world**

R&D expenditure remains high In the fiscal year 2021, we invested €3,060 million (2020: €2,516 million; 2019: €2,652 million) in research and development in all technology areas. This corresponds to a sales share of 8.0% (2020: 7.7%; 2019: 7.3%). R&D expenditure is defined as research and development costs according to the statement of profit and loss plus capitalized development costs, less their depreciation. ZF set ambitious climate targets, that's why ZF has updated the corporate product strategy, even though ZF products were already meeting many of the criteria. As a result, ZF will no longer pursue developments for pure combustion engine vehicles.

## C4. Targets and performance

### C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

Intensity target

### C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

**Target reference number**

Abs 1

**Year target was set**

2021

**Target coverage**

Company-wide

**Scope(s)**

Scope 1

Scope 2

**Scope 2 accounting method**

Market-based

**Scope 3 category(ies)**

<Not Applicable>

**Base year**

2019

**Base year Scope 1 emissions covered by target (metric tons CO2e)**

406000

**Base year Scope 2 emissions covered by target (metric tons CO2e)**

1371000

**Base year Scope 3 emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Total base year emissions covered by target in all selected Scopes (metric tons CO2e)**

1777000

**Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1**

100

**Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2**

100

**Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)**

<Not Applicable>

**Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes**

100

**Target year**

2030

**Targeted reduction from base year (%)**

80

**Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]**

355400

**Scope 1 emissions in reporting year covered by target (metric tons CO2e)**

416000

**Scope 2 emissions in reporting year covered by target (metric tons CO2e)**

941000

**Scope 3 emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)**

1357000

**% of target achieved relative to base year [auto-calculated]**

29.5441755768149

**Target status in reporting year**

Achieved

**Is this a science-based target?**

Yes, and this target has been approved by the Science Based Targets initiative

**Target ambition**

1.5°C aligned

**Please explain target coverage and identify any exclusions**

ZF Friedrichshafen AG commits to reduce absolute Scope 1 & 2 GHG emissions 80% by 2030 from a 2019 base year. This absolute reduction target, which was approved by SBTi in Q1 / 2022, is an element of ZF Climate Neutrality Strategy. The Greenhouse Gas Protocol (GHG) sets an international standard to categorize direct and indirect sources of emissions. Climate neutral means that all processes, products and services will not increase the CO2e load in the atmosphere. Scopes 1 and 2 can be directly influenced by ZF, as Scope 1 includes direct emissions resulting from the combustion of fossil fuel in ZF's own production and Scope 2 involves emissions from purchased energy, e.g., electricity. Climate neutrality by 2040 is part of ZF Strategy "Next Generation Mobility". ZF conducts its ZF Climate Ambition Initiative for implementation of climate protection strategy in all company processes considering ESG requirements. In this context scope and recalculation processes were reviewed to meet future criteria on auditability. This led to change in carbon accounting of one power plant and inclusion of sites from former WABCO into scope. Therefore, baseyear 2019 numbers stated here are the latest and differ from data reported last year.

**Plan for achieving target, and progress made to the end of the reporting year**

<Not Applicable>

**List the emissions reduction initiatives which contributed most to achieving this target**

To achieve the decarbonization of its locations, ZF focuses on two main levers: energy efficiency and the switch to green energy. Energy Efficiency Program The Group includes all production, administrative and research locations in its efficiency programs. A cross-functional task force, under the leadership of the domain function Operations and with the participation of real estate management and EHS, works on increasing energy efficiency. The task force manages a corresponding program and reports to divisional Production Management and the Group. Target achievement and individual projects are monitored and controlled through KPIs within the environmental and energy management system in conformity with ISO 14001 and ISO 50001. Overall, a total of 555 projects (2020: 412) has been implemented or initiated, which led to more than 86.4 GWh in energy savings (2020: 39 GWh). This corresponds to the electricity consumption of 20,000 average households and the avoidance of 40,800 tons of CO2 emissions. ZF Green Power Roadmap In early 2021, the Green Power target was set: By 2030, 100% of the required electricity is to be procured from renewable sources. Together with the energy purchasing department, the ZF Green Power Guidance Document has been developed that defines what ZF accepts as "green power". ZF focuses on technical green energy solutions that ensure real additionality. Particular attention is paid to the generation of electricity by wind turbines using ZF technologies. Activities according to this Green Power Roadmap started and led to increase the share of green power, which contributed to emission reduction in 2021.

**(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).**

**Target reference number**

Int 1

**Year target was set**

2021

**Target coverage**

Company-wide

**Scope(s)**

Scope 3

**Scope 2 accounting method**

<Not Applicable>

**Scope 3 category(ies)**

Category 1: Purchased goods and services

Category 2: Capital goods

Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)

Category 4: Upstream transportation and distribution

Category 5: Waste generated in operations

Category 6: Business travel

Category 7: Employee commuting

Category 9: Downstream transportation and distribution

Category 10: Processing of sold products

Category 12: End-of-life treatment of sold products

Category 15: Investments

**Intensity metric**

Metric tons CO2e per unit revenue

**Base year**

2019

**Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)**

<Not Applicable>

**Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)**

<Not Applicable>

**Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)**

750

**Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)**

698

**% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure**

<Not Applicable>

**% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure**

<Not Applicable>

**% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure**

92

**% of total base year emissions in all selected Scopes covered by this intensity figure**

100

**Target year**

2030

**Targeted reduction from base year (%)**

40

**Intensity figure in target year for all selected Scopes (metric tons CO2e per unit of activity) [auto-calculated]**

418.8

**% change anticipated in absolute Scope 1+2 emissions**

0

**% change anticipated in absolute Scope 3 emissions**

-13.5

**Intensity figure in reporting year for Scope 1 (metric tons CO2e per unit of activity)**

<Not Applicable>

**Intensity figure in reporting year for Scope 2 (metric tons CO2e per unit of activity)**

<Not Applicable>

**Intensity figure in reporting year for Scope 3 (metric tons CO2e per unit of activity)**

695

**Intensity figure in reporting year for all selected Scopes (metric tons CO2e per unit of activity)**

593

**% of target achieved relative to base year [auto-calculated]**

37.6074498567335

**Target status in reporting year**

Achieved

**Is this a science-based target?**

Yes, and this target has been approved by the Science Based Targets initiative

**Target ambition**

Other, please specify (SBTi classified ZF Scope 1+2 target ambition and has determined that it is in line with a 1.5°C trajectory. The assessment corresponds only to scope 1+2, an approach to classify the ambition of scope 3 intensity targets is still in development.)

**Please explain target coverage and identify any exclusions**

ZF Friedrichshafen AG commits to reduce Scope 3 (upstream & downstream) GHG emissions 40% per Million Euro sales by 2030 from a 2019 base year. This target includes Scope 3 "upstream" and "downstream" Categories. This intensity reduction target, which was announced 2021 and validated by SBTi in Q1 / 2022, is an element of ZF Climate Neutrality Strategy The Greenhouse Gas Protocol (GHG) sets an international standard to categorize direct and indirect sources of emissions. Climate neutral means that all processes, products and services will not increase the CO<sub>2</sub>e load in the atmosphere. Scope 3 accounts for indirect emissions generated by purchased goods (Scope 3 "upstream") and emissions generated by ZF products in the utilization phase (Scope 3 "downstream") and can therefore not be directly influenced by the Group. Two categories with high materiality were identified: Category 1: Purchased goods and services and Category 11: Use of sold products. Four categories are excluded: Category 8: Upstream Leased Assets, Category 13: Downstream Leased Assets, Category 14: Franchises and Category 15: Investments. Other categories (Category 2, 3, 4, 5, 6, 7, 9, 10, 12) are of low share (<4%) but considered as relevant. Climate neutrality by 2040 is part of ZF Strategy "Next Generation Mobility". ZF conducts its ZF Climate Ambition Initiative for implementation of climate protection strategy in all company processes considering ESG requirements. In this context scope and recalculation processes were reviewed to meet future criteria on auditability. This led to change in carbon accounting of one power plant and inclusion of sites from former WABCO into scope. Therefore, reporting year 2021 numbers stated here are including former WABCO site. Base year 2019 numbers are not including WABCO due to lack of comparable data for metric dominator (revenue).

**Plan for achieving target, and progress made to the end of the reporting year**

<Not Applicable>

**List the emissions reduction initiatives which contributed most to achieving this target**

Supply Chain Management & Engagement In order to strengthen all sustainability-relevant activities within the supplier base, ZF Materials Management has set up a team for sustainability in the supply chain. In 2021, this team developed a decarbonization roadmap based on the goal of achieving climate neutrality by 2040. The corresponding expectations were already communicated to the suppliers at the digital Global Supplier Summit in 2020. In addition, individual information letters were sent to each supplier. On this basis, ZF launched 2021 a new campaign to identify the ten suppliers causing the largest amounts of greenhouse gases (based on the CO<sub>2</sub> equivalents or CO<sub>2</sub>e) for each product category. Subsequently, the maturity level of the individual suppliers was considered in terms of their respective climate management, use of recycled materials and energy efficiency. Suppliers with a below-average valuation agreed with ZF on selected measures, with the focus being on CO<sub>2</sub>e reduction.

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**C4.2**

**(C4.2) Did you have any other climate-related targets that were active in the reporting year?**

Target(s) to increase low-carbon energy consumption or production

Other climate-related target(s)

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**C4.2a**

**(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.**

**Target reference number**

Low 1

**Year target was set**

2021

**Target coverage**

Company-wide

**Target type: energy carrier**

Electricity

**Target type: activity**

Consumption

**Target type: energy source**

Renewable energy source(s) only

**Base year**

2019

**Consumption or production of selected energy carrier in base year (MWh)**

2559000

**% share of low-carbon or renewable energy in base year**

10

**Target year**

2030

**% share of low-carbon or renewable energy in target year**

100

**% share of low-carbon or renewable energy in reporting year**

14

**% of target achieved relative to base year [auto-calculated]**

4.444444444444444

**Target status in reporting year**

Achieved

**Is this target part of an emissions target?**

Yes, the transformation to renewable energy sources is part of overarching ZF Climate Neutrality Strategy. To achieve decarbonization in operations (Scope 1+2), ZF focuses on two main levers: energy efficiency and the transformation towards green energy. The Group includes all production, administrative and research facilities in its efficiency programs. The overall emission reduction target has been set as follows: by 2030 Scope 1 and Scope 2 emissions to have reduced by 80 percent, as compared to 2019. The target will be achieved with contributions from the energy efficiency projects and an increased share of renewable power of 100 percent by 2030. High demands are placed on all projects in terms of quality and credibility. ZF focuses on technical green energy solutions which ensure actual additionality, for example by increasing renewable energy production. Particular attention is paid to the generation of electricity by wind turbines using ZF technologies.

**Is this target part of an overarching initiative?**

Science Based Targets initiative

**Please explain target coverage and identify any exclusions**

ZF Friedrichshafen AG commits to increase annual sourcing of renewable electricity from 10% in 2019 to 100% by 2030. Target coverage according SBTi Validation process (operational control)

**Plan for achieving target, and progress made to the end of the reporting year**

<Not Applicable>

**List the actions which contributed most to achieving this target**

ZF Green Power Roadmap In early 2021, the Green Power target was set: By 2030, 100% of the required electricity is to be procured from renewable sources. Together with the energy purchasing department, the ZF Green Power Guidance Document has been developed that defines what ZF accepts as "green power". ZF focuses on technical green energy solutions that ensure real additionality. Particular attention is paid to the generation of electricity by wind turbines using ZF technologies. Activities according to this Green Power Roadmap started and led to increase the share of green power, which contributed to emission reduction in 2021.

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**C4.2b**

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(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2020

Target coverage

Company-wide

Target type: absolute or intensity

Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

|                                  |     |
|----------------------------------|-----|
| Energy consumption or efficiency | MWh |
|----------------------------------|-----|

Target denominator (intensity targets only)

Other, please specify (value added in Mio €)

Base year

2019

Figure or percentage in base year

316

Target year

2030

Figure or percentage in target year

244

Figure or percentage in reporting year

301

% of target achieved relative to base year [auto-calculated]

20.83333333333333

Target status in reporting year

Achieved

Is this target part of an emissions target?

Yes, the Energy Efficiency target is part of overarching ZF Climate Neutrality Strategy. To achieve decarbonization in operations (Scope 1+2), ZF focuses on two main levers: energy efficiency and the transformation towards green energy. The Group includes all production, administrative and research facilities in its efficiency programs. The overall emission reduction target has been set as follows: by 2030 Scope 1 and Scope 2 emissions to have reduced by 80 percent, as compared to 2019. The target will be achieved with contributions from the energy efficiency projects and an increased share of renewable power. With contributions from the energy efficiency projects, this target will be achieved by reducing energy consumption by 2 percent every year relative to value added (with 2019 as the base year). Climate neutrality by 2040 is part of ZF Strategy "Next Generation Mobility". ZF conducts its ZF Climate Ambition Initiative for implementation of climate protection strategy in all company processes considering ESG requirements. In this context scope and recalculation processes were reviewed to meet future criteria on auditability. This led to change in carbon accounting of one power plant. Therefore, numbers stated here are the latest and differ from data of ZF Sustainability Report 2020.

Is this target part of an overarching initiative?

Science Based targets initiative - other

Please explain target coverage and identify any exclusions

ZF Friedrichshafen AG commits to reduce energy consumption per Million Euro value added by 2% per year from a 2019 base year. Target coverage according SBTi Validation process (operational control)

Plan for achieving target, and progress made to the end of the reporting year

<Not Applicable>

List the actions which contributed most to achieving this target

Energy Efficiency Program The Group includes all production, administrative and research locations in its efficiency programs. A cross-functional task force, under the leadership of the domain function Operations and with the participation of real estate management and EHS, works on increasing energy efficiency. The task force manages a corresponding program and reports to divisional Production Management and the Group. Target achievement and individual projects are monitored and controlled through KPIs within the environmental and energy management system in conformity with ISO 14001 and ISO 50001. Overall, a total of 555 projects (2020: 412) has been implemented or initiated, which led to more than 86.4 GWh in energy savings (2020: 39 GWh). This corresponds to the electricity consumption of 20,000 average households and the avoidance of 40,800 tons of CO2 emissions. As part of the ZF Energy Basics Program, each location is expected to establish and maintain standards to improve employee awareness and to promote behavioural changes as well as standards for demand or peak-load management. For each aspect, a guidance document has been added to the ZF EHS management system. In the field of compressed air, a joint campaign implemented by Spare Parts Procurement, Machine Inventory and EHS to standardize technology resulted in an energy-optimized compressed air management scheme. To further reduce energy consumption for heat generation, ZF continues to recover heat from industrial and washing processes.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

|                           | Number of initiatives | Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *) |
|---------------------------|-----------------------|--|
| Under investigation       | 223                   |  |
| To be implemented*        | 48                    | 506  |
| Implementation commenced* | 66                    | 2000   |
| Implemented*              | 555                   | 40800  |
| Not to be implemented     | 43                    |  |

## C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

### Initiative category & Initiative type

|                              |          |
|------------------------------|----------|
| Low-carbon energy generation | Solar PV |
|------------------------------|----------|

### Estimated annual CO2e savings (metric tonnes CO2e)

2730

### Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 2 (market-based)

### Voluntary/Mandatory

Voluntary

### Annual monetary savings (unit currency – as specified in C0.4)

### Investment required (unit currency – as specified in C0.4)

### Payback period

4-10 years

### Estimated lifetime of the initiative

16-20 years

### Comment

ZF proceeded with PV projects like the Schweinfurt (Germany) site, where the second largest carport photovoltaic system in Germany has been built. The plant supplies the location with an output of 2.5 megawatts. That is as much electricity as more than 700 average households consume in one year. In addition, 80 electric car-charging stations are to be installed. ZF invested over 3.6 million euros in this project. The solar power generated is expected to save 1,250 tons of CO2e annually. Three 3 additional photovoltaic power plants were installed in 2021 at ZF locations in Shanghai (China), Gliwice (Poland) and San Francisco (Argentina). Further projects in other locations are in the investigation and prioritization phase. In 2021, self-generated renewable electricity from all photovoltaic systems contributed about 5.300 MWh.

### Initiative category & Initiative type

|                       |  |
|-----------------------|--|
| Other, please specify | Other, please specify (Energy Efficiency Measures) |
|-----------------------|--|

### Estimated annual CO2e savings (metric tonnes CO2e)

40800

### Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Scope 2 (location-based)

Scope 2 (market-based)

### Voluntary/Mandatory

Mandatory

### Annual monetary savings (unit currency – as specified in C0.4)

### Investment required (unit currency – as specified in C0.4)

### Payback period

4-10 years

### Estimated lifetime of the initiative

6-10 years

### Comment

Estimated CO2 savings are a summarization of all projects/ measures reported on group level, therefore the reported payback period and estimated lifetime of the initiative are an approximate average of sum of projects/ measures; further measures/ projects have been conducted on local level, but not been reported on group level; detailed data on annual monetary savings and required investment are confidential. Special programs and actions at location level have brought about a constant improvement in energy efficiency. Overall, a total of 555 projects (2020: 412) has been implemented or initiated, which led to more than 86.4 GWh in energy savings (2020: 39 GWh). This corresponds to the electricity consumption of 20,000 average households and the avoidance of 40,800 tons of CO2 emissions. The projects covered the following fields of technology: - Behavioural management (-16.7 GWh) - Building Envelope (-1.2 GWh) - Compressed Air Management (-11.9 GWh) - Heat Recovery (-1.6 GWh) - HVAC Management (-6.2 GWh) - LED (Lighting Management) (-10.6 GWh) - Motors & Pumps (-1.7 GWh) - Other energy efficiency measures (-36.5 GWh)



(C4.3c) What methods do you use to drive investment in emissions reduction activities?

| Method  | Comment   |
|---|---|
| Employee engagement                               | Communications Campaign "Acting now." with clear tone from the top to increase the awareness for climate protection and sustainable development in all areas of the company. Examples of further awareness and engagement initiatives and programs: • GreenBox@ZF - New products and services for a sustainable future: Support and empower employees to develop innovative ideas in a structured way • ZF Excellence Award Category "Sustainability" • Trainings • Dedicated Sustainability Leads in all divisions and the most material corporate domain functions. • ZF idea management enables every employee to indicate ideas of improvement regarding climate change as improvement in energy efficiency and CO2 emission reduction. When the idea was implemented, it will be awarded.  |
| Compliance with regulatory requirements/standards | An indispensable component of ZF's success is correct, responsible, and sustainable business management as well as the adherence to all statutory requirements in the countries in which ZF operates.   |
| Dedicated budget for low-carbon product R&D       | Our objective: new mobility Despite COVID-19-related restrictions, the Group successfully pursued the projects planned for the implementation of the Next Generation Mobility corporate strategy in 2021. To this end, the Group invests in the future sectors of new vehicle functions, software, artificial intelligence and efficient, electrified drive systems in particular. We have defined four enablers for our path to the implementation of our technology strategy: - Vehicle Systems & Functions - Data handling & Analytics - Efficient energy conversion - Advanced Base Technology Within these four technology enablers there are 19 key technologies (focus topics) that we are pursuing in global research and development. R&D expenditure remains high In the fiscal year 2021, we invested €3,060 million (2020: €2,516 million; 2019: €2,652 million) in research and development. This corresponds to a sales share of 8.0% (2020: 7.7%; 2019: 7.3%). R&D expenditure is defined as research and development costs according to the statement of profit and loss plus capitalized development costs, less their depreciation. ZF has set ambitious climate targets, that is why we have updated our corporate product strategy, even though ZF products were already meeting many of the criteria. As a result, ZF will no longer invest in R&D of component parts for combustion engine-powered drive systems.   |
| Lower return on investment (ROI) specification    | Extended return periods for all efficiency measures to achieve energy efficiency targets.   |
| Other (The ZF WAY)                                | THE ZF WAY In more than one hundred years of company history, ZF has developed a unique corporate culture. It is based on the entrepreneurial spirit of its founders and has always been highly innovation oriented. We refer to this culture as the ZF Way. It shows both the origin of the company and the direction of its continuous development. The ZF Way offers orientation and a clear direction in the midst of an industry transformation that is more dynamic and, in certain areas, more fundamental than ever before. The ZF Way is based on three pillars: 1. ZF strategy: "Next Generation Mobility" ZF's mission is to enable clean, safe, comfortable and affordable mobility for everyone, everywhere. The resulting Next Generation Mobility strategy is a guideline for how the company intends to master future challenges, respond to industry developments and face a constantly changing environment. In this connection, targets and KPIs are continuously updated to meet changing requirements. 2. ZF Way principles The ZF Way principles illustrate how ZF shapes cooperation and leadership. Every employee should be able to identify with these principles and put them to use in their everyday work. These principles also provide the framework for a successful implementation of the corporate strategy. The equally ranked five principles are: • Passion • Anticipation • Diversity • Empowerment • Accountability 3. Operating model The operating model is based on three pillars: the divisions, functions and regions. It defines how ZF serves its customers. For this purpose, it summarizes processes, structures and directives. At the same time, the operating model serves as a framework for global cooperation characterized by the ZF Way principles. More information on the ZF Way is available at <a href="http://www.zf.com">www.zf.com</a> |

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Group of products or services

Taxonomy used to classify product(s) or service(s) as low-carbon

Green Bond Principles (ICMA)

Type of product(s) or service(s)

|       |                                    |
|-------|------------------------------------|
| Power | Other, please specify (Wind Power) |
|-------|------------------------------------|

Description of product(s) or service(s)

Renewable Energy: ZF Technology in Wind Turbines / ZF Wind Power Technology

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Yes

Methodology used to calculate avoided emissions

The Avoided Emissions Framework (AEF)

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Use stage

Functional unit used

see ZF Green Finance Report ([https://www.zf.com/mobile/en/company/investor\\_relations/sustainable\\_finance/sustainable\\_finance.html](https://www.zf.com/mobile/en/company/investor_relations/sustainable_finance/sustainable_finance.html))

Reference product/service or baseline scenario used

Wind turbine gear units

Life cycle stage(s) covered for the reference product/service or baseline scenario

Use stage

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

19280466

Explain your calculation of avoided emissions, including any assumptions

ZF Green Finance Report 2022, page 12: Methodology Renewable Energy The business unit Wind Power Technology is essentially a pure play sustainable activity in accordance with the EU activity "3.1 Manufacture of renewable energy technologies" as per EU Taxonomy Climate Delegated Act. With respect to the development,

manufacture and distribution of wind turbine gear units, ZF committed to report on three impact indicators: the number of wind turbines covered, annual renewable energy generated and estimate of annual GHG emissions avoided/ reduced during use. In 2021, ZF covered 3965 wind turbine gear units and contributed to an installed capacity of 15466 MW, considering the wind turbine gear units' respective power classes. As the annual capacity of a wind turbine is particularly dependent on the location and weather conditions (e.g., wind speed, solar irradiation), the installed capacity was adjusted by a technical efficiency factor of 35%, leading to an annual renewable energy generated of 47418756 MWh. Using a world emission factor of 406.6 g CO<sub>2</sub> per kWh, derived from the International Energy Agency (IEA)'s Policy and Sustainable Development Scenario, ZF estimates to have avoided 19280466 t CO<sub>2</sub> of annual GHG emissions during use in 2021. ([https://www.zf.com/mobile/en/company/investor\\_relations/sustainable\\_finance/sustainable\\_finance.html](https://www.zf.com/mobile/en/company/investor_relations/sustainable_finance/sustainable_finance.html))

**Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year**

**Level of aggregation**

Group of products or services

**Taxonomy used to classify product(s) or service(s) as low-carbon**

Green Bond Principles (ICMA)

**Type of product(s) or service(s)**

|       |  |
|-------|--|
| Other | Other, please specify (Clean Transportation: products for pure battery electric vehicles ) |
|-------|--|

**Description of product(s) or service(s)**

Clean Transportation: products for pure battery electric vehicles

**Have you estimated the avoided emissions of this low-carbon product(s) or service(s)**

Yes

**Methodology used to calculate avoided emissions**

The Avoided Emissions Framework (AEF)

**Life cycle stage(s) covered for the low-carbon product(s) or services(s)**

Use stage

**Functional unit used**

see ZF Green Finance Report ([https://www.zf.com/mobile/en/company/investor\\_relations/sustainable\\_finance/sustainable\\_finance.html](https://www.zf.com/mobile/en/company/investor_relations/sustainable_finance/sustainable_finance.html))

**Reference product/service or baseline scenario used**

see ZF Green Finance Report ([https://www.zf.com/mobile/en/company/investor\\_relations/sustainable\\_finance/sustainable\\_finance.html](https://www.zf.com/mobile/en/company/investor_relations/sustainable_finance/sustainable_finance.html))

**Life cycle stage(s) covered for the reference product/service or baseline scenario**

Use stage

**Estimated avoided emissions (metric tons CO<sub>2</sub>e per functional unit) compared to reference product/service or baseline scenario**

195054

**Explain your calculation of avoided emissions, including any assumptions**

ZF Green Finance Report 2022, page 12: Methodology Clean Transportation With the respect to the development, manufacture and distribution of products for pure battery electric vehicles, ZF committed to report on the estimate of annual GHG emissions avoided/ reduced during use as impact indicator. ZF's EV business mainly delivers to passenger cars, on which the calculation of the estimate of annual GHG emissions avoided/ reduced during the use phase of the battery electric vehicle was based. ZF refers to the VDA lifetime distance of respective vehicle classes in the WLTP driving cycle and assumes that the ZF-equipped vehicles (BEV, no hybrids) in 2021 replace internal combustion engine (ICE) vehicles (e.g., petrol and diesel). Both vehicle types generate well-to-wheel emissions, stemming from the use phase of the respective vehicles over their lifetime. For ICE vehicles they originate from fuel combustion whilst driving the car, and for BEVs from charging the battery. Following the guidelines of Greenhouse Gas Protocol Standard, the emissions were calculated in weight-based approach referring to lead products and upscaled by their respective sales volume. In this context, the calculations in the report represent a maximum impact assessment limited to these circumstances. In 2021, ZF estimate to have avoided 195054 t CO<sub>2</sub> of annual GHG emissions during use.

**Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year**

**Level of aggregation**

Product or service

**Taxonomy used to classify product(s) or service(s) as low-carbon**

No taxonomy used to classify product(s) or service(s) as low carbon

**Type of product(s) or service(s)**

|      |   |
|------|---|
| Road | Other, please specify (Modular electric drive system, consisting of electric motors, power electronics and sensors, as well as the brake system and trailer motion control) |
|------|---|

**Description of product(s) or service(s)**

E-Caravan with ZF Drive Electric vehicles are not yet an option for caravanners. Due to the additional energy requirement, pulling a caravan reduces the range of a battery-electric towing vehicle to less than half, depending on the topography. The solution: an own drive for the caravan. For the world's first electrically powered caravan prototype, the E.HOME Caravan, ZF is supplying the modular electric drive system, consisting of electric motors, power electronics and sensors, as well as the brake system and trailer motion control. Two 330-volt asynchronous electric motors with a continuous output of 30 kilowatts, a maximum of 90 kilowatts, are installed in the prototype. The integrated two-stage transmission in each electric drive unit ensures a maximum torque of 1,440 Newton meters at the wheel. This is enough to overcome four-centimeter-high curbs or floor plates when manoeuvring the uncoupled caravan on the campsite from a standstill. When driving downhill, the electric motors function as generators that feed power into the batteries and extend the range.

**Have you estimated the avoided emissions of this low-carbon product(s) or service(s)**

No

**Methodology used to calculate avoided emissions**

<Not Applicable>

**Life cycle stage(s) covered for the low-carbon product(s) or services(s)**

<Not Applicable>

Functional unit used

<Not Applicable>

Reference product/service or baseline scenario used

<Not Applicable>

Life cycle stage(s) covered for the reference product/service or baseline scenario

<Not Applicable>

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

<Not Applicable>

Explain your calculation of avoided emissions, including any assumptions

<Not Applicable>

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

Level of aggregation

Product or service

Taxonomy used to classify product(s) or service(s) as low-carbon

Other, please specify (Cradle to Cradle Certified™ Products)

Type of product(s) or service(s)

|      |   |
|------|---|
| Road | Other, please specify (Remanufactured products: Clutch cover, Clutch disc, Torque converters, ConAct® ) |
|------|---|

**Description of product(s) or service(s)**  
Cradle to Cradle Certified™ Products Regarding its products, the ZF Group has been using remanufacturing procedures for decades and for this purpose has established a global return system. Various parts such as clutch covers, clutch discs, torque converters, ConAct® are remanufactured for industrial use. Remanufacturing reduces ZF's demand for raw materials by up to 90% while saving about 90% in energy compared to manufacturing a new product. Industrial remanufacturing is currently implemented at 15 ZF locations. The Bielefeld (Germany) location alone sorts and remanufactures around 50 tons of cores per day. In total, several thousand products of all kinds – from automatic transmissions to various types of mechatronics and hydraulic control units – are remanufactured every year. This does not only prevent many components from being scrapped too early. Their remanufacturing also extends the service life of many vehicles that have long since been phased out of volume production. Within the new ESG strategy, the remanufactured ZF product portfolio shall be expanded in order to achieve a further reduction of product-related emissions. ZF's service strategy and the ZF Aftermarket portfolio consider various dimensions of the circular economy, such as product recycling, remanufacturing and CO2 equivalents when evaluating total cost of ownership and serviceability.

**Have you estimated the avoided emissions of this low-carbon product(s) or service(s)**  
Yes

**Methodology used to calculate avoided emissions**  
Other, please specify (Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard . This product carbon footprint was calculated using the "cradle-to-customer plus end-of-life" approach.)

**Life cycle stage(s) covered for the low-carbon product(s) or services(s)**  
Other, please specify ("cradle-to-customer plus end-of-life")

**Functional unit used**  
1,000 pcs. for clutch cover MF430

**Reference product/service or baseline scenario used**  
Clutch cover MF430 Remanufacturing products were compared with the new products

**Life cycle stage(s) covered for the reference product/service or baseline scenario**  
Other, please specify ("cradle-to-customer plus end-of-life")

**Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario**  
53

**Explain your calculation of avoided emissions, including any assumptions**  
Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard This product carbon footprint was calculated using the "cradle-to-customer plus end-of-life" approach. Emissions along the following life cycle phases were considered: Extraction and pre-processing of raw materials and packaging, production, delivery of product to the customer's factory gate as well as relevant disposal emissions of the product and the packaging. With the "cradle-to-customer plus end-of-life" approach, the focus of the calculation is on the processes that are controllable by the producer. The emissions from the use phase are mostly not controllable and subject to assumptions and estimates when applying them were therefore not included in the calculation. As far as possible, primary data was used for the calculation. Where this is not possible, secondary data from recognised sources has been used. The underlying emission factors come from internationally recognized databases such as ecoinvent or GEMIS. All relevant greenhouse gases were considered and CO2 equivalents were used for better comparability. Emissions that cannot be directly attributed to the product but can be attributed to the production as necessary, such as travel for employees or business trips, were considered. Common issues also included in the calculation. For clutch cover MF430: Remanufactured: 23,98 tons per 1,000 pieces New Production: 77,31 tons per 1,000 pieces This saves 53,33 tons of CO2 per 1,000 pieces compared to manufacturing new products Revenue data are confidential and for internal use only.

**Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year**

Level of aggregation

Product or service

Taxonomy used to classify product(s) or service(s) as low-carbon

Other, please specify (Cradle to Cradle Certified™ Products)

Type of product(s) or service(s)

|      |   |
|------|---|
| Road | Other, please specify (Remanufactured products: Clutch cover, Clutch disc, Torque converters, ConAct® ) |
|------|---|

**Description of product(s) or service(s)**

Cradle to Cradle Certified™ Products Regarding its products, the ZF Group has been using remanufacturing procedures for decades and for this purpose has established a global return system. Various parts such as clutch covers, clutch discs, torque converters, ConAct® are remanufactured for industrial use. Remanufacturing reduces ZF's demand for raw materials by up to 90% while saving about 90% in energy compared to manufacturing a new product. Industrial remanufacturing is currently implemented at 15 ZF locations. The Bielefeld (Germany) location alone sorts and remanufactures around 50 tons of cores per day. In total, several thousand products of all kinds – from automatic transmissions to various types of mechatronics and hydraulic control units – are remanufactured every year. This does not only prevent many components from being scrapped too early. Their remanufacturing also extends the service life of many vehicles that have long since been phased out of volume production. Within the new ESG strategy, the remanufactured ZF product portfolio shall be expanded in order to achieve a further reduction of product-related emissions. ZF's service strategy and the ZF Aftermarket portfolio consider various dimensions of the circular economy, such as product recycling, remanufacturing and CO2 equivalents when evaluating total cost of ownership and serviceability.

**Have you estimated the avoided emissions of this low-carbon product(s) or service(s)**

Yes

**Methodology used to calculate avoided emissions**

Other, please specify (Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard This product carbon footprint was calculated using the "cradle-to-customer plus end-of-life" approach.)

**Life cycle stage(s) covered for the low-carbon product(s) or services(s)**

Other, please specify ("cradle-to-customer plus end-of-life")

**Functional unit used**

1,000 pcs. for clutch cover MF430 E

**Reference product/service or baseline scenario used**

Clutch cover MF430E Remanufacturing products were compared with the new products

**Life cycle stage(s) covered for the reference product/service or baseline scenario**

Other, please specify ("cradle-to-customer plus end-of-life")

**Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario**

58

**Explain your calculation of avoided emissions, including any assumptions**

Greenhouse Gas Protocol Product Life Cycle Accounting and Reporting Standard This product carbon footprint was calculated using the "cradle-to-customer plus end-of-life" approach. Emissions along the following life cycle phases were considered: Extraction and pre-processing of raw materials and packaging, production, delivery of product to the customer's factory gate as well as relevant disposal emissions of the product and the packaging. With the "cradle-to-customer plus end-of-life" approach, the focus of the calculation is on the processes that are controllable by the producer. The emissions from the use phase are mostly not controllable and subject to assumptions and estimates when applying them were therefore not included in the calculation. As far as possible, primary data was used for the calculation. Where this is not possible, secondary data from recognised sources has been used. The underlying emission factors come from internationally recognized databases such as ecoinvent or GEMIS. All relevant greenhouse gases were taken into account, and CO2 equivalents were used for better comparability. Emissions that cannot be directly attributed to the product, but can be attributed to the production are necessary, such as travel for employees or business trips, were considered. Common issues also included in the calculation. For clutch cover MF430E: Remanufactured: 28,82 tons per 1,000 pieces New Production: 86,38 tons per 1,000 pieces This saves 57.56 tons of CO2 per 1,000 pieces compared to manufacturing new products Revenue data are confidential and for internal use only.

**Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year**

C5. Emissions methodology

C5.1

**(C5.1) Is this your first year of reporting emissions data to CDP?**

No

C5.1a

**(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?**

**Row 1**

**Has there been a structural change?**

Yes, an acquisition

**Name of organization(s) acquired, divested from, or merged with**

WABCO

**Details of structural change(s), including completion dates**

With the takeover of WABCO, 79 subsidiaries and two associates were acquired. WABCO, which was fully acquired in May 2020, was not yet fully integrated into the corporate environmental reporting for 2020 and CDP disclosure 2021 (based on reporting year 2020). While ZF has successfully completed the acquisition of WABCO, the sustainability reporting of the new CVCS division (Commercial Vehicle Control Systems, ex WABCO) was further harmonized over the course of 2021 and is now fully integrated in Annual Report 2021 and CDP disclosure (reporting year 2021). Base year 2019, reporting year 2021 and target data have been recalculated accordingly to include the structural change.

C5.1b

**(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?**

|       | Change(s) in methodology, boundary, and/or reporting year definition? | Details of methodology, boundary, and/or reporting year definition change(s) |
|-------|---|--|
| Row 1 | No  | <Not Applicable>   |

**C5.1c****(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?**

|       | Base year recalculation | Base year emissions recalculation policy, including significance threshold  |
|-------|-------------------------|---|
| Row 1 | Yes                     | Base year 2019, reporting year 2021 and target data have been recalculated accordingly to include the structural change by the mentioned acquisition. |

**C5.2****(C5.2) Provide your base year and base year emissions.****Scope 1****Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

406000

**Comment**

Climate neutrality by 2040 is an essential part of the ZF strategy. With the ZF Climate Ambition Initiative launched in 2021, ZF has a clear, low-carbon transition plan up to climate neutrality in 2040. ZF Climate Ambition Target: ZF Friedrichshafen AG commits to reduce absolute Scope 1 & 2 GHG emissions 80% by 2030 from a 2019 base year. Base year 2019 figures have been recalculated accordingly to include the structural change mentioned under C5.1a.

**Scope 2 (location-based)****Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

1437000

**Comment**

Climate neutrality by 2040 is an essential part of the ZF strategy. With the ZF Climate Ambition Initiative launched in 2021, ZF has a clear, low-carbon transition plan up to climate neutrality in 2040. ZF Climate Ambition Target: ZF Friedrichshafen AG commits to reduce absolute Scope 1 & 2 GHG emissions 80% by 2030 from a 2019 base year. Base year 2019 figures have been recalculated accordingly to include the structural change mentioned under C5.1a.

**Scope 2 (market-based)****Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

1371000

**Comment**

Climate neutrality by 2040 is an essential part of the ZF strategy. With the ZF Climate Ambition Initiative launched in 2021, ZF has a clear, low-carbon transition plan up to climate neutrality in 2040. ZF Climate Ambition Target: ZF Friedrichshafen AG commits to reduce absolute Scope 1 & 2 GHG emissions by 80% by 2030 from a 2019 base year. Base year 2019 figures have been recalculated accordingly to include the structural change mentioned under C5.1a.

**Scope 3 category 1: Purchased goods and services****Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO<sub>2</sub>e)**

21688441

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO<sub>2</sub>e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 2: Capital goods

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

1485421

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

221757

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 4: Upstream transportation and distribution

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

1126644

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 5: Waste generated in operations

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

131469

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 6: Business travel

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

112540

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 7: Employee commuting

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

149394

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 8: Upstream leased assets

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)****Comment**

not applicable Leased assets are reported together with owned properties in the according sections of scope 1, 2 and 3. There are a few exceptions which are small offices with no production site and very low energy consumption (< 1%) and emissions. Therefore, this category has been defined as not relevant.

### Scope 3 category 9: Downstream transportation and distribution

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

414759

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 10: Processing of sold products

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

59510

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

### Scope 3 category 11: Use of sold products

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

77234947

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a. Reported figure in metric tons CO2e (77.234.947) is the sum of direct (8.414.179) and indirect (68.820.768) use phase emissions (see Annual Report 2021, page 52).

#### Scope 3 category 12: End of life treatment of sold products

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

71325

**Comment**

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. Reported data are base year 2019 values that have been recalculated accordingly to include the structural change mentioned under C5.1a.

#### Scope 3 category 13: Downstream leased assets

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)****Comment**

not applicable Leased assets are reported together with owned properties in the according sections of scope 1, 2 and 3. There are a few exceptions which are small offices with no production site and very low energy consumption (< 1%) and emissions. Therefore, this category has been defined as not relevant.

#### Scope 3 category 14: Franchises

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)****Comment**

not applicable ZF Group does not have franchises with partners on a relevant scale.

#### Scope 3 category 15: Investments

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

22460

**Comment**

Based on the latest evaluation, category 3.15 was evaluated as "low material". However, ZF decided to include the category into the annual report and the SBTi target scope. Scope 3 category 15 was not reported separately in reporting year 2020.

#### Scope 3: Other (upstream)

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

0

**Comment**

no other

#### Scope 3: Other (downstream)

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

0

**Comment**

no other

### C5.3

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**(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**

IPCC Guidelines for National Greenhouse Gas Inventories, 2006  
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)  
The Greenhouse Gas Protocol: Scope 2 Guidance  
Other, please specify (ZF tool using VDA emission factors)

## C6. Emissions data

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### C6.1

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**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**

**Reporting year**

**Gross global Scope 1 emissions (metric tons CO2e)**

416000

**Start date**

January 1 2021

**End date**

December 31 2021

**Comment**

ZF commits to reduce absolute Scope 1 & 2 GHG emissions 80% by 2030 from a 2019 base year. This new absolute reduction target, which was announced in 2021, is an element of ZF Climate Neutrality Strategy. The Greenhouse Gas Protocol (GHG) sets an international standard to categorize direct and indirect sources of emissions. Climate neutral means that all processes, products and services will not increase the CO2e load in the atmosphere. Scopes 1 and 2 can be directly influenced by ZF, as Scope 1 includes direct emissions resulting from the combustion of fossil fuel in ZF's own production and Scope 2 involves emissions from purchased energy, e.g., electricity. Climate neutrality by 2040 is part of ZF Strategy "Next Generation Mobility". ZF conducts its ZF Climate Ambition Initiative for implementation of climate protection strategy in all company processes considering ESG requirements. In this context scope and recalculation processes have been reviewed to meet future criteria on auditability.

**Past year 1**

**Gross global Scope 1 emissions (metric tons CO2e)**

384000

**Start date**

January 1 2020

**End date**

December 31 2020

**Comment**

Figures of past year 1 (2020) have been recalculated accordingly to include the structural change mentioned under C5.1a.

### C6.2

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**(C6.2) Describe your organization's approach to reporting Scope 2 emissions.**

**Row 1**

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We are reporting a Scope 2, market-based figure

**Comment**

We have a number of operations where we are able to access electricity supplier emission factors or residual emission factors. Where no specific emission factors are available, we use the same emission factors as for the location-based approach. location-based figure: gross global Scope 2 emissions (metric tons CO2e) consider CO2 fossil, CH4 and N2O; CO2 biogenic is excluded. market-based figure: gross global Scope 2 emissions (metric tons CO2e) consider CO2 fossil, CH4 and N2O; CO2 biogenic is excluded.

### C6.3

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(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

1377000

Scope 2, market-based (if applicable)

941000

Start date

January 1 2021

End date

December 31 2021

Comment

ZF commits to reduce absolute Scope 1 & 2 GHG emissions 80% by 2030 from a 2019 base year. This new absolute reduction target, which was announced in 2021, is an element of ZF Climate Neutrality Strategy. The Greenhouse Gas Protocol (GHG) sets an international standard to categorize direct and indirect sources of emissions. Climate neutral means that all processes, products and services will not increase the CO2e load in the atmosphere. Scopes 1 and 2 can be directly influenced by ZF, as Scope 1 includes direct emissions resulting from the combustion of fossil fuel in ZF's own production and Scope 2 involves emissions from purchased energy, e.g., electricity. Climate neutrality by 2040 is part of ZF Strategy "Next Generation Mobility". ZF conducts its ZF Climate Ambition Initiative for implementation of climate protection strategy in all company processes considering ESG requirements. In this context scope and recalculation processes have been reviewed to meet future criteria on auditability.

Past year 1

Scope 2, location-based

1323000

Scope 2, market-based (if applicable)

1130000

Start date

January 1 2020

End date

December 31 2020

Comment

Figures of past year 1 (2020) have been recalculated accordingly to include the structural change mentioned under C5.1a.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

|  |  |
|--|--|
| <b>(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.</b> |  |
| <b>Source</b>  | HFCs, PFCs, NF3  |
| <b>Relevance of Scope 1 emissions from this source</b>   | Emissions are not relevant   |
| <b>Relevance of location-based Scope 2 emissions from this source</b>  | Emissions are not relevant   |
| <b>Relevance of market-based Scope 2 emissions from this source (if applicable)</b>  | Emissions are not relevant   |
| <b>Explain why this source is excluded</b>   | HFC, PFC: fillings recorded (R-substances), no significant amount Is used only in closed systems. Emissions only in case of incidents relevant and then reported in GRI.<br>NF3: no solar cell production or LCD screen technology production. |
| <b>Estimated percentage of total Scope 1+2 emissions this excluded source represents</b>   | 0  |
| <b>Explain how you estimated the percentage of emissions this excluded source represents</b>   | Is used only in closed systems, emissions only. No incidents on behalf of leakages reported in 2021.   |
| <hr/>  |  |
| <b>Source</b>  | SF6  |
| <b>Relevance of Scope 1 emissions from this source</b>   | Emissions are not relevant   |
| <b>Relevance of location-based Scope 2 emissions from this source</b>  | Emissions are not relevant   |
| <b>Relevance of market-based Scope 2 emissions from this source (if applicable)</b>  | Please select  |
| <b>Explain why this source is excluded</b>   | No SF6 emissions from ZF operations  |
| <b>Estimated percentage of total Scope 1+2 emissions this excluded source represents</b>   | 0  |
| <b>Explain how you estimated the percentage of emissions this excluded source represents</b>   | No SF6 emissions from ZF operations (no emissions from insulation in medium / high voltage technology)   |
| <hr/>  |  |

C6.5

---

**(C6.5) Account for your organization’s gross global Scope 3 emissions, disclosing and explaining any exclusions.**

|  |  |
|--|--|
| <b>Purchased goods and services</b>  |  |
| <b>Evaluation status</b>   | Relevant, calculated   |
| <b>Emissions in reporting year (metric tons CO2e)</b>  | 18993700   |
| <b>Emissions calculation methodology</b>   | Hybrid method<br>Spend-based method  |
| <b>Percentage of emissions calculated using data obtained from suppliers or value chain partners</b> | 0  |
| <b>Please explain</b>  | <p>The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. _____ Category 1 Purchased Goods and Services carbon footprint calculation is built on the commodity structure of ZF, using purchasing data. Weights are the main input needed for calculating emissions. Weights and emissions have been calculated based on quantitative and qualitative information for each sub-commodity, where the specific weights per commodity were calculated by multiplying the individual weights of purchased goods and services by their volumes. The emission factors convert the weights per commodity into CO2e emissions. To guarantee accuracy and representativeness, the emissions factor for each sub-commodity were individually determined applying a conservative estimation approach from relevant databases. The “Scope 3.1” relevant non-production materials calculation is based on environmental input-output databases (World Input-Output Database (WIOD) and the Open IO Database, using the GHG Protocol Scope 3 Evaluator (<a href="https://ghgproto-col.org/scope-3-evaluator">https://ghgproto-col.org/scope-3-evaluator</a>)). No reliable primary data from suppliers available at this time. Supply chain sustainability program for development to enable suppliers is in place. To drive forward the topic of climate neutrality in the supply chain, ZF communicated quantified expectations for essential carbon reduction levers. These include, among other things, the use of renewable energies and secondary raw materials. In addition, so-called decarbonization dialogues were initiated with important suppliers of production and non-production materials. A significant outcome of this dialogue has been the identification of measures that will be implemented through joint projects and materialize over the coming years.</p> |

## Capital goods

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

1188373

### Emissions calculation methodology

Spend-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 2 Capital Goods carbon footprint calculation is based on financial data. No reliable primary data from suppliers available at this time. Supply chain sustainability program for development to enable suppliers is in place.

## Fuel-and-energy-related activities (not included in Scope 1 or 2)

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

235914

### Emissions calculation methodology

Hybrid method  
Fuel-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 3 Fuel-and-energy-related activities carbon footprint calculation is based on the calculation process of Scope 1 and 2 revering to the energy consumption. The supply chain and grid losses were calculated separately by using VDA emission factors from German trade association VDA - Association of German automotive industry. No reliable primary data from suppliers available at this time. Supply chain sustainability program for development to enable suppliers is in place.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

1356756

### Emissions calculation methodology

Hybrid method  
Spend-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 4 Upstream transportation and distribution carbon footprint calculation is based on data of transport costs, subdivided by different means of transport (land, water, air). No reliable primary data from suppliers available at this time. Supply chain sustainability program for development to enable suppliers is in place.

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

135919

### Emissions calculation methodology

Hybrid method  
Waste-type-specific method  
Site-specific method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 5 Waste generated in operations carbon footprint calculation is based on extrapolation. Detailed and accurate waste data were currently only available for a number of sites and group of representative specific products. On company level only four categories are reported (hazardous or not, to recycling or disposal), which were used for an extrapolation. No reliable primary data from suppliers available at this time. Supply chain sustainability program for development to enable suppliers is in place.

## Business travel

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

20874

### Emissions calculation methodology

Please select

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 6 Business travel carbon footprint calculation is based on data on travel costs, subdivided by different means of transport (car, rail, air). No reliable primary data available at this time. Program for development of data quality is in place.

## Employee commuting

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

145280

### Emissions calculation methodology

Hybrid method  
Average data method  
Distance-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 7 Employee commuting carbon footprint calculation is based on data on employees, subdivided by different countries and regions and different means of transport (private, public). No reliable primary data available at this time. Program for development of data quality is in place.

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Emissions in reporting year (metric tons CO2e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Please explain

Leased assets are reported together with owned properties in the according sections of scope 1, 2 and 3. There are a few exceptions which are small offices with no production site and very low energy consumption (< 1%) and emissions. Therefore, this category has been defined as not relevant.

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

499471

### Emissions calculation methodology

Hybrid method  
Spend-based method  
Average product method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 9 Downstream transportation and distribution carbon footprint calculation is based on data of transport costs, subdivided by different means of transport (land, water, air). No reliable primary data available at this time. Program for development of data quality is in place.

## Processing of sold products

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

59510

### Emissions calculation methodology

Spend-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO<sub>2</sub>e reduction levers. \_\_\_\_\_ Category 10 Processing of sold products carbon footprint calculation is based on sales figures. Due to low share of total emissions, it was categorized as less relevant. No reliable primary data available at this time. Program for development of data quality is in place.

## Use of sold products

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

68935007

### Emissions calculation methodology

Hybrid method

Average data method

Average product method

Fuel-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO<sub>2</sub>e reduction levers. \_\_\_\_\_ Category 11 Use of sold products carbon footprint calculation is based on the top sales representative products of ZF. To address the CO<sub>2</sub>e emissions of the top sales products, the following was taken into account: the fraction of the vehicle weight; the fleet mix (ICE, Hybrid, or electric); the application (passenger cars, utility vehicles, or non-automotive); and the vehicle CO<sub>2</sub>e emissions per kilometre or CO<sub>2</sub>e emissions per hour for non-automotive applications. After the calculation of the top sales representative products, the emissions of the whole range of ZF products have been calculated extrapolating by the sales volume. No reliable primary data available at this time. Program for development of data quality is in place. ZF continuously develops the calculation of use phase emissions of their products: More simulations will be carried out to determine the fuel consumption of their automotive parts. This will enhance the overall result, when the extrapolation to the whole product range will have a broader basis. Reported figure in metric tons CO<sub>2</sub>e (68935007) is the sum of direct (3905942) and indirect (65029065) use phase emissions (see Annual Report 2021, page 52).

## End of life treatment of sold products

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

94367

### Emissions calculation methodology

Hybrid method

Average data method

Spend-based method

Average product method

Waste-type-specific method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO<sub>2</sub>e reduction levers. \_\_\_\_\_ Category 12 End of life treatment of sold products carbon footprint calculation is based on the top sales representative products of each ZF division. ZF produces mainly automotive parts made of metal or other recyclable materials. The share of recyclable content per top sales product was estimated, revealing that most parts will undergo a considerable recycling process. Electronics scrap is the exemption, whose CO<sub>2</sub>e emissions were calculated based on a final incineration process. No reliable primary data available at this time. Program for development of data quality is in place.

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Emissions in reporting year (metric tons CO2e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Please explain

Leased assets are reported together with owned properties in the according sections of scope 1, 2 and 3. There are a few exceptions which are small offices with no production site and very low energy consumption (< 1%) and emissions. Therefore, this category was defined as not relevant.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Emissions in reporting year (metric tons CO2e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Please explain

ZF Group does not have franchises with partners on a relevant scale.

## Investments

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO2e)

7056

### Emissions calculation methodology

Average data method  
Spend-based method

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Please explain

The ZF Corporate Carbon Footprint CCF Calculation Model has been reviewed in early 2021 during the ZF Climate Ambition Initiative with external consultant. Based on the calculation model and analysis of reduction levers the target setting process to all categories for internal and external stakeholders has been set up. This calculation model has been designed to calculate the potential of CO2e reduction levers. \_\_\_\_\_ Category 15 Investments carbon footprint calculation is based on the assumption of a average footprint according to ZF Group and the investment spent based data. No reliable primary data available at this time.

## Other (upstream)

### Evaluation status

Not evaluated

### Emissions in reporting year (metric tons CO2e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Please explain

not applicable

## Other (downstream)

### Evaluation status

Not evaluated

### Emissions in reporting year (metric tons CO2e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Please explain

not applicable

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date

January 1 2020

End date

December 31 2020

Scope 3: Purchased goods and services (metric tons CO2e)

21615130

Scope 3: Capital goods (metric tons CO2e)

1442444

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

212536

Scope 3: Upstream transportation and distribution (metric tons CO2e)

1015729

Scope 3: Waste generated in operations (metric tons CO2e)

95637

Scope 3: Business travel (metric tons CO2e)

127911

Scope 3: Employee commuting (metric tons CO2e)

136846

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

373882

Scope 3: Processing of sold products (metric tons CO2e)

59510

Scope 3: Use of sold products (metric tons CO2e)

64339373

Scope 3: End of life treatment of sold products (metric tons CO2e)

60928

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Scope 3 figures for past year 1 (2020) do not include the structural change mentioned under C5.1a. Recalculations were performed for base year 2019, reporting year 2021 and target data only. Figures of 2020 have not been recalculated.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biogenic carbon relevant to your organization in metric tons CO2.

|       | CO2 emissions from biogenic carbon (metric tons CO2) | Comment  |
|-------|--|--|
| Row 1 | 165951   | Figure includes emissions from Scope 1 and Scope 2 (location-based) only, but not Scope 3 category 3: fuel-and energy- related activities. In the emission calculation process, the biologically sequestered carbon is calculated separately (using VDA emission factors from German trade association VDA - Association of German automotive industry). |

C6.10



(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

35

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

1357000

Metric denominator

Other, please specify (unit total revenue [Mio EUR])

Metric denominator: Unit total

38313

Scope 2 figure used

Market-based

% change from previous year

25

Direction of change

Decreased

Reason for change

CO2e emissions intensity figure unit: t CO2e / Mio EUR sales The intensity of GHG emissions results directly from the energy intensity and footprint of each country in which energy is purchased and used. In addition, the production footprint is strongly influenced by customer needs, national production and purchasing requirements (market-based). After a highly unusual development of the intensity figure in 2020 (reduction in energy consumption did not fully correspond with the significant decrease in sales throughout the pandemic year) there is a significant decrease shown in 2021. Decrease of 25% results out of a recalculated intensity figure of 47 in 2020 considering the structural change mentioned under C5.1a.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?  
Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

| Greenhouse gas | Scope 1 emissions (metric tons of CO2e) | GWP Reference   |
|----------------|---|---|
| CO2            | 414908.884                              | IPCC Fifth Assessment Report (AR5 – 100 year)<br>ZF inhouse reporting tool: calculation of emissions by using VDA emission factors from German trade association VDA (Association of German automotive industry). The VDA emission factors are used to calculate the quantity of direct CO2 emissions based on the direct energy consumption. The greenhouse gases CO2, CH4 and N2O are included as CO2e, using the Global Warming Potentials from IPCC AR 5 (2013) |
| CH4            | 16.368                                  | IPCC Fifth Assessment Report (AR5 – 100 year)<br>ZF inhouse reporting tool: calculation of emissions by using VDA emission factors from German trade association VDA (Association of German automotive industry). The VDA emission factors are used to calculate the quantity of direct CO2 emissions based on the direct energy consumption. The greenhouse gases CO2, CH4 and N2O are included as CO2e, using the Global Warming Potentials from IPCC AR 5 (2013) |
| N2O            | 5.171                                   | IPCC Fifth Assessment Report (AR5 – 100 year)<br>ZF inhouse reporting tool: calculation of emissions by using VDA emission factors from German trade association VDA (Association of German automotive industry). The VDA emission factors are used to calculate the quantity of direct CO2 emissions based on the direct energy consumption. The greenhouse gases CO2, CH4 and N2O are included as CO2e, using the Global Warming Potentials from IPCC AR 5 (2013) |

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

| Country/Region                                       | Scope 1 emissions (metric tons CO2e) |
|--|--------------------------------------|
| Argentina  | 1193                                 |
| Austria  | 1180                                 |
| Belgium  | 6565                                 |
| Brazil   | 8878                                 |
| Canada   | 6355                                 |
| China  | 14469                                |
| Czechia  | 2856                                 |
| Denmark  | 22.4                                 |
| France   | 3914                                 |
| Germany  | 284614                               |
| United Kingdom of Great Britain and Northern Ireland | 4768                                 |
| Hungary  | 6836                                 |
| India  | 2193                                 |
| Italy  | 4266                                 |
| Malaysia   | 0                                    |
| Mexico   | 8386                                 |
| Netherlands  | 193                                  |
| Portugal   | 1042                                 |
| Romania  | 2867                                 |
| Russian Federation                                   | 1150                                 |
| Slovakia   | 9055                                 |
| South Africa   | 215                                  |
| Republic of Korea                                    | 1593                                 |
| Spain  | 7192                                 |
| Taiwan, China  | 110                                  |
| Thailand   | 2.69                                 |
| Turkey   | 2619                                 |
| United States of America                             | 28958                                |
| Japan  | 3.73                                 |
| Poland   | 3765                                 |
| Viet Nam   | 10.8                                 |
| Australia  | 0                                    |
| Serbia   | 1226                                 |
| Singapore  | 0                                    |
| Switzerland  | 80.4                                 |
| United Arab Emirates                                 | 163                                  |

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.  
Please select

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

| Country/Region                                       | Scope 2, location-based (metric tons CO2e) | Scope 2, market-based (metric tons CO2e) |
|--|--|--|
| Argentina  | 2186                                       | 1337                                     |
| Australia  | 231  | 0  |
| Austria  | 8090                                       | 1554                                     |
| Belgium  | 5681                                       | 5.87                                     |
| Brazil   | 42845                                      | 10084                                    |
| Canada   | 3584                                       | 3584                                     |
| China  | 237384                                     | 238580                                   |
| Czechia  | 28803                                      | 2422                                     |
| Denmark  | 35.3                                       | 0  |
| France   | 2524                                       | 0.28                                     |
| Germany  | 440008                                     | 228694                                   |
| United Kingdom of Great Britain and Northern Ireland | 13988                                      | 0  |
| Hungary  | 10660                                      | 0  |
| India  | 79751                                      | 79534                                    |
| Italy  | 8767                                       | 0  |
| Japan  | 1800                                       | 1800                                     |
| Malaysia   | 17618                                      | 17618                                    |
| Mexico   | 113973                                     | 89971                                    |
| Netherlands  | 226  | 155                                      |
| Poland   | 67306                                      | 61312                                    |
| Portugal   | 2827                                       | 0  |
| Romania  | 10132                                      | 0  |
| Russian Federation                                   | 4239                                       | 4239                                     |
| Serbia   | 5272                                       | 1401                                     |
| Singapore  | 73.8                                       | 73.8                                     |
| Slovakia   | 27225                                      | 2951                                     |
| South Africa   | 2832                                       | 2832                                     |
| Republic of Korea                                    | 11355                                      | 10785                                    |
| Spain  | 21419                                      | 1.67                                     |
| Switzerland  | 31.2                                       | 31.2                                     |
| Taiwan, China  | 330  | 330                                      |
| Thailand   | 1895                                       | 1895                                     |
| Turkey   | 13503                                      | 13503                                    |
| United Arab Emirates                                 | 104  | 104                                      |
| United States of America                             | 190164                                     | 165715                                   |
| Viet Nam   | 310  | 310                                      |

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

Please select

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

**(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.**

|   | Change in emissions (metric tons CO2e) | Direction of change | Emissions value (percentage) | Please explain calculation   |
|---|--|---------------------|------------------------------|--|
| Change in renewable energy consumption  | 75280                                  | Decreased           | 5.5                          | Renewables accounted for 14% of the total purchased electricity (2020: 5.7%) in 2021 – under guaranteed certified green power contracts. This change is a result of the initiatives and contract amendments within the ZF Green Power Roadmap. By 2030, the additionally purchased electricity shall be procured from purely renewable sources.  |
| Other emissions reduction activities    | 40800                                  | Decreased           | 3                            | Energy efficiency Program: Overall, a total of 555 projects (2020: 412) has been implemented or initiated, which led to more than 86.4 GWh in energy savings (2020: 39 GWh). This corresponds to the electricity consumption of 20,000 average households and the avoidance of 40,800 tons of CO2 emissions.   |
| Divestment                              | 0                                      | No change           | 0                            | No relevant divestment in 2021.  |
| Acquisitions                            | 0                                      | No change           | 0                            | With the takeover of WABCO, 79 subsidiaries and two associates were acquired. WABCO, which was fully acquired in May 2020, was not yet considered in previous years CDP report, but is now considered. In 2021 it was fully included in sustainability & emissions reporting. Absolut baseline emissions 2019 and absolute emissions of previous year 2020 were recalculated and do now include emissions from former WABCO sites. |
| Mergers                                 | 0                                      | No change           | 0                            | No relevant mergers in 2021.   |
| Change in output                        | 122130                                 | Increased           | 9                            | The economic impact of the global pandemic led to a decrease of ZF Group sales to 32,611 million € in 2020. Due to increase of business from 2020 to 2021 and a sales increase to 38,313 million € (+17%), the energy consumption increased from 4,139 GWh in 2020 to 4,500 GWh in 2021 (+9%).   |
| Change in methodology                   | 0                                      | No change           | 0                            | No relevant change in methodology in 2021.   |
| Change in boundary                      | 0                                      | No change           | 0                            | No relevant change in boundary in 2021.  |
| Change in physical operating conditions | 0                                      | No change           | 0                            | several locations with extraordinary weather conditions (cold/mild winter, hot/cool summer); some effects around the world eliminated each other, others cannot be defined clearly yet.  |
| Unidentified                            | 6050                                   | Decreased           | 0.5                          | Other effects around the world may have eliminated one another and cannot be differentiated.   |
| Other                                   | 0                                      | No change           | 0                            | Other effects around the world may have eliminated one another and cannot be differentiated.   |

C7.9b

**(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?**  
 Market-based

C8. Energy

C8.1

**(C8.1) What percentage of your total operational spend in the reporting year was on energy?**  
 More than 5% but less than or equal to 10%

C8.2

**(C8.2) Select which energy-related activities your organization has undertaken.**

|  | Indicate whether your organization undertook this energy-related activity in the reporting year |
|--|---|
| Consumption of fuel (excluding feedstocks)         | Yes   |
| Consumption of purchased or acquired electricity   | Yes   |
| Consumption of purchased or acquired heat          | Yes   |
| Consumption of purchased or acquired steam         | No  |
| Consumption of purchased or acquired cooling       | No  |
| Generation of electricity, heat, steam, or cooling | Yes   |

C8.2a

**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

|   | Heating value             | MWh from renewable sources | MWh from non-renewable sources | Total (renewable and non-renewable) MWh |
|---|---------------------------|----------------------------|--------------------------------|---|
| Consumption of fuel (excluding feedstock)               | LHV (lower heating value) | 150                        | 2001020                        | 2001170                                 |
| Consumption of purchased or acquired electricity        | <Not Applicable>          | 420346                     | 2142417                        | 2562763                                 |
| Consumption of purchased or acquired heat               | <Not Applicable>          | 1141                       | 197903                         | 199044                                  |
| Consumption of purchased or acquired steam              | <Not Applicable>          | <Not Applicable>           | <Not Applicable>               | <Not Applicable>                        |
| Consumption of purchased or acquired cooling            | <Not Applicable>          | <Not Applicable>           | <Not Applicable>               | <Not Applicable>                        |
| Consumption of self-generated non-fuel renewable energy | <Not Applicable>          | 5317                       | <Not Applicable>               | 5317                                    |
| Total energy consumption                                | <Not Applicable>          | 426954                     | 4341340                        | 4768294                                 |

**C8.2b**

**(C8.2b) Select the applications of your organization's consumption of fuel.**

|   | Indicate whether your organization undertakes this fuel application |
|---|---|
| Consumption of fuel for the generation of electricity   | Yes   |
| Consumption of fuel for the generation of heat          | Yes   |
| Consumption of fuel for the generation of steam         | No  |
| Consumption of fuel for the generation of cooling       | No  |
| Consumption of fuel for co-generation or tri-generation | Yes   |

**C8.2c**

**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.**

**Sustainable biomass**

**Heating value**

Please select

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

**Comment**

n/a

**Other biomass**

**Heating value**

Please select

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

**Comment**

n/a

Other renewable fuels (e.g. renewable hydrogen)

|  |   |
|--|---|
| Heating value  | LHV   |
| Total fuel MWh consumed by the organization                    | 150   |
| MWh fuel consumed for self-generation of electricity           | 0   |
| MWh fuel consumed for self-generation of heat                  | 0   |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>                                      |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>                                      |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 0   |
| Comment  | Bioethanol used for mobile combustion (company fleet) |

Coal

|  |                                   |
|--|-----------------------------------|
| Heating value  | Please select                     |
| Total fuel MWh consumed by the organization                    | 0                                 |
| MWh fuel consumed for self-generation of electricity           | 0                                 |
| MWh fuel consumed for self-generation of heat                  | 0                                 |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>                  |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>                  |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 0                                 |
| Comment  | n/a, no coal consumed at ZF sites |

Oil

|  |                                      |
|--|--------------------------------------|
| Heating value  | LHV                                  |
| Total fuel MWh consumed by the organization                    | 6782                                 |
| MWh fuel consumed for self-generation of electricity           | 0                                    |
| MWh fuel consumed for self-generation of heat                  | 6782                                 |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>                     |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>                     |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 0                                    |
| Comment  | Heating oil used for heat generation |

Gas

|  |  |
|--|--|
| Heating value  | LHV  |
| Total fuel MWh consumed by the organization                    | 1906244  |
| MWh fuel consumed for self-generation of electricity           | 0  |
| MWh fuel consumed for self-generation of heat                  | 1107158  |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>   |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>   |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 764041   |
| Comment  | including natural gas, liquid petroleum gas (LPG) and compressed natural gas (CNG) consumed for mobile combustion (company fleet), self-cogeneration or trigeneration and consumed for self-generation of heat (including building heat and heat for production processes) |

Other non-renewable fuels (e.g. non-renewable hydrogen)

|  |   |
|--|---|
| Heating value  | LHV   |
| Total fuel MWh consumed by the organization                    | 86950   |
| MWh fuel consumed for self-generation of electricity           | 0   |
| MWh fuel consumed for self-generation of heat                  | 0   |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>  |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>  |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 0   |
| Comment  | including diesel and gasoline/ petrol for mobile combustion (company fleet) and testing processes |

Total fuel

|  |   |
|--|---|
| Heating value  | LHV   |
| Total fuel MWh consumed by the organization                    | 2000125   |
| MWh fuel consumed for self-generation of electricity           | 0   |
| MWh fuel consumed for self-generation of heat                  | 1113940   |
| MWh fuel consumed for self-generation of steam                 | <Not Applicable>  |
| MWh fuel consumed for self-generation of cooling               | <Not Applicable>  |
| MWh fuel consumed for self- cogeneration or self-trigeneration | 764041  |
| Comment  | including all types of fuels for mobile and stationary applications |

C8.2d

---

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

|             | Total Gross generation (MWh) | Generation that is consumed by the organization (MWh) | Gross generation from renewable sources (MWh) | Generation from renewable sources that is consumed by the organization (MWh) |
|-------------|------------------------------|---|---|--|
| Electricity | 324489                       | 56190   | 5317  | 5317   |
| Heat        | 225845                       | 22784   | 0   | 0  |
| Steam       | 0                            | 0   | 0   | 0  |
| Cooling     | 0                            | 0   | 0   | 0  |

## C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

### Sourcing method

Green electricity products from an energy supplier (e.g. green tariffs)

### Energy carrier

Electricity

### Low-carbon technology type

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

### Country/area of low-carbon energy consumption

Austria

### Tracking instrument used

GO

### Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

23350

### Country/area of origin (generation) of the low-carbon energy or energy attribute

Austria

### Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

### Comment

ZF purchased at 2 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

### Sourcing method

Green electricity products from an energy supplier (e.g. green tariffs)

### Energy carrier

Electricity

### Low-carbon technology type

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

### Country/area of low-carbon energy consumption

Belgium

### Tracking instrument used

GO

### Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)

29818

### Country/area of origin (generation) of the low-carbon energy or energy attribute

Belgium

### Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

### Comment

ZF purchased at 2 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

### Sourcing method

Green electricity products from an energy supplier (e.g. green tariffs)

### Energy carrier

Electricity

### Low-carbon technology type

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)



**Country/area of low-carbon energy consumption**

Czechia

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

40977

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Czechia

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)****Comment**

ZF purchased at 7 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

France

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

37079

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

France

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)****Comment**

ZF purchased at 6 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

---

**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Germany

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

1943

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Germany

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)****Comment**

ZF purchased at 2 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

---

**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of

biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

United Kingdom of Great Britain and Northern Ireland

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

46771

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

United Kingdom of Great Britain and Northern Ireland

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 10 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Italy

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

24457

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Italy

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 8 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Portugal

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

8350

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Portugal

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 5 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefore data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

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Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Romania

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

23614

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Romania

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 3 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Hungary

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

26230

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Hungary

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 1 site in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Slovakia

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

56151

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Slovakia

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

ZF purchased at 5 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

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**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Spain

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

70941

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Spain

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)****Comment**

ZF purchased at 12 sites in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

**Sourcing method**

Green electricity products from an energy supplier (e.g. green tariffs)

**Energy carrier**

Electricity

**Low-carbon technology type**

Renewable energy mix, please specify (Eligible Technologies acc. ZF Green Power Standard: 1. Wind, solar power, hydro, geothermal 2. Solid, liquid and gaseous forms of biomass from fuels 3. Ocean-based energy resources captured through tidal and wave technologies.)

**Country/area of low-carbon energy consumption**

Serbia

**Tracking instrument used**

GO

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

9342

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Serbia

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)****Comment**

ZF purchased at 1 site in the country green electricity. ZF provides data here on country level only. Within a country several sites may have sourced green electricity, therefor data could be the sum of different assets, technologies and are not tracked by site for external reporting here. Due to the mix of assets and technologies, the detailed commissioning date is not tracked and reported here. Moreover, the country of generation could be any other country within the same market boundary, e.g., AIB origin Europe.

**C8.2g****(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.****Country/area**

Argentina

**Consumption of electricity (MWh)**

5006

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

5006

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

**Country/area**

Australia

**Consumption of electricity (MWh)**

271

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

271

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Austria

**Consumption of electricity (MWh)**

23478

**Consumption of heat, steam, and cooling (MWh)**

6856

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

30334

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Belgium

**Consumption of electricity (MWh)**

29849

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

29849

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Brazil

**Consumption of electricity (MWh)**

163378

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

163378

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Canada

**Consumption of electricity (MWh)**

18933

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

18933

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

China

**Consumption of electricity (MWh)**

328827

**Consumption of heat, steam, and cooling (MWh)**

2517

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

331344

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Czechia

**Consumption of electricity (MWh)**

41521

**Consumption of heat, steam, and cooling (MWh)**

7838

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

49359

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

Denmark

**Consumption of electricity (MWh)**

125

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

125

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

France

**Consumption of electricity (MWh)**

37083

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

37083

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

Germany

**Consumption of electricity (MWh)**

983580

**Consumption of heat, steam, and cooling (MWh)**

169254

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

1152834

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

United Kingdom of Great Britain and Northern Ireland

**Consumption of electricity (MWh)**

46771

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

46771

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

Hungary

**Consumption of electricity (MWh)**

26230

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

26230

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

**Country/area**

India

**Consumption of electricity (MWh)**

80829

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

80829

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Italy

**Consumption of electricity (MWh)**

24457

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

24457

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Japan

**Consumption of electricity (MWh)**

3221

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

3221

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Malaysia

**Consumption of electricity (MWh)**

24324

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

24324

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Mexico

**Consumption of electricity (MWh)**

201729

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

201729

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Netherlands

**Consumption of electricity (MWh)**

465

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

465

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Poland

**Consumption of electricity (MWh)**

73907

Consumption of heat, steam, and cooling (MWh)

9283

Total non-fuel energy consumption (MWh) [Auto-calculated]

83190

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area

Portugal

Consumption of electricity (MWh)

8350

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

8350

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area

Romania

Consumption of electricity (MWh)

24538

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

24538

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area

Russian Federation

Consumption of electricity (MWh)

9029

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

9029

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area

Serbia

Consumption of electricity (MWh)

12767

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

12767

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area

Singapore

Consumption of electricity (MWh)

182

Consumption of heat, steam, and cooling (MWh)

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

182

Is this consumption excluded from your RE100 commitment?

<Not Applicable>

---

Country/area



Slovakia

**Consumption of electricity (MWh)**

67660

**Consumption of heat, steam, and cooling (MWh)**

2155

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

69815

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

South Africa

**Consumption of electricity (MWh)**

2540

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

2540

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Republic of Korea

**Consumption of electricity (MWh)**

21618

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

21618

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Spain

**Consumption of electricity (MWh)**

71250

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

71250

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Switzerland

**Consumption of electricity (MWh)**

182

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

182

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

**Country/area**

Taiwan, China

**Consumption of electricity (MWh)**

502

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

502

**Is this consumption excluded from your RE100 commitment?**

<Not Applicable>

---

---

**Country/area**  
Thailand

**Consumption of electricity (MWh)**  
3494

**Consumption of heat, steam, and cooling (MWh)**  
0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**  
3494

**Is this consumption excluded from your RE100 commitment?**  
<Not Applicable>

---

**Country/area**  
Turkey

**Consumption of electricity (MWh)**  
24540

**Consumption of heat, steam, and cooling (MWh)**  
0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**  
24540

**Is this consumption excluded from your RE100 commitment?**  
<Not Applicable>

---

**Country/area**  
United Arab Emirates

**Consumption of electricity (MWh)**  
172

**Consumption of heat, steam, and cooling (MWh)**  
0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**  
172

**Is this consumption excluded from your RE100 commitment?**  
<Not Applicable>

---

**Country/area**  
United States of America

**Consumption of electricity (MWh)**  
403043

**Consumption of heat, steam, and cooling (MWh)**  
0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**  
403043

**Is this consumption excluded from your RE100 commitment?**  
<Not Applicable>

---

**Country/area**  
Viet Nam

**Consumption of electricity (MWh)**  
571

**Consumption of heat, steam, and cooling (MWh)**  
0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**  
571

**Is this consumption excluded from your RE100 commitment?**  
<Not Applicable>

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C9. Additional metrics

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C9.1

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**(C9.1) Provide any additional climate-related metrics relevant to your business.**

**Description**

Waste

**Metric value**

594681

**Metric numerator**

waste in tons

**Metric denominator (intensity metric only)**

not applicable, absolute number

**% change from previous year**

16.8

**Direction of change**

Increased

**Please explain**

ZF also continues to work towards decreasing the volume of waste it sends for disposal, as well as hazardous waste, by altering processes, optimizing procedures and substituting hazardous substances in operations. ZF does not export hazardous waste from one country to another, with waste management organized at the local level. The absolute amount of waste, incl. waste to recycle and waste to disposal increased by 85,842 tons (+16.8%) compared to previous year's recalculated figure incl. WABCO (508,839 tons) because of increased production. In 2021, the recycling rate was 90 percent, the same as in the previous year. With the takeover of WABCO, 79 subsidiaries and two associates were acquired. WABCO, which was fully acquired in May 2020, was not yet fully integrated into last year's corporate environmental reporting and CDP disclosure (reporting year 2020). While ZF has successfully completed the acquisition of WABCO, the sustainability reporting of the new CVCS division (Commercial Vehicle Control Systems, ex WABCO) was further harmonized over the course of 2021 and is now fully integrated in Annual Report 2021 and CDP disclosure (reporting year 2021). Base year 2019, reporting year 2020, 2021 and target data have been recalculated accordingly to include the structural change.

**C10. Verification**

**C10.1**

**(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

|  | Verification/assurance status                          |
|--|--|
| Scope 1                                  | Third-party verification or assurance process in place |
| Scope 2 (location-based or market-based) | No third-party verification or assurance               |
| Scope 3                                  | Third-party verification or assurance process in place |

**C10.1a**

**(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.**

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

1

12364-1612-1001\_Certificate\_en.pdf

EU\_ETS\_GuD\_14310-1892\_EmB2021\_1\_0\_20220310.pdf

**Page/ section reference**

Facility number / DEHSt #: 14310-1892 GuD-Heizkraftwerk (CHP plant) Saarbrücken, Germany Verification: proTerra Umweltschutz und Managementberatung GmbH Accreditor: Deutsche Akkreditierungsstelle GmbH - DAkkS VET report via EU ETS Portal CO2 Emissions in reporting periode: 121.798 tons CO2 Total ZF scope 1: 416.000 tons CO2e (--> GuD facility emits 29% of ZF#s Scope 1 emissions) Date of report: Jan 25th 2022

**Relevant standard**

European Union Emissions Trading System (EU ETS)

**Proportion of reported emissions verified (%)**

29

**C10.1c**

**(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.**

**Scope 3 category**

Scope 3: Purchased goods and services  
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
Scope 3: Upstream transportation and distribution  
Scope 3: Waste generated in operations  
Scope 3: Employee commuting  
Scope 3: Downstream transportation and distribution  
Scope 3: End-of-life treatment of sold products

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Not applicable

**Attach the statement**

ZF\_Fr\_Clutc\_Gold\_CERT4767\_2021-03-11.pdf

**Page/section reference**

Cradle to Cradle Certified™ Gold THE LICENSED MARKS IDENTIFIED ABOVE MAY BE LICENSED TO: ZF Friedrichshafen AG Only the following products are considered Certified Product(s) within the scope of this certification and the associated Trademark License Agreement: Clutch disks with diameter 350 – 430 mm with and without predamper CERTIFICATION #4767 Issue date: 11 March 2021 Expiration date: 22 August 2022 Certified under Version 3.1 of the Cradle to Cradle Certified™ Product Standard

**Relevant standard**

Other, please specify (Cradle to Cradle Certified® Product Standard; Lead assessment body: EPEA GmbH)

**Proportion of reported emissions verified (%)**

---

**Scope 3 category**

Scope 3: Purchased goods and services  
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
Scope 3: Upstream transportation and distribution  
Scope 3: Waste generated in operations  
Scope 3: Employee commuting  
Scope 3: Downstream transportation and distribution  
Scope 3: End-of-life treatment of sold products

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Not applicable

**Attach the statement**

ZF\_Fr\_Clutc\_Gold\_CERT5135\_2021-10-25\_112430.pdf

**Page/section reference**

Cradle to Cradle Certified™ Gold THE LICENSED MARKS IDENTIFIED ABOVE MAY BE LICENSED TO: ZF Friedrichshafen AG Only the following products are considered Certified Product(s) within the scope of this certification and the associated Trademark License Agreement: Clutch Cover (M, MZ, MFZ, MFZ2, G, GM, GMF, GMFZ, GMFZ2, HVB, HBX, XN) CERTIFICATION #5135 Issue date: 18 October 2021 Expiration date: 14 July 2023 Certified under Version 3.1 of the Cradle to Cradle Certified™ Product Standard

**Relevant standard**

Other, please specify (Cradle to Cradle Certified® Product Standard; Lead assessment body: EPEA GmbH)

**Proportion of reported emissions verified (%)**

---

**Scope 3 category**

Scope 3: Purchased goods and services  
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
Scope 3: Upstream transportation and distribution  
Scope 3: Waste generated in operations  
Scope 3: Employee commuting  
Scope 3: Downstream transportation and distribution  
Scope 3: End-of-life treatment of sold products

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Not applicable

**Attach the statement**

ZF\_Fr\_Clutc\_Silve\_CERT5137\_2021-10-18\_122348.pdf

**Page/section reference**

Cradle to Cradle Certified™ Silver THE LICENSED MARKS IDENTIFIED ABOVE MAY BE LICENSED TO: ZF Friedrichshafen AG Only the following products are

considered Certified Product(s) within the scope of this certification and the associated Trademark License Agreement: Clutch Cover MF430E CERTIFICATION #5137  
Issue date: 18 October 2021 Expiration date: 17 October 2023 Certified under Version 3.1 of the Cradle to Cradle Certified™ Product Standard

**Relevant standard**

Other, please specify (Cradle to Cradle Certified® Product Standard; Lead assessment body: EPEA GmbH)

**Proportion of reported emissions verified (%)**

---

**Scope 3 category**

Scope 3: Purchased goods and services  
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
Scope 3: Upstream transportation and distribution  
Scope 3: Waste generated in operations  
Scope 3: Employee commuting  
Scope 3: Downstream transportation and distribution  
Scope 3: End-of-life treatment of sold products

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Not applicable

**Attach the statement**

ZF\_Fr\_Torqu\_Silve\_CERT5197\_2021-12-10\_16952.pdf  
ZF\_Fr\_ConAc\_Bronz\_CERT5123\_2021-10-18\_124159.pdf

**Page/section reference**

Cradle to Cradle Certified™ Silver THE LICENSED MARKS IDENTIFIED ABOVE MAY BE LICENSED TO: ZF Friedrichshafen AG Only the following products are considered Certified Product(s) within the scope of this certification and the associated Trademark License Agreement: Torque converter 8HP / 6HP CERTIFICATION #5197 Issue date: 10 December 2021 Expiration date: 18 December 2023 Certified under Version 3.1 of the Cradle to Cradle Certified™ Product Standard

**Relevant standard**

Other, please specify (Cradle to Cradle Certified® Product Standard; Lead assessment body: EPEA GmbH)

**Proportion of reported emissions verified (%)**

---

**Scope 3 category**

Scope 3: Purchased goods and services  
Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)  
Scope 3: Upstream transportation and distribution  
Scope 3: Waste generated in operations  
Scope 3: Employee commuting  
Scope 3: Downstream transportation and distribution  
Scope 3: End-of-life treatment of sold products

**Verification or assurance cycle in place**

Biennial process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Not applicable

**Attach the statement**

**Page/section reference**

Cradle to Cradle Certified™ Bronze THE LICENSED MARKS IDENTIFIED ABOVE MAY BE LICENSED TO: ZF Friedrichshafen AG Only the following products are considered Certified Product(s) within the scope of this certification and the associated Trademark License Agreement: ConAct® CERTIFICATION #5123 Issue date: 18 October 2021 Expiration date: 29 September 2023 Certified under Version 3.1 of the Cradle to Cradle Certified™ Product Standard

**Relevant standard**

Other, please specify (Cradle to Cradle Certified® Product Standard; Lead assessment body: EPEA GmbH)

**Proportion of reported emissions verified (%)**

---

**Scope 3 category**

Scope 3: Use of sold products

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

ZF\_Green-Finance-Framework.pdf  
ZF\_Green\_Finance\_Report\_2022.pdf

**Page/section reference**

ZF Green Finance Report 2022 page 13 Impact Report ZF Green Finance Framework page 14 External Review

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**Relevant standard**

Other, please specify (ZF Green Finance Framework (GFF) is aligned with ICMA's 2018 Green Bond Principles and LMA's 2020 Green Loan Principles. )

**Proportion of reported emissions verified (%)****C10.2**

**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

In progress

**C11. Carbon pricing****C11.1**

**(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?**

Yes

**C11.1a**

**(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.**

EU ETS

**C11.1b**

**(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.**

**EU ETS**

**% of Scope 1 emissions covered by the ETS**

29

**% of Scope 2 emissions covered by the ETS**

0

**Period start date**

January 1 2021

**Period end date**

December 31 2021

**Allowances allocated**

7403

**Allowances purchased**

126120

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

121798

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**

**Details of ownership**

Facilities we own but do not operate

**Comment**

Data are referring to facility number 14310-1892 GuD-Heizkraftwerk (CHP plant) in Saarbrücken, Germany. The facility number 14310-0028 (combustion plant), reported in previous years, does not participate in ETS since 24.06.2019 because of power reduction under 20 MW (approval DEHSt 28.02.2020).

**C11.1d**

**(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?**

ZF set a target to become climate neutral by 2040 at the latest. Main levers are increasing energy efficiency and the increase of purchased green electricity up to 100% by 2030. This means that all processes, products, and services will decrease the CO<sub>2</sub>e load in the atmosphere in the upcoming years.

The installation under the EU ETS is located in Germany, Saarbrücken.

Concerning our strategy for complying with the ETS, the site acts in accordance with ZF Climate Ambition Strategy and the related technology will be substituted until 2030.

## C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

Yes

### C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

**Credit origination or credit purchase**

Credit purchase

**Project type**

Wind

**Project identification**

ClimatePartner-ID 12364-1612-1001 Wind energy Sindrap Indonesia verified by Carbon Check (India) Private Ltd.

**Verified to which standard**

Gold Standard

**Number of credits (metric tonnes CO2e)**

252

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

252

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Voluntary Offsetting

## C11.3

(C11.3) Does your organization use an internal price on carbon?

No, but we anticipate doing so in the next two years

## C12. Engagement

### C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

### C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

**Type of engagement**

Information collection (understanding supplier behavior)

**Details of engagement**

Collect climate change and carbon information at least annually from suppliers

Other, please specify (Sustainability Criterion)

**% of suppliers by number**

23

**% total procurement spend (direct and indirect)**

54

**% of supplier-related Scope 3 emissions as reported in C6.5**

54

**Rationale for the coverage of your engagement**

Sustainability as a key element for supplier approval and sourcing of production material: In May 2020, ZF introduced an additional sustainability criterion as a mandatory requirement for the approval of new suppliers and for ongoing sourcing. The sustainability criterion covers the topics of climate footprint, human rights and compliance, as well as environment, health and safety (EHS). Regarding the environmental management of its suppliers, ZF also carefully reviews energy consumption, water usage, air

emissions, waste management and the handling of restricted substances and chemicals. A corresponding questionnaire was developed based on the Self-Assessment Questionnaire on CSR and Sustainability developed by the Drive Sustainability initiative. Since its introduction, all production material suppliers with an upcoming approval or sourcing case must fulfil this requirement. As part of the continuous development of our approach, ZF decided in 2021 to gradually replace its Self-Assessment Questionnaire. In future, we will request that our suppliers (production and non-production material suppliers) submit the standardized, industry-specific Self-Assessment Questionnaire (SAQ) via the global NQC platform. The use of standardized tools makes processes more efficient for ZF and its suppliers. At the same time, subcontractors get an overall impression of the Group's sustainability expectations. This makes it possible to prioritize key topics more effectively. Following a successful pilot project, our goal is to complete the rollout with approximately 2,500 suppliers by the end of 2022.

#### Impact of engagement, including measures of success

The reviewed questionnaire is a mandatory element of the new supplier approval process. It is also a mandatory deliverable for new sourcing from existing suppliers. If a supplier does not provide a completed questionnaire, if the score achieved lies below 25 percent or if the signed acceptance sheet of the ZF Business Partner Principles is not submitted, the sourcing case will not be processed. Thanks to ZF sustainability criteria for suppliers, we now have a central steering element that's a mandatory part of our sourcing process. Our next step is to intensify our monitoring of, and collaboration with, suppliers to improve our joint sustainability performance based on the NQC self-assessment questionnaire. Based on the validated answers, we can agree on a specific action plan with our suppliers and to track the progress.

#### Comment

Values include new suppliers and new sourcing from existing suppliers. The values consider production materials PM only. Non-production materials (NPM) are often one-time-buys and the overall impact and levers are low. Therefore, NPM are not prioritized yet (Share NPM < 10%). We focus on PM, where we identified high levers (Share PM > 90%). Supplier-related Scope 3 emissions as reported in C6.5 is an estimated value, based on the procurement spend share (54%).

---

#### Type of engagement

Innovation & collaboration (changing markets)

#### Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

Other, please specify (Provide training, support, and best practices on how to make credible renewable energy usage claims)

#### % of suppliers by number

100

#### % total procurement spend (direct and indirect)

100

#### % of supplier-related Scope 3 emissions as reported in C6.5

100

#### Rationale for the coverage of your engagement

ZF set a target to become climate neutral by 2040 at the latest. ZF addresses all three scopes of the GHG. The largest share of Scope 3 accounts for indirect emissions generated by purchased goods (Scope 3 "upstream") and emissions generated by ZF products in the utilization phase (Scope 3 "downstream"). To fulfil our responsibility with regard to Scope 3 emissions in line with ZF's climate neutrality strategy, we want to reduce Scope 3 GHG emissions by 40% per million-euro sales by 2030, with 2019 as the base year. To identify the supplier groups causing the largest volume of CO<sub>2</sub>e emissions and started to work with them on mitigation measures, ZF is determined to strengthen its sustainability-related activities within its supplier base. Consequently, a team for supply chain sustainability is in place within ZF Materials Management. This team, which is also part of the Group program on climate neutrality, continuously develop the decarbonization roadmap over the course of 2021 in line with the Group's 2040 target. To achieve this target, general expectations regarding carbon reduction were communicated at the digital Global Supplier Summit with the focus on sustainability topics in November 2021. Individual letters of information were also sent to each supplier by the end of 2021. ZF also continued the ZF Decarbonization Dialogues. The objective of this format is to exchange information and knowledge regarding the application of strategies, methods, and technological possibilities. The Decarbonization Dialogues are the starting point for various campaigns and concrete projects.

#### Impact of engagement, including measures of success

At ZF's Global Supplier Summit in November 2020 the expectations were shared, to be followed up by dedicated projects and initiatives from 2021 onwards. Concerning the upstream supply chain, the focus lies on: • Increasing renewable energy/electricity • Using secondary materials • Creating transparency and standardization of carbon footprint calculations • Participating in ZF Supply Chain Decarbonization Dialogue • Driving energy efficiency projects with absolute carbon reduction effects

#### Comment

As we set a ZF Scope 3 reduction target in 2021, we will be able to report progress in the following years.

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#### Type of engagement

Other, please specify (Compliance & onboarding )

#### Details of engagement

Other, please specify (Business Partner Principles - Included climate change in supplier selection / management mechanism)

#### % of suppliers by number

100

#### % total procurement spend (direct and indirect)

100

#### % of supplier-related Scope 3 emissions as reported in C6.5

100

#### Rationale for the coverage of your engagement

All new and existing suppliers are required to endorse the ZF Business Partner Principles (BPP). The BPP represent values that ZF recognizes, supports and communicates: Respecting national and international laws and regulations at the locations worldwide is considered the minimum. The BPP also conform to principles and conventions, such as the principles of the UN Global Compact, the OECD Guidelines for Multinational Enterprises, the Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights and relevant conventions of the International Labour Organization (ILO).

#### Impact of engagement, including measures of success

The BPP are guidelines specifying fundamental requirements for collaboration with ZF's business partners. They address topics such as human rights, labour standards, occupational safety and health protection, environmental protection, business ethics and compliance. A standardized process for the request and confirmation of ZF's BPP includes a tool to track the information about the current BPP status of each supplier. Acceptance of BPP is taken into consideration in supplier award decisions and in the approval process for new suppliers. ZF reserves the right to scrutinize business relationships and take appropriate action if deviations or violations are identified.

#### Comment

A reviewed version of the ZF BPP was released in 2020.



**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Run an engagement campaign to educate suppliers about climate change

Provide training, support, and best practices on how to make credible renewable energy usage claims

Other, please specify (Supplier Academy)

**% of suppliers by number**

100

**% total procurement spend (direct and indirect)**

100

**% of supplier-related Scope 3 emissions as reported in C6.5**

100

**Rationale for the coverage of your engagement**

With the Supplier Academy, ZF has created a platform to support cooperation with production materials suppliers and, at the same time, promote supplier qualification in sustainability. ZF suppliers are given the opportunity to take part in seminars held in their regions. Participation provides suppliers with in-depth training on ZF requirements and standards in the areas of environmental issues, human rights and EHS and on corresponding guidelines and procedures. A special training module on the topic of sustainability was developed in 2021. It summarizes the information already available and was supplemented to cover additional aspects such as decarbonization.

**Impact of engagement, including measures of success**

Ensuring that all our production material suppliers are aware of ZF's sustainability strategy, especially our climate targets, their impact on our target achievement and our expectation towards decarbonization.

**Comment**

The values consider production materials PM only. Non-production materials (NPM) are often one-time-buys and the overall impact and levers are low. Therefore, NPM are not prioritized yet (Share NPM < 10%). We focus on PM, where we identified high levers (Share PM >90%).

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**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Directly work with suppliers on exploring corporate renewable energy sourcing mechanisms

Other, please specify (Product Carbon Footprint Information in sourcing & award scheme)

**% of suppliers by number**

100

**% total procurement spend (direct and indirect)**

100

**% of supplier-related Scope 3 emissions as reported in C6.5**

100

**Rationale for the coverage of your engagement**

The target to become climate neutral by 2040 in all three scopes is one of the key elements in the ZF business strategy. The decarbonization of our supply chain (Scope 3 upstream) is essential to achieve this target, mainly driven by Materials Management. The implementation of the CO2e target operating model for the sourcing process of production material is a further consequential step towards the decarbonization of our supply chain. Key element of the operating model is the product carbon footprint (PCF), which will be requested from our suppliers as part of the RfQ process from January 2022 onwards.

**Impact of engagement, including measures of success**

The PCF will be introduced step by step as a mandatory element for sourcing decisions in the Sourcing Decision Board. Thus, the sourcing decision can be made on transparent PCF information.

**Comment**

The values consider production materials PM only. Non-production materials (NPM) are often one-time-buys and the overall impact and levers are low. Therefore, NPM are not prioritized yet (Share NPM < 10%). We focus on PM, where we identified high levers (Share PM >90%).

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**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Run an engagement campaign to educate suppliers about climate change

Other, please specify (Global Supplier Summit & Sustainability Award)

**% of suppliers by number**

100

**% total procurement spend (direct and indirect)**

100

**% of supplier-related Scope 3 emissions as reported in C6.5**

100

**Rationale for the coverage of your engagement**

The ZF Group's ambitious climate neutrality target has a decisive impact on the entire supply chain. This is why the annual ZF Global Supplier Summit – held in November 2021 – focused on decarbonization. At the virtual conference, ZF top management provided around 1,000 delegates from around the world with an insight into ZF's corporate strategy, new technologies and new requirements related to purchasing and logistics. One customer and four suppliers presented their decarbonization activities to demonstrate potential solutions that are already applied in practice. ZF also used the Global Supplier Summit to communicate concrete levers and expectations regarding the transparency of emissions (product carbon footprint – PCF) as well as the organizational integration of the topic at the supplier end. The corresponding specific expectations were distributed in writing to the approximately 10,000 suppliers of direct production materials.

**Impact of engagement, including measures of success**

As part of the Global Supplier Summit, eight of the approximately 60,000 suppliers worldwide received the ZF Supplier Award for their excellent performance. The

Sustainability category honoring particularly outstanding achievements in the context of decarbonization was included for the first time.

#### Comment

The values consider production materials PM only. Non production-materials (NPM) are often one-time-buys and the overall impact and levers are low. Therefore, NPM are not prioritized yet (Share NPM < 10%). We focus on PM, where we identified high levers (Share PM >90%).

#### Type of engagement

Information collection (understanding supplier behavior)

#### Details of engagement

Collect climate change and carbon information at least annually from suppliers  
Other, please specify (Activity Based Targets)

*Climate change performance is featured in supplier awards scheme*

#### % of suppliers by number

#### % total procurement spend (direct and indirect)

#### % of supplier-related Scope 3 emissions as reported in C6.5

#### Rationale for the coverage of your engagement

In 2021, we launched pilot projects for the calculation of the product carbon footprint (PCF) of products representing the key technologies in each division. Here again, we focused on exchanging information with the suppliers of these products in order to be able to calculate the PCF more precisely based on primary data. Furthermore, we launched a campaign in 2021 in order to identify the top suppliers for each commodity that make the largest contribution to ZF's carbon footprint. The next steps implemented at ZF were: 1. determining the maturity level of the suppliers with regard to the levers "share of green energy", "share of recyclates" and "energy efficiency" through a supplier query; 2. carrying out a quality-based evaluation of the feedback and comparing it with the expectations ZF communicated to its suppliers in 2020; 3. deriving action plans in case of noncompliance with ZF expectations.

#### Impact of engagement, including measures of success

Based on the insights gained, the campaign will be expanded to include the majority of ZF's production materials suppliers in the coming years. In the first half of 2022, we will focus on obtaining green electricity roadmaps from the suppliers, on evaluating these roadmaps and provide trainings. In addition, the results will also be integrated into existing materials management processes – the supplier release process and the procurement process in particular. This is to ensure that the planned roadmap for reducing Scope 3 upstream emissions supports the Group's overall target of achieving climate neutrality by 2040. Furthermore, the PCF will be introduced step by step as a mandatory element for sourcing decisions in the Sourcing Decision Board starting in 2022.

#### Comment

no further comment

#### Type of engagement

Information collection (understanding supplier behavior)

#### Details of engagement

Collect climate change and carbon information at least annually from suppliers  
Other, please specify (Bid Conditions (renewable energy))

*Climate change performance is featured in supplier awards scheme*

#### % of suppliers by number

#### % total procurement spend (direct and indirect)

#### % of supplier-related Scope 3 emissions as reported in C6.5

#### Rationale for the coverage of your engagement

To implement sustainability requirements regarding decarbonization in sourcing, bid conditions towards decarbonization were created. These sustainability minimum bid conditions are part of every new sourcing from August 2022 onwards. All suppliers need to include the listed requirements in their offer. Beside bid conditions towards the share of secondary raw material and others, one bid condition is the usage of 100% green electricity by 2025 but latest SOP.

#### Impact of engagement, including measures of success

These sustainability minimum bid conditions are part of every new sourcing from August 2022 onwards. Min. Sustainability Bid Conditions consider currently production materials PM only. Non-production materials (NPM) are often one-time-buys and the overall impact and levers are low. Therefore, NPM are not prioritized yet (Share NPM < 10%). We focus on PM, where we identified high levers (Share PM >90%).

#### Comment

no further comment

## C12.1b

### (C12.1b) Give details of your climate-related engagement strategy with your customers.

#### Type of engagement & Details of engagement

|                            |   |
|----------------------------|---|
| Collaboration & innovation | Run a campaign to encourage innovation to reduce climate change impacts |
|----------------------------|---|

#### % of customers by number

#### % of customer - related Scope 3 emissions as reported in C6.5

#### Please explain the rationale for selecting this group of customers and scope of engagement

Wind turbine gear units for the energy transition One of the cornerstones of "Next Generation Mobility" is electromobility. For the transformation to succeed, however, the expansion of renewable energy generation must be accelerated. ZF's non-automotive products are benefiting from this showing significant market growth in our wind power division outside of Europe. By 2050, the proportion of wind energy in renewables is set to increase to over 85 percent and become the biggest driver of the global energy transition – a development in which ZF is already playing a significant role even today: A quarter of all wind turbines worldwide contain a ZF Wind Power gear unit.

**Impact of engagement, including measures of success**

With two new milestones, the company has provided decisive momentum to wind power: - Cooperation lowers generation costs: ZF Wind Power and wind turbine manufacturer Vestas pooled their expertise and brought a powertrain to the market, lowering power generation costs. The EnVentus powertrain guarantees an output of up to 6 megawatts (MW). Due to the modular platform design, customers from all around the world will benefit from more flexible solutions and a wider range of customer-specific turbine varieties. - SHIFT enables best-of-breed torque density: ZF Wind Power exceeded the torque density limit of 200 Newton meters per kilogram thanks to the SHIFT 7k modular gearbox platform. This enables a material reduction and thus a decreased nacelle weight – a decisive argument when it comes to turbine towers growing ever taller.

**Type of engagement & Details of engagement**

|                            |   |
|----------------------------|---|
| Collaboration & innovation | Run a campaign to encourage innovation to reduce climate change impacts |
|----------------------------|---|

**% of customers by number**

**% of customer - related Scope 3 emissions as reported in C6.5**

**Please explain the rationale for selecting this group of customers and scope of engagement**

Electromobility on the rise ZF is working closely together with customers (OEMs) on a responsible transformation of industry according to ZF Strategy "Next Generation Mobility". The objective is to enable clean, safe, comfortable and affordable mobility for everyone, everywhere. Now the strategy is being rolled out with solutions ready for serial production in the four technology domains of electromobility, autonomous driving, vehicle motion control and integrated safety. One of the cornerstones of "Next Generation Mobility" is electromobility. Sales is promoting ZF's climate neutrality goal as well as all interim targets in all scopes to its customers. In addition to that, sales are highlighting ZF's ambitions and decarbonization requirements in the supply chain like reduction CO2 footprint, Renewable energy and secondary material targets.

**Impact of engagement, including measures of success**

ZF is expecting a considerable market shift to occur by 2030 thanks to electrification. Within a decade, the proportion of conventional engines will decrease from 90 to less than 50 percent. At a share of 40 percent, pure battery electric vehicles (BEVs) will have clearly overtaken plug-in hybrid electric vehicles (PHEVs). ZF supplies both of these driveline technologies. The development of the next generation of BEVs now amounts to a paradigm shift: It is no longer power and torque that come at the top the specification sheet – current e-vehicles possess plenty of that – but rather efficiency. And because range is the currency of efficiency, ZF is pulling out all the stops when it comes to the electro vehicle system. Overall, ZF technicians are expecting efficiency potentials of up to 13 percent thanks to combining these measures. ZF's electrification strategy enables and contributes to scope 3 downstream CO2e emission reduction. Increased energy efficiency will be achieved with next generation of electric drives. Acceleration of E-Mobility towards the "Zero E-mission" strategy. ZF announced that it will no longer develop driveline new components for pure combustion engine vehicle.

**Type of engagement & Details of engagement**

|                            |   |
|----------------------------|---|
| Collaboration & innovation | Run a campaign to encourage innovation to reduce climate change impacts |
|----------------------------|---|

**% of customers by number**

**% of customer - related Scope 3 emissions as reported in C6.5**

**Please explain the rationale for selecting this group of customers and scope of engagement**

Heavy trucks and buses: Less CO2 Leading truck manufacturers want to phase out the combustion engine by 2040. Until then, the main objective is to reduce CO2 emissions from commercial vehicles. ZF has access to all commercial vehicle segments - including heavy trucks, buses, and trailers - and can therefore make a valuable contribution. The commercial vehicle industry is facing enormous challenges. From 1991 to 2017, road haulage increased by 100 percent in Germany alone. An end to this trend is not yet in sight, but at the same time CO2 emissions and local pollution levels must be further reduced. The consequence: By 2040, the largest truck manufacturers want to phase out conventional combustion engines and focus on hydrogen fuel cells, battery technology and fuels from renewable resources. There is a particular need for action in buses and coaches: In its Clean Vehicle Directive, the EU Commission stipulates a binding quota for urban transport authorities as of August 2021 if they procure vehicles: At least 45 percent, which is almost half of the new fleet vehicles, are to feature low-emission drives. Battery-powered buses are a good solution for reducing local pollutant and noise emissions and further increasing the acceptance of local public transport, especially in city-centre line operation. China has been a pioneer in this field for years - with more than 400,000 electric buses already in 2019, representing around 99 percent of all electric buses worldwide. For three years, only electric buses have been running in the metropolitan area of Shenzhen, South China. Europe: electric buses close to a breakthrough The era of electric buses has also begun in Europe. In 2019 alone, their registration figures increased by 170.5 percent compared to the prior year. With 770 vehicles, the share of zero-emission buses in the Netherlands already accounts for 15 percent of the entire fleet. In 2020, orders from many German municipal bus companies showed that the environmentally friendly buses also made it from the pilot phase to volume production in Europe, too.

**Impact of engagement, including measures of success**

In the upcoming years, the electrically powered bus will become a standard in the EU. A development that benefits ZF. For example, the 31 battery-powered double-decker buses from the British manufacturer Optare, which have been operating the North Finchley – Tottenham Court Road in London since 2019, are equipped with ZF's AxTrax AVE electric portal axle, which is already being used in more than 4000 electric buses from various manufacturers worldwide. The CeTrax electric central drive can be easily integrated into vehicle concepts with a conventional driveline layout and is suitable for a wide range of applications in special vehicles. All-electric: from light commercial vehicles up to heavy trucks ZF's portfolio covers the entire range of electrification: from hybridized vehicles to all-electric solutions – from electric light CVs to electrified trucks. From 2023 onwards, the portfolio will include electric drives for weight classes up to 44 tons. The e-drives can be used for battery or fuel cell vehicles. Electrification also includes the trailer sector. With the technology of ZF's e-trailer drive, an electrically driven semitrailer can turn a conventional truck to which it is coupled into a hybrid vehicle, which can save up to 16 percent fuels. Promising potential: CO2 reduction for conventional drives Not only electromobility, but also light-weight and aerodynamic concepts contribute significantly to more efficiency – especially in heavy trucks. The Light-weight Future Truck with OptiFlowTM provides convincing evidence: Targeted aerodynamic measures and lightweight design concepts realize significant savings potential compared to conventional concepts. Aerodynamic improvements in the rear and side areas save 7 percent fuel and cut costs. The electronically controlled OptiLevelTM air suspension automatically regulates the trailer's ride height to reduce fuel consumption. Lightweight design alone reduces the weight of the tractor by up to 150 kilograms. Saving that can be added directly to the payload, which enhances cost-effectiveness. This is also an advantage in electrically driven trucks, as it can compensate for part of the battery weight.

**Type of engagement & Details of engagement**

|                            |   |
|----------------------------|---|
| Collaboration & innovation | Other, please specify ("Polestar 0 Project": Together to the Climate Neutral Car) |
|----------------------------|---|

**% of customers by number**

**% of customer - related Scope 3 emissions as reported in C6.5**

**Please explain the rationale for selecting this group of customers and scope of engagement**

Together to the Climate Neutral Car - ZF joins forces with industry-spanning alliance of suppliers and research institutions - Pioneering initiative aiming for a completely

climate neutral vehicle by 2030 - The entire vehicle life cycle in focus: from material procurement through production and operation to recycling Along with its partners, ZF continues to drive the decarbonization of mobility forward as the first tier 1 supplier group in the automotive industry to participate in the "Polestar 0 Project". The Swedish automaker's initiative aims to create a fully climate neutral vehicle by 2030. The main goal is to avoid emissions throughout the entire vehicle life cycle — not to compensate for them by planting trees or buying emission credits. Development of a production-ready, completely climate neutral passenger car by 2030 will begin following a preliminary development phase of just under three years. Polestar is focusing on fundamental cooperation across industries to address the net zero emissions challenge. The electric vehicle manufacturer is currently forming a collaboration between automotive industry suppliers, research institutions, start-ups, investors, governmental and non-governmental organizations. Project supports ZF's roadmap to climate neutrality ZF is one of the first and largest technology groups in the automotive industry to decide to participate. ZF's program includes all dimensions, from procuring materials to manufacturing to the complete life cycle of all our products. ZF is using its entry into the "Polestar 0 Project" as an opportunity to expand its own ecosystem of partnerships around the topic of sustainability. Working with universities, suppliers and start-ups, the group will create standards that make a measurable contribution to reducing emissions and conserving resources. To concretely contribute to the "Polestar 0 Project", ZF will initially focus on developing, sourcing, and producing electric drivetrains that aspire to meet maximal sustainability targets. As a further valuable contribution, the group is also offering its systems expertise and the most comprehensive product range in the industry, covering not only drivetrain technology but also chassis technology, as well as active and passive safety technology.

**Impact of engagement, including measures of success**

Real emission avoidance instead of compensation The "Polestar 0 Project" focuses on real emissions avoidance rather than compensation through the purchase of emission credits. It is the first overarching initiative of its kind. "We're excited to announce that ZF has expressed interest to collaborate on the Polestar 0 project. The intended collaboration will aim to find fossil-free automotive system solutions, including the end-of-life phase, to produce a climate-neutral car by 2030. Our joint research task will investigate the complete electric drive to find out which type has the potential to achieve net zero manufacturing. Our aligned strive to fossil-free solutions will enable us to explore other areas and components as we progress with the net-zero build of the car," says Thomas Ingenlath, CEO Polestar. Solutions developed as part of the "Polestar 0 Project" could have an impact far beyond the automotive sector. New, lower-emission manufacturing processes for materials such as glass, steel and aluminium could contribute to the decarbonization of further industries and correspondingly benefit society.

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C12.1d

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**(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.**

Examples:

**1. ZF relies on green steel**

ZF is working at full speed to further reduce its carbon footprint. One of the most important key levers of achieving this is the purchase of sustainably produced materials such as steel. The technology group has now concluded a long-term supply agreement with Swedish start-up H2 Green Steel. Starting 2025 through to 2032 the Scandinavian company will ramp up and supply ZF with 250,000 tons of steel annually from its production plant in northern Sweden. This accounts for ten percent of ZF's current steel requirements and will save around 475,000 tons of CO2 per year.

ZF directly and indirectly processes around 2.5 million tons of steel per year worldwide. To help achieve its CO2 reduction targets, the company has concluded an agreement with H2 Green Steel. The Swedish start-up was launched in 2021 with the aim of accelerating the decarbonization of heavy industries, starting with the steel industry through new production processes and technologies, and by using green hydrogen.

The steel will be produced in a fully integrated production process, using end-to-end digitalization, electricity from renewable energy sources and green hydrogen instead of coal. In traditional steel making, reduction of iron ore is done by heating it together with coal, utilizing a chemical reaction that separates the oxygen from the iron, forming and emitting CO2. In H2 Green Steel's production process, green hydrogen reacts with iron ore similarly to carbon, resulting in the extraction of oxygen. However, instead of creating CO2, the main by-product is water.

Starting in 2025, H2 Green Steel will ramp up to supply ZF with 250,000 tons of steel annually from its production plant in northern Sweden. This is ten percent of ZF's current steel requirements and will save around 475,000 tons of CO2 annually. The supply agreement extends to 2032.

"With the introduction of low-CO2 production processes and sustainable products, the steel industry is in the midst of a profound transformation. Innovative companies with new concepts are in demand. We are supporting this transformation through our long-term supply relationship with H2 Green Steel," says Daniele Pontarollo, Head of ZF Group-wide Materials Management. ZF is also in dialogue with other leading steel suppliers to explore opportunities for sourcing green steel.

"We believe that by working closely with sustainable suppliers, we can significantly and sustainably reduce upstream emissions. The cooperation with H2 Green Steel is an excellent example of this," says Dr. Michael Karrer, who is responsible for sustainability, environmental management and occupational safety throughout the ZF Group.

**2. ZF is partner of "ALFRIED - Automated and connected driving in logistics at the test field in Friedrichshafen"**

Inner-city goods transport and own-account transport are a challenge for the complex transport system. This traffic is often perceived as an obstacle or even a danger to other road users. Improved traffic flow can increase traffic efficiency for the safety of all road users, reduce congestion and achieve positive environmental effects for affected residents. Automated and Connected Driving (AVF) and Intelligent Transport Systems (ITS) provide solutions for this.

The aim of ALFRIED is the further development of the complex mobility system of the city of Friedrichshafen with a focus on infrastructure and smart city control center. As a medium-sized German center, Friedrichshafen offers an excellent field of application for a mobility concept that can be transferred to many cities and regions. AVF, data integration, route optimization, fault prediction and intelligent real-time information are intended to optimize inner-city goods journeys between plant locations in such a way that savings in journeys and/or the associated emissions are achieved, and the inner-city traffic volume is relieved.

The newly researched, tested and developed infrastructure components, concepts, and systems for AVF and IVS within the framework of ALFRIED contribute to problem solving. These include a sensor fusion concept for complex nodes as well as the development of intelligent guideposts for AVF in difficult driving situations. Data from vehicles, infrastructure and the surrounding area are enriched with various data sources in a digital platform and evaluated, analyzed, displayed, and optimized via the new Smart City control center. The technologies will first be tested in a demonstration environment (indoor and outdoor) and then in real traffic at the Digital Test Field Friedrichshafen, along an inner-city main traffic route, which is also a transit route and a company transport route.

Overall aim is to save journeys, reduce emissions and relieve inner-city traffic volumes. Project results may influence policy makers and may be used as basis for definition of standards and regulations. (Consortium leader: IWT Wirtschaft und Technik GmbH; [www.alfried.net](http://www.alfried.net))

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**C12.2**

**(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?**

Yes, climate-related requirements are included in our supplier contracts

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**C12.2a**

(C12.2a) Provide details of the climate-related requirements that suppliers have to meet as part of your organization's purchasing process and the compliance mechanisms in place.

**Climate-related requirement**

Purchasing renewable energy

**Description of this climate related requirement**

To implement sustainability requirements regarding the topic of decarbonization in sourcing, bid conditions towards decarbonization were created. These bid conditions are part of every new sourcing (focus on production material) from August 2022 onwards. All suppliers need to include the listed requirements in their offer. Beside bid conditions towards the share of secondary raw material and others, one bid condition is the usage of 100% green electricity by 2025 but latest SOP.

**% suppliers by procurement spend that have to comply with this climate-related requirement**

100

**% suppliers by procurement spend in compliance with this climate-related requirement**

**Mechanisms for monitoring compliance with this climate-related requirement**

Supplier self-assessment

Supplier scorecard or rating

**Response to supplier non-compliance with this climate-related requirement**

Retain and engage

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**Climate-related requirement**

Climate-related disclosure through a non-public platform

**Description of this climate related requirement**

In May 2020, ZF introduced an additional sustainability criterion as a mandatory requirement for the approval of new suppliers and for ongoing sourcing. The sustainability criterion covers the topics of climate footprint, human rights and compliance, as well as environment, health and safety (EHS). Regarding the environmental management of its suppliers, ZF also carefully reviews energy consumption, water usage, air emissions, waste management and the handling of restricted substances and chemicals. As part of the continuous development of our approach, ZF decided in 2021 to gradually replace its Self-Assessment Questionnaire. From 2023 we will request that our suppliers (production and non-production material suppliers) submit the standardized, industry-specific Self-Assessment Questionnaire (SAQ) via the global NQC platform. The use of standardized tools makes processes more efficient for ZF and its suppliers. At the same time, subcontractors get an overall impression of the Group's sustainability expectations. This makes it possible to prioritize key topics more effectively. Following a successful pilot project, our goal is to complete the rollout with approximately 2,500 suppliers by the end of 2022.

**% suppliers by procurement spend that have to comply with this climate-related requirement**

100

**% suppliers by procurement spend in compliance with this climate-related requirement**

**Mechanisms for monitoring compliance with this climate-related requirement**

Supplier self-assessment

Supplier scorecard or rating

**Response to supplier non-compliance with this climate-related requirement**

Suspend and engage

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**Climate-related requirement**

Measuring product-level emissions

**Description of this climate related requirement**

The implementation of the CO<sub>2</sub>e target operating model for the sourcing process of production material is a further consequential step towards the decarbonization of our supply chain. Key element of the operating model is the product carbon footprint (PCF), which will be requested from our suppliers as part of the RFQ process from January 2022 onwards. The PCF will be introduced step by step as a mandatory element for sourcing decisions in the Sourcing Decision Board. Thus, the sourcing decision can be made on transparent PCF information.

**% suppliers by procurement spend that have to comply with this climate-related requirement**

**% suppliers by procurement spend in compliance with this climate-related requirement**

**Mechanisms for monitoring compliance with this climate-related requirement**

Supplier scorecard or rating

**Response to supplier non-compliance with this climate-related requirement**

Retain and engage

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## C12.3

**(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?**

**Row 1**

**Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate**

Yes, we engage directly with policy makers

Yes, we engage indirectly through trade associations

Yes, we engage indirectly by funding other organizations whose activities may influence policy, law, or regulation that may significantly impact the climate

**Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?**

Yes

**Attach commitment or position statement(s)**

See Annual Report 2021 page 14ff Sustainability@ZF page 32 Our Strategy Sustainability – an essential component Sustainability is an integral part of our corporate strategy. We want to be fully climate-neutral with our company by 2040. Upstream supply chains are included in our targets as well. By 2030, we want to reduce CO2 emissions at ZF locations by 80% compared to 2019. We want to achieve this without the carbon offset instrument. Our climate targets have been evaluated and confirmed by the Science Based Targets initiative (SBTi). Sustainability, however, is more than climate protection. We want to meet the needs of the present without jeopardizing opportunities for future generations. The United Nations has defined 17 Sustainable Development Goals. These are policy objectives designed to ensure sustainable development worldwide at the economic, social, and environmental levels. ZF has identified eight of these goals to which our company can make a relevant contribution in the context of our business activities, either by minimizing impacts or by developing new technical solutions with positive effects. In our sustainability efforts, we focus on the following three dimensions: climate and nature, people, enduring values. ZF is a founding member of the World Economic Forum's (WEF) First Movers Coalition which aims to jumpstart the demand for zero-emission technologies. page 38 Sustainability page 48 Climate and Resources  
ZF\_Annual-Report\_2021.pdf

**Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy**

Our transition plan is voted on at AGMs and we also have an additional feedback mechanism in place. Sustainability is of strategic importance to ZF. We proactively assume responsibility for sustainable management in all three dimensions. Sustainability was defined as a binding target in our Next Generation Mobility corporate strategy. We will make significant investments that are required to improve our environmental performance and prepare for new regulations or customer expectations. ZF has been collecting and reporting non-financial information in detail for years and actively involves different stakeholders. Developments are recorded systematically and early on and taken into account when coping with the associated risks. In coordinating sustainability topics within the company, the sustainability department is supported by a cross-divisional and cross-functional committee. Comprised of the sustainability leads of all divisions and the most material corporate domain functions. Through the sustainability department the committee regularly reports into senior management up to the Board of management. The tasks of the sustainability department include: • Developing and implementing an appropriate sustainability strategy and monitoring progress for the ZF Group. In this endeavour, it assists the Board of Management in fulfilling its responsibility for oversight of relevant sustainability and corporate social responsibility aspects of the company. • Regularly reviewing the materiality matrix. • Drawing up an annual review of ZF's sustainability strategy. • Anchoring the top issues in the sustainability program as well as in the respective departmental strategy and management. • Regularly reviewing the appropriateness and effectiveness of ZF's strategy, targets and measures. • Providing regular progress reports on target achievements or related measures. • Monitoring external trends and requirements and recommending additional actions in response. • Within the context of risk management, identifying, assessing and managing risks associated with sustainability issues. • Reviewing and approving the annual Sustainability Report. • Coordinating the internal and external communication of sustainability – stakeholder dialogue. To gain an overview of newly arising company topics and to elaborate initial starting points for dealing with them, the steering committee may establish working groups that will then address specific tasks in depth.

**Primary reason for not engaging in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate**

<Not Applicable>

**Explain why your organization does not engage in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate**

<Not Applicable>

**C12.3a**

**(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?**

**Focus of policy, law, or regulation that may impact the climate**

Climate-related targets

Renewable energy generation

Taxes on products

**Specify the policy, law, or regulation on which your organization is engaging with policy makers**

EU Green Deal Revision of CO2 fleet targets for PassCars and LCV RePower EU Company Car taxation Germany US plug-in vehicle tax credit US Fuel Economy and emissions standards

**Policy, law, or regulation geographic coverage**

Global

**Country/region the policy, law, or regulation applies to**

<Not Applicable>

**Your organization's position on the policy, law, or regulation**

Support with minor exceptions

**Description of engagement with policy makers**

We are part of the activities of associations (CLEPA, VDA) as well as from industry groups, like the industrial renewable platform in the EU-COM. Furthermore we are in direct contacts with MPs, ministries, and EU commissioners.

**Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation**

Revision of CO2 Fleet targets: arguing for an approach that is open for technology and including renewable fuels (E-Fuels) to also decarbonize the existing fleet.

**Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

**C12.3b**



**(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.**

**Trade association**

German Automotive Association (VDA)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Environmental and climate protection regulations are the driving force behind automotive developments. Increased efficiency, recycling, and a reduction in emissions benefit both companies and consumers. Preserving natural resources is an integral part of national and European regulation. The Association represents the interests of the automotive industry and supports the regulatory processes with its viewpoints and information. <https://www.vda.de/en> Funding figure is confidential and for internal use only.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

<Not Applicable>

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

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**Trade association**

Other, please specify (VDMA German Engineering Federation e.V.)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

The engineering sector supports the climate change concept of German government with the committed reduction target in the transport sector and the activities of the national energy efficiency action plan. The federal government presented a draft of the new edition of the German sustainability strategy and invited all stakeholders to comment. The federal government adapts its strategy to the Global Agenda 2030 and to the 17 SGDs. VDMA very much welcomes this alignment. <http://www.vdma.org> Funding figure is confidential and for internal use only.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

<Not Applicable>

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

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**Trade association**

Other, please specify (CLEPA European Association of Automotive Suppliers)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Protection of the environment and the improvement of air quality are important objectives for the automotive supplier industry. From the conception to the production, suppliers strive to make their products and services ever more environmentally friendly and energy efficient. Funding figure is confidential and for internal use only.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

<Not Applicable>

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

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**C12.3c**



(C12.3c) Provide details of the funding you provided to other organizations in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.

**Type of organization**  
Other, please specify (Registered Assoziation (German: eingetragener Verein (e.V.) )

**State the organization to which you provided funding**  
Bundesverband eMobilität e.V. (BEM) (www.bem-ev.de)

**Funding figure your organization provided to this organization in the reporting year (currency as selected in C0.4)**

**Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate**  
Objectives of the BEM: Fascination & enthusiasm for a new mobility The BEM is committed to converting mobility in Germany to electromobility with the use of renewable energies in the long term. This objective is based on the Federal Government's plan to become the lead market and leading provider for electromobility by 2020. The tasks of the BEM include the improvement of the legal framework conditions for the expansion of electromobility as a sustainable and forward-looking mobility concept and the implementation of equal opportunities in the conversion to electric mobility. In order to achieve these goals, the BEM networks the actors from business, politics and the media with each other, promotes public awareness of electromobility and advocates the necessary infrastructural changes. With a view to a changing society that recognizes its social and ecological responsibility, the BEM wants to integrate the fascination for electromobility into people's everyday lives and implement it through practical experience. It is essential to face the challenges of eMobility together and increasingly in order to ensure a sustainable upswing in the entire market environment. This task requires the active participation of Germany's most innovative companies, strong personalities and the cooperative cooperation of all actors involved from science and research, business, politics, the media, associations and institutions, as well as the commitment of every single citizen who wants to work for a new mobility. Funding figure is confidential and for internal use only.

**Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?**  
Yes, we have evaluated, and it is aligned

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

**Publication**  
In voluntary sustainability report

**Status**  
Complete

**Attach the document**

**Page/Section reference**  
Please refer to ZF Annual Report 2021 - Content see pages: 13 Acting now. Sustainability@ZF 38 Sustainability 39 Sustainability Corporate Management (Governance) 48 Climate and Resources (Environment) 58 Employees, Partners and Society (Social)

**Content elements**  
Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets  
Other metrics

**Comment**  
ZF Annual Report 2021 included information about ZF's response to climate change and GHG emissions performance for the reporting year 2021. Accountability is essentially what acting sustainably is all about. Sustainability is an integral part of ZF's Next Generation Mobility strategy. Sabine Jaskula, Chief Human Resources Officer, explains in an interview how ZF intends to incorporate sustainability as a ZF unique selling proposition (see page 14).

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

|       | Board-level oversight and/or executive management-level responsibility for biodiversity-related issues | Description of oversight and objectives relating to biodiversity | Scope of board-level oversight |
|-------|--|--|--------------------------------|
| Row 1 | No, but we plan to have both within the next two years   | <Not Applicable>   | <Not Applicable>               |

C15.2

**(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?**

|       | Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity | Biodiversity-related public commitments | Initiatives endorsed |
|-------|---|---|----------------------|
| Row 1 | No, but we plan to do so within the next 2 years  | <Not Applicable>                        | <Not Applicable>     |

**C15.3**

**(C15.3) Does your organization assess the impact of its value chain on biodiversity?**

|       | Does your organization assess the impact of its value chain on biodiversity?     | Portfolio        |
|-------|--|------------------|
| Row 1 | No, but we plan to assess biodiversity-related impacts within the next two years | <Not Applicable> |

**C15.4**

**(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?**

|       | Have you taken any actions in the reporting period to progress your biodiversity-related commitments?                        | Type of action taken to progress biodiversity- related commitments |
|-------|--|--|
| Row 1 | No, we are not taking any actions to progress our biodiversity-related commitments, but we plan to within the next two years | <Not Applicable>   |

**C15.5**

**(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?**

|       | Does your organization use indicators to monitor biodiversity performance? | Indicators used to monitor biodiversity performance |
|-------|--|---|
| Row 1 | No, we do not use indicators, but plan to within the next two years        | Please select                                       |

**C15.6**

**(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

| Report type     | Content elements | Attach the document and indicate where in the document the relevant biodiversity information is located |
|-----------------|------------------|---|
| No publications | <Not Applicable> | <Not Applicable>  |

**C16. Signoff**

**C-FI**

**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

no further information

**C16.1**

**(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

|       | Job title                       | Corresponding job category       |
|-------|---------------------------------|----------------------------------|
| Row 1 | Head of Sustainability Strategy | Other, please specify (Director) |

Submit your response

**In which language are you submitting your response?**  
English

**Please confirm how your response should be handled by CDP**

|                                       | I understand that my response will be shared with all requesting stakeholders | Response permission |
|---------------------------------------|---|---------------------|
| Please select your submission options | Yes   | Public              |

The European Climate Pact Submission

**Please indicate your consent for CDP to showcase your disclosed environmental actions on the European Climate Pact website as pledges to the Pact.**  
Yes, we wish to pledge to the European Climate Pact through our CDP disclosure

**Please confirm below**  
I have read and accept the applicable Terms