

# Welcome to your CDP Climate Change Questionnaire 2019

## C0. Introduction

### C0.1

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

Bayerische Motoren Werke G. m. b. H. came into being in 1917, having been founded in 1916 as Bayerische Flugzeugwerke AG (BFW); it became Bayerische Motoren Werke Aktiengesellschaft (BMW AG) in 1918. The BMW Group has meanwhile become one of the ten largest car manufacturers in the world. With our BMW, MINI and Rolls-Royce brands, we possess three of the strongest premium brands in the automobile industry. We also command a strong market position in the motorcycle sector and operate successfully in the field of financial services. The Strategy Number ONE adopted in 2007 has put us on the right path to a successful future. Since 2007 and the introduction of Strategy Number ONE, the company has grown to a new level. We have developed successfully from being the leading manufacturer of premium vehicles to becoming the leading provider of premium mobility and services. At the same time, our environment has changed at a rapid pace. Digitalization, in particular, has brought about new technological opportunities for the automobile industry, ranging from automated driving to connectivity and automation in production. In the light of these developments, we have revised and updated our strategy for the future. We are operating from a solid basis: the BMW Group successfully combines financial strength, innovation and profitability with further growth, and we intend to pursue this path further with Strategy NUMBER ONE > NEXT. Our business model will continue to focus on sustainable individual mobility in the premium segment – combined with attractive mobility services. This means in particular the electrification of all BMW Group brands and model series. The customer is at the heart of everything we do. With our Strategy Number ONE > NEXT, we are looking ahead to the year 2025. Long-term thinking and responsible action have long been the cornerstones of our success. Striving for ecological and social sustainability along the entire value-added chain, taking full responsibility for our products and giving an unequivocal commitment to preserving resources are prime objectives firmly embedded in our corporate strategy. For these reasons, the BMW Group is the only company in the automotive sector continuously listed in the Dow Jones Sustainability Indices since 1999. Sustainability is a key component of the strategic approach to Strategy NUMBER ONE > NEXT and makes an important contribution towards our competitive edge. The sustainability strategy is consistent with the corporate strategy and pursues the thorough integration of sustainability. It applies across all board divisions worldwide. In order to keep pursuing our existing activities with the same consistency while also allowing for external developments – in particular the increasing demands due to regulatory requirements, the capital market and civil society – we began reviewing our sustainability strategy in 2018. The full details of the updated strategy are to be revealed in 2019. The updated sustainability strategy is based on the materiality analysis conducted in 2018. It consists of the following six key topics: mobility solutions, decarbonisation, environmental and social standards in the supplier network, circular economy, employees and culture as well as

responsibility and partnerships. We have set ourselves strategic sustainability goals in these key areas, which will extend through to 2030. Using a so-called “environment radar” which includes ecological and social criteria, engaging in dialogue with stakeholders, taking sustainability into account in all decisions and keeping a tight watch over the whole value-added chain are key elements of our sustainability management. Corporate sustainability measured in balanced scorecard terms (at Group level) was first included as a formal corporate objective at the beginning of 2009. Detailed targets are then derived for each of the divisions within the Group. Today, every project must be measured in terms of corporate sustainability. This involves measuring the consumption of resources and emission levels as well as the social and socio-political consequences of the various solutions at hand. As part of the process of improving the way in which we measure and manage our corporate sustainability activities, we expanded our sustainability organization already in 2009. The Sustainability Circle being part of the Structure Circle, a standard committee of the BMW Group which comprises department heads from all divisions, drafts decisions for presentation to the Sustainability Board and is responsible for implementing sustainability activities across the Group. The Sustainability Board, composed of the entire Board of Management, was set up in summer 2009 and is responsible for setting the strategic course with respect to corporate sustainability.

## 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
Row 1	January 1, 2018	December 31, 2018	No

## C0.3

**(C0.3) Select the countries/regions for which you will be supplying data.**

- Austria
- Brazil
- China
- Germany
- India
- South Africa
- Thailand
- United Kingdom of Great Britain and Northern Ireland
- United States of America

## 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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.**

Operational control

## C-T00.7/C-TS0.7

**(C-T00.7/C-TS0.7) For which transport modes will you be providing data?**

Light Duty Vehicles (LDV)

## 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
Board-level committee	The highest level of direct responsibility for climate change is the Sustainability Board (SB). It includes the full board of management. The SB is setting the strategic course for sustainability issues / climate change (CC). Like this all board members have full oversight over CC related issues to make sure that CC as core strategic driver is systematically implemented in all board divisions. The SB is part of our three level sustainability organization: The SB determines the strategic alignment for sustainability issues. The Sustainability Circle SC (senior vice president level), being part of the structure circle, is in charge of the operational implementation in the departments and reports to the SB. The senior vice presidents are responsible to reach agreed targets and report progress back to the SC. Examples for divisional targets in the area of climate change are CO2-emission reductions of the BMW Group fleet or energy- and CO2- reduction targets in BMW Group operations.

### 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	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	We selected “scheduled – all meetings” as well as all “Governance mechanisms” because it is obligatory for every submissions to the Board of Management to assess implications on sustainability issues such as resource consumption or impact on the environment. According to our vision of being the world’s most successful and sustainable premium provider of individual mobility many decisions are directly or indirectly linked to climate related issues. Sustainability is a core principle in our strategy Number ONE > NEXT and anchored in the strategic approach. When the board is reviewing and guiding our strategy as well as major plans of actions, business plans, annual budgets or overseeing major capital expenditures, acquisitions and divestitures sustainability plays a key role as part of our strategic approach. This is how the governance mechanisms contribute to the board's oversight of climate issues. As a major example we mention our heavy investments in vehicle efficiency, electrification and battery electric vehicles (BEV) to support decarbonisation as well as in Joint Ventures to support market penetration of BEVs. Energy recovery in low-voltage vehicle electricity systems is in the standard configuration since 2007. In the next few years, 48 V systems in vehicles will increase the recovery potential. We rolled out the Auto Start Stop function on a broad basis. We have the BEV BMW i3 and the 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman and the i8 as PHEV models. By 2023, we will offer a total of 25 electrified models, more than half of them pure electric. The next fully-electric models will be the MINI E (2019), BMW iX3 (2020), BMW i4 (2021) and BMW iNEXT (2021), which means from 2021 on 5 BEVs in the portfolio. The BMW iNEXT combines electric and Level 3 autonomous driving, high-end connectivity and the interior of the future in a single vehicle for the first time – thereby creating a whole new experience of mobility. By 2025, we expect electrified vehicles (BEVs + PHEVs) to account for between 15-25% of

		<p>our global sales. That is why we are relying on flexible platforms, where customers can choose their drive train (BEV, PHEV, diesel or petrol) to suit their preference. Flexibility is our strategy for ramping up electromobility, not stand alone electric platforms. All this results e.g. in the reduction of CO2 emissions of our newly sold vehicles in Europe (EU-28) by 42 % between 1995 and 2018. Until 2020 our goal is to reduce CO2-emissions by at least 50%. CO2-targets are monitored in vehicle markets to reach the increasingly strict regulatory requirements as well as our own ambitious standards. Expanding the charging infrastructure is a fundamental condition for the breakthrough of electromobility. In founding the IONITY joint venture, the BMW Group together with other OEMs is setting the course for creating a high-performance rapid charging network for electric vehicles in Europe.</p>
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## 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)	Responsibility	Frequency of reporting to the board on climate-related issues
Other C-Suite Officer, please specify Chief Development Officer, Member of the Board of Management of BMW AG, responsible for Development ☞ <sup>1</sup>	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other C-Suite Officer, please specify Chief Production Officer, Member of the Board of Management of BMW AG, responsible for Production ☞ <sup>2</sup>	Both assessing and managing climate-related risks and opportunities	Half-yearly

☞<sup>1</sup>Member of the Board of Management of BMW AG with responsibility for Development.

☞<sup>2</sup>Member of the Board of Management of BMW AG, Production

## 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).**

The answer explains (i) where in the organization the position lies, (ii) what the rational and responsibilities are and (iii) how climate change (CC) related issues are monitored.

**A. “Chief development officer”:**

(i) The Member of the Board of Management of BMW AG responsible for Development (MBoMD) leads the R&D department, He is accountable for all decisions for the R&D department, based on the strategic orientation and decision framework stipulated at Board of Management (BoM) meetings being the highest body.

(ii) The MBoMD is responsible for all the activities in the R&D department, A key issue is energy consumption and CO<sub>2</sub>-emissions of BMW Group’s worldwide vehicle fleet. Therefore, a key process entails us defining specific CO<sub>2</sub>-targets for each product line and each new vehicle project in order to achieve our strategic targets on vehicle fleet CO<sub>2</sub>-emissions as well as all regulatory requirements worldwide. Our Strategy unit is responsible for monitoring and further developing these targets.

The “Complete Vehicle Architecture” unit within the R&D department coordinates the development and implementation of fuel-saving technologies in the individual vehicle projects. This ensures that the market-specific fleet requirements are taken into consideration in the very early stages of vehicle development and are subject to Efficient Dynamics (ED) measures during the development process. Under the term ED, we have been successfully working on reducing fuel consumption and vehicle emissions through the development of highly efficient combustion engines, electrification respectively plug-in hybrid vehicles (PHEV) and battery electric vehicles (BEV) or e.g. lightweight construction. Because of the importance of the R&D department, oversight over CC related issues was assigned to the MBoMD. The top decision making bodies such as the “development circle” inside the R&D department are led by the MBoMD. Decisions binding for the R&D department are made there as e.g. efficient dynamics measures to reach the vehicle specific CO<sub>2</sub>-emission targets.

(iii) The MBoMD monitors CC related issues through the top decision making bodies described above (development circle). All technical issues and all vehicle projects as well as e.g. strategic questions about electrification or digital services are discussed there. Decisions on e.g. strategic targets on vehicle fleet CO<sub>2</sub>-emissions to be made in the BoM are analyzed technically and aligned with representatives of the corresponding departments.

**B. “Chief production officer”:**

(i) The Member of the Board of Management of BMW AG production (MBoMP) leads BMW Group Production. He is accountable for all decisions for worldwide production, based on the strategic orientation and decision framework stipulated at BoM meetings being the highest body.

(ii) We are facing the challenge of conserving resources and tackling CC, also very relevant for our production processes. We require a reliable supply of resources for the production of our vehicles, and the energy we consume generates emissions. Therefore the responsibility for CC also relies with the MBoMP. One major responsibility is the achievement of the energy and

CO<sub>2</sub>-targets for the BMW Group production network decided by the BoM. For energy efficiency our target is a 45% improvement by 2020, taking 2006 as a base year. For CO<sub>2</sub> our target is to reduce the absolute CO<sub>2</sub>-emissions in the production network by 20% between 2015 and 2020 and to purchase 100% of electricity from renewable sources by 2020. The Strategy unit is responsible for monitoring and further developing yearly targets consistent with the overall 2020 targets.

Together with the planning departments for the production technologies within the production department, the contribution for resource efficiency of the production sites respectively the technologies are defined and measures are agreed in terms of a target roadmap until 2020. In a similar way a target roadmap for CO<sub>2</sub>-efficiency and purchase of green electricity is worked out. Both have flexibilities until 2020 but are fixed for the reporting year as agreed targets.

(iii) The top decision making body for production that also monitors CC related issues is the “production circle”, led by the MBoMP. Decisions binding for production are made there as e.g. yearly targets or technical measures. As an example the target for energy efficiency in 2018 was aligned end of 2017 between the planning departments, the production sites as well as BMW Group’s Strategy unit and decided in the “production circle”. Management and control of resource consumption along with identification of potential risks for target achievement form an integral part of environmental management at our plants. The steering function of our international environmental network controls these measures. In case half year target monitoring shows deviations, counter measures are defined and decided in the “production circle” to guarantee target achievement.

## C1.3

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

Yes

### 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).**

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#### **Who is entitled to benefit from these incentives?**

Chief Executive Officer (CEO)

#### **Types of incentives**

Monetary reward

#### **Activity incentivized**

Emissions reduction target

#### **Comment**

The compensation of the CEO has two components: Fixed remuneration consists of a base salary (paid monthly) and other remuneration elements as the use of company



cars. The variable remuneration comprises variable cash remuneration and share-based remuneration components. The bonus is made up of two components, each equally weighted, namely a corporate earnings-related bonus and a personal performance-related bonus. The personal performance-related bonus is derived in terms of a performance factor. The Supervisory Board sets the performance factor on the basis of its assessment of the contribution of the CEO to sustainable and long term oriented business development. The following citation of our annual report p. 225 explains the criteria for the performance factor: "The criteria include in particular innovation (economic and ecological, for example in the reduction of carbon dioxide emissions), the Group's market position compared to its competitors, customer focus, ability to adapt, leadership, corporate culture, promotion of compliance and integrity, contribution to the Group's attractiveness as an employer, progress in implementing the diversity concept, and activities that foster corporate social responsibility."

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**Who is entitled to benefit from these incentives?**

Board/Executive board

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

The compensation of Board of Management members has two components: Fixed remuneration consists of a base salary (paid monthly) and other remuneration elements as the use of company cars. The variable remuneration comprises variable cash remuneration and share-based remuneration components. The bonus is made up of two components, each equally weighted, namely a corporate earnings-related bonus and a personal performance-related bonus. The personal performance-related bonus is derived in terms of a performance factor. The Supervisory Board sets the performance factor on the basis of its assessment of the contribution of the relevant Board of Management member to sustainable and long term oriented business development. The following citation of our annual report p. 225 explains the criteria for the performance factor: "The criteria include in particular innovation (economic and ecological, for example in the reduction of carbon dioxide emissions), the Group's market position compared to its competitors, customer focus, ability to adapt, leadership, corporate culture, promotion of compliance and integrity, contribution to the Group's attractiveness as an employer, progress in implementing the diversity concept, and activities that foster corporate social responsibility."

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**Who is entitled to benefit from these incentives?**

Executive officer

**Types of incentives**



Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

Every Board of Management member agrees with its executive officers corporate and divisional targets in terms of balanced scorecards. Examples for divisional targets in the area of climate change are: CO2-emission reductions of the BMW Group fleet; emission, waste, and energy reduction targets for each production site and for the central departments as well as targets regarding external sustainability ratings such as Dow Jones Sustainability Index, FTSE4Good Index, and Carbon Disclosure Project. Achieving these targets is directly linked to the variable income component.

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**Who is entitled to benefit from these incentives?**

Management group

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

Executive officers agree detailed targets with their respective management group. As an example Senior Vice President "Corporate Strategy and Planning, Environment", agrees with Head of sustainability and environmental protection detailed targets. Some examples are:

- Further development and implementation of the sustainability strategy in all divisions;
- Integration of objectives for the corresponding year in the objective management process for plants;
- Assurance of the target achievement concerning sustainability ratings such as Dow Jones Sustainability Index, FTSE4Good Index, and Carbon Disclosure Project;
- Organization of the implementation and maintenance of the BMW Group wide standardized environmental management system of which one element is our database Ecofacts for all environmental data;
- Support and further development of the external international sustainability network.

Another example are targets agreed between plant managers and their management group for resource efficiency (e.g. energy consumption per vehicle produced). Achieving these targets is directly linked to the variable income component

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**Who is entitled to benefit from these incentives?**

Energy manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Efficiency project

**Comment**

Energy management staff has targets corresponding to energy and CO2 emission reduction, depending on their position. These targets are linked to the variable part of their remuneration. The percentage amount in general decreases (in relation to fix parts of remuneration) with decreasing responsibility. Energy managers located in our production sites worldwide as well as in central departments have various targets corresponding to climate change. They have to meet detailed targets derived from the divisional targets measured in balanced scorecard terms (at Group level). One target is for example 45% less energy consumption per vehicle produced (2006-2020). This target is broken down to all production sites with various energy managers having their responsibilities and, respectively, their targets. Achieving these targets is directly linked to the variable income component.

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**Who is entitled to benefit from these incentives?**

Environment/Sustainability manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Efficiency target

**Comment**

Environmental and sustainability managers e.g. in our production sites have targets corresponding climate change, depending on their position. These targets are linked to the variable part of their remuneration which in general decreases (in relation to fix parts of remuneration) with decreasing responsibility. Detailed targets are derived from the divisional targets measured in balanced scorecard terms (at Group level). Examples are:

- 25% less CO2 in the fleet of new vehicles (2008-2020)
- 45% less energy consumption per vehicle produced (2006-2020)
- Targets regarding external sustainability ratings such as Dow Jones Sustainability Index, FTSE4Good Index, and Carbon Disclosure Project.

Achieving these targets and the implementation of measures are directly linked to the variable income component.

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**Who is entitled to benefit from these incentives?**

All employees

**Types of incentives**

Monetary reward

**Activity incentivized**

Efficiency project

**Comment**

The BMW Group has implemented a worldwide employee’s idea management system a long time ago. In addition to the permanently active online supported suggestion scheme campaigns have been running to specific subjects, for example energy saving measures. In 2018 about 2,600 ideas were put into practice, resulting in savings of € 30.7 million, partially resulting lower levels of energy consumption and CO2-emissions. Implemented improvement ideas result in a premium paid to the employee, which is proportional to the amount of qualitative benefits (e.g. improved air quality or ergonomics) as well as cost savings.

**Who is entitled to benefit from these incentives?**

All employees

**Types of incentives**

Recognition (non-monetary)

**Activity incentivized**

Efficiency project

**Comment**

(Sustainability and carbon saving related) Target achievement is one main criterion for the annual, individual performance appraisal and therefore does not only influence the pay out of the personal bonus but the future career of each individual as a whole.

## C2. Risks and opportunities

### C2.1

**(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.**

	From (years)	To (years)	Comment
Short-term	0	2	In line with Group’s internal management system, the outlook of BMW annuals report covers a period of one year.  Opportunities and risks are assessed in the internal risk report and in the risk report of the annual report with respect to a period including the current business year and the two following years.
Medium-term	2	6	BMW Groups corporate planning considers two time periods, the so called “Long-term planning” and the “prolonged long-term planning. Our “Long-term planning” includes the detailed planning of the next six

			years following the current business year. We understand this as medium term horizon in the sense of CDP.
Long-term	6	12	BMW Groups corporate planning considers two time periods, the so called "Long-term planning" and the "prolonged long-term planning. Our "prolonged long-term planning" includes the timespan of an additional six years. We understand this as long term horizon in the sense of CDP.

## C2.2

**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

## C2.2a

**(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.**

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	We considered our worldwide operations within the identification process of risks/opportunities driven by climate parameters. On a market level, climate change related risks and opportunities (CCR&Os) are ongoing monitored. The results of the environmental risk management process are part of the regular reporting to the board of management / supervisory board, at least twice a year and regularly for risks with significant impact. All CCR&O are reported twice a year to the Sustainability Board (SB) (full board of management). The SB makes main decisions for the mitigation and adoption strategy and its implementation throughout the entire value chain. All business decisions (e.g. new facilities) are reached after analyses of CCR&O. Evaluation of CCR&O is part of long-term planning.

## C2.2b

**(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.**

The scope of climate change risks and opportunities (CCR&O) identification and management includes BMW Group wide direct physical risks and opportunities (R&Os) as well as indirect R&Os, e.g. from regulation and changing consumer behavior.

The results of the environmental risk management process are part of the regular reporting to the board of management / supervisory board, at least twice a year and regularly for risks with significant impact. All CCR&O are reported twice a year to the Sustainability Board (SB) (full board of management). The SB makes main decisions for the mitigation and adoption strategy and its implementation throughout the entire value chain. All business decisions (e.g. new facilities) are reached after analyses of CCR&O. Evaluation of CCR&O is part of long-term planning.

**Identification at company level:**

BMW Group's process of assessing, identifying, monitoring and steering CCR&O is part of A) the enterprise risk management process (ERMP), integrated in B) the Structure/Sustainability Circle (SC) resp. Sustainability Board (SB) & part of C) the management process established to ensure the reduction of CO<sub>2</sub> emissions of BMW Group's vehicle fleet.

A) ERMP comprises early identification of R&Os, their measurement, management and monitoring in a decentralized structure. Within this internal risk management network covering all organizational levels dedicated managers are responsible for reporting and managing CCR&O. The results of the ERMP are reported to a steering committee which prioritizes R&Os (CCR&O) reported to the Board of Management.

B) In the SC tasks and measures for the climate protection strategy of the BMW Group are discussed and proposed to the SB (entire Board of management) which sets the strategic course with respect to corporate sustainability.

C) The fleet CO<sub>2</sub> strategy, corresponding targets for each vehicle project and their fulfilment are set and monitored by corporate planning, which reports directly to the Board of Management. CO<sub>2</sub> targets are refined and adjusted in line with new regulations and alterations in demand and offer of new cars.

**Identification at Asset Level:**

Assessment of CCR&Os at plant level and relevant central department units is carried out in terms of the ERMP by the responsible network managers. Audits for ISO14001, in place in all plants and relevant central units, verify our "on-site" CCR&O assessment and monitoring processes regularly.

**Assessment of substantive financial impacts:**

Risk/opportunity is defined as any event which might occur with a certain probability that could have a negative/positive impact on the achievement of targets. Main targets are: Growth, profitability, efficiency and sustainable levels of business. Materiality for prioritization is measured as amount of risk (average negative impact on earnings), including climate change related risks, for profit/loss and cash flow as well as image/reputation by the magnitude of impact and likelihood of occurrence. The amount of risks is classified as low (0-50 Mio. €),

medium (>50-400 Mio. €) and high (>400 Mio. €). Risks with potential substantial financial impact are those with medium and high risk amounts. CCR&Os are allocated to categories (regulatory, reputational, shifts in customer demand, operational, physical). Risk catalogues help the risk management network representatives to reflect/categorize and aggregate all CCR&Os. All locations (plants, logistic issues etc.) are considered as well as risks in the supply chain. Important weather related risks considered are flooding, tornados, hail or interruption of supply chains due to climate changes/ availability of water. Assessment, evaluation and prioritization of CCR&Os is supported by a team of risk/insurance managers and external expertise (e.g. Allianz, Munich Re). Physical risks are covered by insurances and are part of the annual reassessment with our insurance companies. Risks reported to the centralized risk management from the network are aggregated/prioritized and reported to the board of management/supervisory board. In strategic planning material short to LONG TERM CCR&Os are reflected.

## C2.2c

**(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?**

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<p>Relevance: Climate-related risks from current regulation are generally relevant for BMW Group and the Automotive Industry as a whole. More specifically, the tightening of current climate-related regulation can include risks for BMW.</p> <p>Company specific: A company specific example is the introduction of increased taxation schemes. Taxation is directly related to the total cost of ownership (TCO) for the customer. If the vehicles of a car manufacturer are especially negatively affected by an increased taxation scheme this will impact the purchase decision. The risks are sector specific, but possess an increased risk level for the BMW Group as premium car manufacturer (e.g. cars with larger engine sizes). E.g. in the French bonus/malus taxation scheme the values increased again in 2018 when compared to 2017 (e.g. the malus for a vehicle emitting more than 185 g CO2/km increased from 10,000 € in 2017 to 10.500€ in 2018). Another example is that a couple of EU-markets focus their incentives on BEV and no longer on PHEVs (e.g. France, UK) with potential negative impact on our future PHEV sales (2018: 107,788PHEV worldwide). In a similar way nearly all of our worldwide passenger car sales are affected by emission taxation and regulation schemes. If they are changed with negative impacts on sales figures as this could e.g. be the case for our PHEV offers it might result in a decrease in sales</p>

		<p>volume. Consequently benefits on continental or national levels might drop, resulting in an impact on the overall annual result. E.g., a drop in sales of 1% might have an estimated impact between 150 and 250 Mio. € Gross profit, depending on the models affected.</p> <p>Inclusion:                  BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “current regulation” are included in the risk categories “external/global environment; new regulations” for tightening of current regulation or “product development and manufacturing; product introduction” if current regulation exposes risks in the homologation and production of vehicles.</p>
<p>Emerging regulation</p>	<p>Relevant, always included</p>	<p>Relevance:                  Climate-related risks from emerging regulation are generally relevant for BMW Group and the Automotive Industry as a whole.</p> <p>Specific example:                  The introduction of new climate-related regulation, mostly for CO2 or local emissions can include risks for BMW. For example, local restrictions affecting product usage in specific sectors may limit our sales in individual markets.                  More specifically we face risks as provider of premium mobility. Regulators could propose uneven load distribution to meet regional fleet targets. At the same time BMW Group as premium manufacturer has to meet high quality and comfort demands of their customers. A deciding factor in achieving e.g. a post 2021 target of EU28 is the success of e-mobility. However, the framework conditions have not yet been solidified in the majorities of states and cities. The uncertainty of regulations regarding incentives for the accelerated introduction of alternative drive vehicles and the available charging infrastructure have major influence on the volatility of the e-mobility business case. The development of market shares for battery electric and plug-in hybrid electric vehicles are not yet easily predicted. The uncertainty about stronger limits in the future and the possibility of low emission zones with stricter limits constitutes a risk. This may affect local demand for our vehicles and hence have a negative impact on sales, margins and, possibly, the residual value of these vehicles. E.g. a drop in sales of 1% might have an estimated impact between 150 and 250 Mio. € Gross profit, depending on the models affected.</p> <p>Inclusion:</p>



		<p>BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in BMW Groups risk management process. In the internal risk catalogue climate-related risks of “emerging regulation” are included in the risk categories “external/global environment; new regulations” for new regulation which limit the use of BMW Group vehicles or “product development and manufacturing; product introduction” if emerging regulation exposes risks in the homologation and production of vehicles.</p>
Technology	Relevant, always included	<p>Relevance: Climate-related risks from Technology are generally relevant for BMW Group and the Automotive Industry as a whole.</p> <p>Specific example: Climate change (CC) is a driving force for transformation of the automotive industry. Electrification is a priority area in BMW Groups Strategy NUMBER ONE &gt; NEXT, which provides us with a strategic roadmap up to 2025. We are closely monitoring technological improvements, in particular in the development of battery cells. A potential risk could be that competitors gain a competitive advantage by finding better technology solutions. Further risk could emerge from the complexity of such new technologies and its handling which could lead to increased development/quality costs. However, BMW Group has introduced the i3 already in 2013, a battery electric vehicle (BEV), followed by the i8 in 2014, a plug-in hybrid electric vehicle (PHEV) and gained comprehensive technical knowledge. We sold in 2018 142,617 BEVs and PHEVs, about 6% of our total sales volume, and are e.g. market leader in Europe.</p> <p>Due to our strong position in electro mobility and corresponding technologies we see CC driven technological changes as an opportunity rather than a risk. To sustain our leading role we concentrate all our technological expertise relating to battery cells at a new competence center. This interdisciplinary competence center aims to advance battery cell technology and introduce it into production processes. The company will invest a total of 200 million euros in the location until 2020, International experts working in the new development labs and facilities will conduct important research to refine cell chemistry and cell design.</p> <p>Inclusion: BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are</p>

		<p>assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “technology” are included in the risk category “product development and manufacturing” for risks in the homologation process and necessary changes for the production planning of vehicles.</p>
<p>Legal</p>	<p>Relevant, always included</p>	<p>Relevance:                      Climate-related legal risks are generally relevant for BMW Group and the Automotive Industry as a whole. Potential risks in that category are related to compliance with the law - a basic prerequisite for the success of the BMW Group. Applicable law provides the binding framework for the BMW Group’s worldwide activities. As a result of its global operations, the BMW Group is exposed to various legal risks, including those related to climate-related regulations.</p> <p>Specific example:                      A Compliance Management System is in place at BMW Group to ensure that the representative bodies, managers and staff consistently act in a lawful manner.                      A company specific example for this risk type related to climate change is the discussion around diesel engine exhaust emissions and its future. Since 2015, the discussion has led to ongoing criticism of the automotive industry, especially in Europe and the USA. In the course of this discussion, the impression was often created that almost all manufacturers had manipulated exhaust values. At the BMW Group, there are no activities or technical provisions that influence the test mode for recording emissions. The BMW Group has corresponding Compliance Management Systems to ensure that legal requirements are met and risks e.g. from legal prosecutions related to individual or organizational misbehavior towards emissions regulations are minimized. Our personal expenses (12,479 million € in 2018) cover many full time employees being part of our worldwide compliance system.                      We believe modern diesel cars continue to have a future. Diesel engines emit 15% less CO2 on average than petrol engines. Therefore diesel engines can make an important contribution towards achieving national and international CO2 reduction goals.</p> <p>Inclusion:                      BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “legal” are included in the risk category “litigations and contractual or</p>

		compliance cooperation's violation".
Market	Relevant, always included	<p>Relevance: Climate-related market risks are generally relevant for BMW Group and the Automotive Industry as a whole.</p> <p>Specific example: More specifically changes in customer Behavior, which can also be brought about by changes in attitudes, values, environmental factors and fuel or energy prices or political and public discussions can pose risks to BMW Group. A company specific example is around the political and public discussion on diesel engines. In the course of this discussion, the impression was often created that almost all manufacturers had manipulated exhaust values. At the BMW Group, there are no activities or technical provisions that influence the test mode for recording emissions. We believe modern diesel cars continue to have a future. Diesel engines emit 15% less CO2 on average than petrol engines. Modern Euro 6 diesel vehicles and further electrification will be crucial in achieving national and international CO2 reduction goals. However, the discussions caused considerable uncertainty among customers and therefore adversely affects demand for diesel vehicles. BMW and MINI diesel sales were declining as of December 2018: in Germany, sales decreased by 5% year-on-year, by 16% in Europe, and by 16% worldwide. Over the same period, sales of electrified drive trains increased in Germany by 27%, in Europe by 20% and worldwide by 38%.</p> <p>Inclusion: BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of "market" are included in the risk category "customer (market, after sales and product related services)".</p>
Reputation	Relevant, always included	<p>Relevance: Climate-related reputation risks are generally relevant for BMW Group and the Automotive Industry as a whole. Climate-related reputation risks are often closely linked to other climate-related risks.</p> <p>Specific example: Introduction of new climate-related regulation, mostly for CO2 or local emissions, can induce reputation risks specific for the BMW Group as premium manufacturer. We have to meet high quality and comfort demands of our customers. Regulators could propose uneven load</p>

		<p>distributions to meet regional fleet targets. If we would not be able to comply with CO2-emission targets as e.g. post 2021 EU28 CO2-emission targets (about 39% of our total sales in 2018) we could face negative press with corresponding negative impact on our reputation and customer churn in addition to potential penalties. Consequently benefits on continental or national levels might drop, resulting in an impact on the overall annual result. E.g., a drop in sales of 1% might have an estimated impact between 150 and 250 Mio. € Gross profit, depending on the models affected.</p> <p>However, BMW Group increases continuously the CO2 efficiency of its vehicles. Since 2007 BMW Group's Efficient Dynamics (ED) is a comprehensive technologic approach. It includes efficient dynamics technologies such as highly-efficient automobiles with gradually refined combustion engines, lightweight construction, improved aerodynamics and coordinated energy management as well as Plug-in hybrids and battery electric vehicles.</p> <p>Inclusion: BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process including their reputational effects. Additional to financial risks, significant reputational risks (including those stemming from financial risks) are reported at least twice a year to the risk management steering committee and the board of management. These include risks related to climate.</p>
Acute physical	Relevant, always included	<p>Relevance: Acute climate-related physical risks are generally relevant for BMW Group and the Automotive Industry as a whole. Especially if the number of natural catastrophes rises, BMW Group could be affected both on the demand and production side.</p> <p>Specific example: On the one hand natural disasters could have a lasting negative impact on the global economy and international capital markets. As another example related production stoppages and downtimes represent risks which the BMW Group addresses through appropriate precautions. These risks vary widely with the degree of damage. E.g. a tornado could damage the BMW Group plant Spartanburg (USA) and cause a breakdown of production up to 12 months. This would represent a damage in the amount of up to 8 billion €. However, due to our flexible production system we can shift volumes between plants and/or we can catch up lost volumes in the affected plant itself. In combination with our worldwide insurance solution possible financial</p>

		<p>implications can be reduced to a large extend.</p> <p>Inclusion:                      BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “acute physical” are included in the risk category “external/global environment; environment; natural risks”.</p>
Chronic physical	Relevant, always included	<p>Relevance:                      Chronic climate-related physical risks are generally relevant for BMW Group and the Automotive Industry as a whole. If economic and living conditions worsen, e.g. through water shortages, BMW Group could be affected both on the demand and production side.</p> <p>Specific example:                      On the one hand worsening living and economic conditions and potential international conflicts arising out of consequential migration movements could have a lasting negative impact on the global economy and international capital markets. As another example production stoppages and downtimes e.g. due to water shortages represent risk, even though BMW Group production sites are planned accordingly to avoid such risks.</p> <p>These risks vary widely with the interruption duration. E.g. a one week breakdown of production of our Rosslyn site (South Africa) located in a region with water stress could lead to an estimated impact between 10 and 15 Mio. € Gross profit (inherent risk before mitigation). However, due to our flexible production system we can shift volumes between plants and/or we can catch up lost volumes in the affected plant itself. In combination with our worldwide insurance solution possible financial implications can be reduced to almost zero.</p> <p>Inclusion:                      BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “chronic physical” are included in the risk category “external/global environment; environment; natural risks”.</p>
Upstream	Relevant, always included	<p>Relevance:                      Climate-related upstream risks are generally relevant for BMW Group and the Automotive Industry as a whole. Close cooperation between</p>

		<p>carmakers and suppliers in the development and production of vehicles and the provision of services generates economic benefits, but also increased dependency.</p> <p>Company specific: Potential reasons for the failure of individual suppliers include in particular non-compliance with sustainability or quality standards, the occurrence of natural hazards, fires and insufficient supply of raw materials. These examples could potentially lead to e.g. production stoppages and downtimes. Changes in physical climate parameters could e.g. induce changes in the availability of resources. The price of water and energy could increase. If the risk materializes via suppliers, e.g. the energy costs in the whole BMW Group supply chains could in average increase in the magnitude of 2-5%, this would represent an increase of purchasing costs of up to 200 million €.</p> <p>Inclusion: BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “upstream” are included in the risk category “product development and manufacturing; procurement / purchasing /foreign production”.</p>
Downstream	Relevant, always included	<p>Relevance: Climate-related downstream risks are generally relevant for BMW Group and the Automotive Industry as a whole.</p> <p>Company specific: For example a risk type that affect the use of BMW Group vehicles is the trend to switch to mobility services instead of owning own vehicles, especially in urban areas. BMW monitors this downstream risk closely. In fact we see this more as an opportunity. We already have introduced e.g. our car sharing services DriveNow and ReachNow. By 31 December 2018, the DriveNow car-sharing service had 1,175,000 customers across Europe (2017: 1,026,000). Our ReachNow service in the USA counted more than 103,000 customers by the end of the year (2017: 82,000). The fleet of DriveNow comprises more than 6,500 vehicles in Europe, of which around 15% are purely electric BMW i3 vehicles. More than 1,000 vehicles are available in the USA. In fact DriveNow is one of the strongest drivers of electro mobility e.g. in Germany. To date, around 420,000 customers have driven some 29.6 million carbon-free kilometers using DriveNow’s BMW i3 electric vehicles.</p>

		<p>Inclusion:          BMW Risk Management uses a comprehensive risk catalogue with experts of the risk categories responsible for validation of their risk categories. The risk catalogue also covers potential climate related risks and thus ensures that significant climate related risks are assessed, reported and validated in the BMW Group risk management process. In the internal risk catalogue climate-related risks of “downstream” are mostly included in the risk category “external/global environment; new regulations”.</p>
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## C2.2d

### (C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Key climate change risks and opportunities (CCR&O), core to our business model, are related to products and services and production. Car manufacturers are in a transition phase. Worldwide inhomogeneous CO<sub>2</sub>-emission regulations are implemented and challenge car manufactures to adapt their products to meet these standards and at the same time clients' needs. Opportunities arise for new products such as PHEVs/BEVs or services. For production a major risk could arise from weather extremes such as extreme temperatures that could cause interruptions, e.g. due to water scarcity.

#### Risk & opportunity management processes:

To mitigate **transitional risks** from regulation or leverage opportunities for new products, e.g. from upcoming regulations or shift in consumer preferences, BMW Group's Strategy unit is responsible for monitoring and further developing targets on vehicle fleet CO<sub>2</sub>-emissions to meet all regulatory requirements worldwide as well as to shape transformation with attractive, electrified products and innovative mobility services. These targets and corresponding measures together with an assessment of financial implications are aligned within the affected departments and discussed in the “product circle” (senior vice president level) and then brought to the board of management as highest body for decision. The “Complete Vehicle Architecture” unit within the R&D department coordinates the development and implementation of fuel-saving technologies in the individual vehicle projects to achieve the CO<sub>2</sub>-targets and to leverage business opportunities with new products and services. For example a result of this management process the X3 BEV was decided to be introduced in 2020 followed in 2021 by the iNEXT, our new technology flagship, as well as a vehicle portfolio incorporating 25 electrified models (more than half fully electric) in 2023.

For production **a major physical risk could** arise from weather extremes such as extreme temperatures that could cause interruptions, e.g. due to water scarcity. To mitigate production risks and leverage opportunities BMW Group's Strategy unit is developing measures with affected departments. Those are considered by the Sustainability Committee being part of the structure circle (senior vice president level). Resulting strategic options and measures are put forward to the Sustainability Board for decision, which comprises the entire Board of Management. Specific examples are targets for resource efficiency (e.g. a 45% reduction in



energy or water consumption from 2006 to 2020), targets for the use of renewable energies or implementation of environmental management systems in all sites worldwide.

Similar **physical risks** could arise in BMW Groups supply chain. Due to our global supplier network (about 4500 Tier 1 suppliers of production material and an exponentially increasing number of Tier n suppliers) supply shortages could arise in several regions worldwide and affect BMW Group sites. We apply a three step risk management and mitigation approach. 1. Identification and analysis of locations of potential high-risk suppliers using a risk filter (and further tools), media screening and an industry-wide questionnaire. 2. Execution of audits and assessments on the basis of the results of the industry-wide questionnaire as well as agreement on corrective measures (e.g. in case potential production material suppliers have not already implemented a certified environmental management system). 3. Review and certification of selected supplier locations using the industry-wide sustainability questionnaire, independent sustainability audits or BMW Group sustainability assessments, supplier training as well as performance monitoring of /engagement with key suppliers/supply chains (e.g. through CDPs supply chain program).

## 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.**

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#### Identifier

Risk 1

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

Customer

#### Risk type

Transition risk

#### Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

#### Type of financial impact

Increased costs and/or reduced demand for products and services resulting from fines and judgments

#### Company- specific description

i) General Description: Emission regulations (e.g. EU28, USA or China) are implemented and challenge car manufactures to adapt their products to meet these

standards (lower emission figures) over time, e.g. the EU CO<sub>2</sub>-Regulation demands a value of 95 gCO<sub>2</sub>/km for the year 2021. Further, the trend towards megacities and the overall traffic and emission situation within those cities will probably lead to a growing number of low emission zones in urban areas, in which only vehicles, that meet strict emission requirements, will be allowed to enter. For car manufacturers these regulatory risks may inhibit the need for significant short-term investments to avoid risks such as payments of penalties or effects on local demand for the BMW Group vehicles up to loss of allowances to offer individual mobility at all (strict emissions zones), with negative impact on sales or margins of these vehicles.

(ii) Company specific: The risks from air pollution limits exist for all members of the automotive sector. BMW Group faces risks as provider of premium mobility: Regulators (e.g. in EU, USA, China) could propose uneven reduction requirements to meet regional fleet targets. BMW Group as premium manufacturer has to meet high quality and comfort demands of their customers. To achieve e.g. the 95g/km target of EU28 we need a significant share of electrified vehicles. However, the framework conditions for e-mobility have not yet been solidified in the majorities of states and cities. The uncertainty of regulations regarding incentives for the accelerated introduction of alternative drive vehicles (granting super credits for fleet limits, user benefits in urban areas, taxation etc.) and the available charging infrastructure have major influence on the volatility of the e-mobility business case and vehicle sales. Furthermore short term regulatory changes against our expectations such as tightened emission limits or introduction of new low emission or prohibited zones could reduce the product portfolio in some world regions offered to customers. Those effects entail the risk of a decline in vehicle sales and margins.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

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

Yes, an estimated range

**Potential financial impact figure (currency)**

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

150,000,000

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

250,000,000

**Explanation of financial impact figure**

Nearly all of our worldwide passenger car sales are affected by emission taxation and regulation. If the taxation or regulation is changed on a short notice (1-2 years)

adversely to expectations it might result in a decrease of sales volume. Consequently benefits on continental or national levels might drop, resulting in an impact on the overall annual result. E.g., a drop in sales of 1% might have an estimated impact between 150 and 250 Mio. € Gross profit, depending on the models affected.

### Management method

Methods) In order to cope with regulations BMW Group invests into R&D to increase CO<sub>2</sub>-efficiency. CO<sub>2</sub> management is included in the corporate strategy (target setting, monitoring) and the product development process.

Regulations are monitored on a regular basis. We anticipate uncertainty in future taxation systems by increasing the CO<sub>2</sub> efficiency of our vehicles. BMW Group's Efficient Dynamics (ED) is a comprehensive technologic approach. It includes efficient dynamics technologies (e.g. gradually refined combustion engines) as well as PHEVs and BEVs.

Examples) We invested major budgets in CO<sub>2</sub>-reduction ED technologies each year. Actually (2018) 48V systems are under development which will in coming years lead to CO<sub>2</sub> reductions in vehicles of 5 to 7%. We invest a significant share of the R&D expenditure in PHEVs/BEVs. Our portfolio will contain 25 electric vehicles in 2023, more than half being BEVs. Our target for 2019 is to have half a million BMW Group BEVs/PHEVs on the road. In 2018 we launched e.g. the PHEV version of the BMW long wheel base 5 series in China or worked on the BEV version of the MINI or the BMW X3. E.g. in EU28 we reduced fleet CO<sub>2</sub>-emissions by 42% between 1995 and 2018.

Cost calculation) Cost of management is set equal to R&D expenditures in 2018 (6.89 billion €). Due to competitive advantage issues we are not able to give here exact numbers but state that ED technologies / electrification took a significant share of the 2018 R&D expenditure.

### Cost of management

6,890,000,000

### Comment

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#### Identifier

Risk 2

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

Customer

#### Risk type

Transition risk

#### Primary climate-related risk driver

Market: Other

#### Type of financial impact

Reduced demand for goods and/or services due to shift in consumer preferences

### Company- specific description

(i) General Description: Additional regulations focus on the taxation of the vehicles in the markets. Taxation is directly related to the total cost of ownership (TCO) for the customer. If the vehicles of a car manufacturer are especially negatively affected by an increased taxation scheme this will impact the purchase decision.

The primary market risk driver is therefore a CO<sub>2</sub>-regulation induced customer preference.

(ii) Company Specific: The risks are sector specific, but possess an increased risk level for the BMW Group as premium car manufacturer (e.g. cars with larger engine sizes). If the BMW Group products are negatively affected by an increased taxation scheme this will impact the purchase decision. Examples for the BMW Group on vehicle level: the values of the French bonus/malus scheme valid in 2018 increased again when compared to previous years (e.g. the malus for a vehicle emitting more than 185 g CO<sub>2</sub>/km increased from 10.000 € in 2017 to 10.500€ in 2018). For the future we expect further tightening of such systems. A couple of EU-markets focus their incentives on BEV and no longer on PHEVs (e.g. France, UK). A concrete example is the UK Plug-in grant has been removed in October 2018, leading to a noticeable decrease in PHEV sales in this market. For the BMW Group the compliance with existing legislation and regulation is a basic requirement for the sale of vehicles and profitability of the company. The BMW Group specific risks regarding emission regulation have been minimized by BMW Groups anticipation of future limits and the implementation in the Efficient Dynamics strategy. This resulted in the actual product portfolio with highly efficient vehicles in the premium segment. Nevertheless the uncertainty about future tax schemes negatively affecting the BMW Group portfolio constitutes a risk to the BMW Group.

### Time horizon

Short-term

### Likelihood

Likely

### Magnitude of impact

Medium-low

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

Yes, an estimated range

### Potential financial impact figure (currency)

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

150,000,000

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

250,000,000

### Explanation of financial impact figure

Nearly all of our worldwide vehicle sales are affected by emission taxation / regulation. If taxation is changed on a short notice (1-2 years) adversely to expectations it might result in a decrease of sales volume. Consequently benefits on continental or national levels might drop, resulting in an impact on the overall annual result. E.g., a drop in sales of 1% might have an estimated impact between 150 and 250 Mio. € Gross profit, depending on the models affected.

### Management method

Methods) In order to cope with taxation schemes we invest into R&D to increase CO<sub>2</sub>-efficiency. CO<sub>2</sub> management is included in the corporate strategy (target setting, monitoring) and the product development process. Taxations are monitored on a regular basis. We anticipate uncertainty in future taxation systems by increasing the CO<sub>2</sub> efficiency of our vehicles. BMW Group's Efficient Dynamics (ED) is a comprehensive technologic approach. It includes efficient dynamics technologies (e.g. gradually refined combustion engines) as well as Plug-in hybrids and battery electric vehicles.

Examples) We invested major budgets in CO<sub>2</sub>-reduction ED technologies each year. Actually (2018) 48V systems are under development which will in coming years lead to CO<sub>2</sub> reductions in vehicles of 5 to 7%. We invest a significant share of the R&D expenditure in PHEVs/BEVs. Our portfolio will contain 25 electric vehicles in 2023, more than half being BEVs. Our target for 2019 is to have half a million BEVs/PHEVs on the road. In 2018 we launched e.g. the PHEV version of the BMW long wheel base 5 series in China or worked on the BEV version of the MINI. E.g. in EU28 we reduced fleet CO<sub>2</sub>-emissions by 42% between 1995 and 2018.

Cost calculation) Cost of management is set equal to R&D expenditures in 2018 (6.89 billion €). Due to competitive advantage issues we are not able to give here exact numbers but state that ED technologies / electrification took a significant share of the 2018 R&D expenditure.

### Cost of management

6,890,000,000

### Comment

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#### Identifier

Risk 3

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

Direct operations

#### Risk type

Physical risk

#### Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

**Type of financial impact**

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

**Company- specific description**

(i) Clear Description: Climate change causes a higher frequency of temperature extremes and extreme weather events (e.g. floods, hail, tornados and hurricanes). Those extremes may lead to damaged production sites, damaged transportation infrastructure or disruptions in production capacity due to affected energy structures or shortages in energy or water availabilities.

(ii) Specific: Production sites of BMW Group in vulnerable regions are affected. This is for example of particular concern for the production sites in the USA (South Carolina), South Africa, India or Brazil as well as partner plants, e.g. in Egypt, Malaysia and Vietnam (e.g. temperature extremes and extreme dryness). These sites represent about 20% of the total BMW Group vehicle production volume. The BMW Group faced several damages due to extreme weather events in the last years. In succession BMW was under pressure to reproduce the ordered vehicles. A feasibility study was carried out for evaluation of natural risks (including extreme weather events) regarding all BMW productions sites worldwide. For example our production site in Spartanburg (U.S.) could be particularly affected by the higher frequency of tornados.

**Time horizon**

Short-term

**Likelihood**

Very unlikely

**Magnitude of impact**

High

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

Yes, an estimated range

**Potential financial impact figure (currency)**

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

0

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

8,000,000,000

**Explanation of financial impact figure**

These vary widely with the degree of damage. E.g. a tornado could damage plant Spartanburg (USA) and cause a breakdown of production up to 12 months. Depending on the damage lost revenue would be between 0 and 8 billion €. However, due to our flexible production system we can shift volumes between plants and/or we can catch up

lost volumes in the affected plant itself. In combination with our worldwide insurance solution possible financial implications can be reduced to a large extend.

### **Management method**

Methods) BMW Group uses a tailor-made natural catastrophes risk analysis tool. Depending on individual vulnerability, exact geographical position and elevation all relative risks (in %) are analyzed for hazards like flood, storm, extreme temperatures etc. Each existing & new location is analyzed and mitigation measures are taken. Insurances cover relevant remaining risks. Complementary we increase energy or water efficiency in our production network to increase resource independency.

Examples) Specific analyzing tools include a site selection tool. All results are considered for choosing new locations and defining mitigation measures. Vulnerability to direct physical climate risks are evaluated at 100% of production sites & preparedness plans exist. E.g. in the planning of our new plants in Brazil and Mexico, risks of flooding after hard rain are included. E.g., for Spartanburg, a plan to minimize damages in case of extreme weathers exists (e.g. removal of vehicles from danger zones). For remaining risks tailor-made insurance contracts covering risks at our locations worldwide. Furthermore since 2006 we reduced energy consumption per vehicle produced by 38.0% and water consumption by 26.7%.

Cost calculation) Insurance premiums for our locations including the production facilities and supply chain interruptions were below 40 Mio. € (2018). Tool development and personnel costs of risk engineers made several 100,000 €. Resource efficiency investments were 161 million €.

### **Cost of management**

200,000,000

### **Comment**

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### **Identifier**

Risk 4

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

Supply chain

### **Risk type**

Physical risk

### **Primary climate-related risk driver**

Acute: Increased severity of extreme weather events such as cyclones and floods

### **Type of financial impact**



Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

**Company- specific description**

(i) Clear Description: Climate change causes a higher frequency of temperature extremes and extreme weather events (e.g. floods, hail and hurricanes). Those extremes may lead to damaged supply plants, which in turn may lead to supply chain interruptions and thus shortages in supply for BMW Group.

(ii) Specific: BMW's supply chain in vulnerable regions is affected by changes in physical climate parameters. BMW Group production sites are supplied with production materials from local suppliers as well as from suppliers located all over the world. E.g. local suppliers of our site in Spartanburg (South Carolina) could be affected by a tornado with corresponding interruptions in material supply. In a similar way other sites in the BMW Group production network could be affected by supply chain interruptions from suppliers located in vulnerable regions of the world.

Depending on the importance and substitutability of a certain component, malfunctions of the supply chain for a single part can lead to failures or even loss of production at BMW production sites. Similar to the events in Japan in 2011, incidents induced by climate change can lead to immense shortfalls of supply. As potential consequence operation of one or more BMW Group production sites must stop, e.g. one week breakdown could have a negative impact of up to 500 Mio. € Gross profit.

**Time horizon**

Short-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium-low

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

500,000,000

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

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

**Explanation of financial impact figure**

Climate change causes a higher frequency of temperature extremes and extreme weather events (e.g. draughts, floods) which could lead to supply chain interruptions. As

potential consequence operation of all BMW Group production sites must stop, e.g. one week breakdown could have a negative impact of up to 500 Mio. € Gross profit.

### Management method

Methods) BMW Group uses a tailor-made natural catastrophes risk analysis tool to evaluate supplier sites. Risks are analyzed for hazards like flood, storm etc. On basis of individual risk parameters each (own and supplier) location worldwide can be analyzed. A clear internal process was introduced. Fall backs and contingency plans have been developed. Insurances cover relevant remaining risks.

Examples) Specific analyzing tools are used, e.g. a site selection tool. All results are considered for choosing specific suppliers /supplier locations and to define mitigation measures with suppliers. To minimize shortages suppliers production locations are considered before nomination. We developed fall back and contingency plans in case of a shortfall of critical parts. Flexible production structures allow us to respond to business interruptions caused by physical climate drivers. E.g. if the X3 production in Spartanburg (USA) would be shut down due to a local supplier we can e.g. shift volumes to plant Rosslyn (South Africa) or Shenyang (China)..

Tailor- made "state-of-the-art" insurance contracts cover known remaining risks for interruptions of the supply chain.

Cost calculation) Insurance premiums for supply chain interruptions and BMW Group locations including the production facilities were below 40 Mio. €. Some FTEs analyze & manage supply chain risks from climate change (about 1 Mio. € personnel costs).

### Cost of management

40,000,000

### Comment

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#### Identifier

Risk 5

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

Supply chain

#### Risk type

Physical risk

#### Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

#### Type of financial impact

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

### **Company- specific description**

(i) Clear Description: Changes in physical climate parameters can induce changes in natural resources and therefore the availability of input materials.

(ii) Specific: The availability of input materials for BMW's suppliers such as water and energy can decrease. As a consequence, the price for these goods could rise and impose additional costs to BMW's suppliers and in consequence to BMW Group. Energy is a significant input factor for BMW Groups supply chain. Life cycle assessments show that the energy needs in the whole BMW Group supply chain for vehicle production are about 80,000,000 MWh in 2018. If the energy costs increase e.g. in average by 5% in the whole supply chain, additional costs could be up to 200 million €.

### **Time horizon**

Short-term

### **Likelihood**

About as likely as not

### **Magnitude of impact**

Medium-low

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

Yes, a single figure estimate

### **Potential financial impact figure (currency)**

200,000,000

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

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

### **Explanation of financial impact figure**

Changes in physical climate parameters can induce changes in the availability of natural resources. The price of water and energy can increase. If the risk materializes via suppliers and would increase in average the energy costs in the whole supply chain in the magnitude of e.g. 5%, this would represent an increase of purchasing costs of about 200 million €.

### **Management method**

Methods) Risks of scarcity of natural resources are most directly tackled by maximizing resource efficiency in the supply chain and jointly developing solutions, e.g. for re-using and recycling materials.

Examples) Resource efficiency is accessed e.g. via the CDP supply chain programme (over 75% of production-relevant procurement volume in 2018), identified potentials are addressed/improvements are discussed on top management level in supplier

performance reviews.

We support shared learning within our supply chain, e.g. through our forum “Learning from the Supplier”. Our Supplier Innovation Awards incentivize especially innovative supplier achievements. Trainings on climate change risks/natural hazards raise awareness among the purchasers and suppliers.

Further, life Cycle Engineering helps to achieve substantial improvements from one vehicle generation to the next. E.g. targets for the share of recycled materials are set to support circular economy, CO<sub>2</sub>- as well as cost-efficiency. E.g. up to 20% of the thermoplastic materials in our vehicles are now made from recirculates and high-strength cast aluminum parts consist of up to 50% of secondary aluminum.

Cost calculation) The CDP supply chain programme costs approximately 30,000€ in 2018. The Supplier Innovation Awards total costs were above 1 Mio. Several full time employees work on sustainability and climate change in R&D and purchase department.

**Cost of management**

10,000,000

**Comment**

**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.**

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**Identifier**

Opp1

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

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

### **Company-specific description**

(i) Clear Description: The automobile industry is highly affected by future standards and regulations. Especially manufacturers who implemented sustainability strategies at a later stage possibly face high development costs to fulfil future requirements. In contrast early adapters may earn a premium on relatively lower running development costs but also might be able to profit from higher sales due to an earlier penetration of the market.

(ii) Specific: As a result of our Efficient Dynamics strategy launched already in 2000 the BMW Group fulfils all relevant requirements from standards and regulation and is in good position in comparison to other premium manufacturers. This position provides an important opportunity to the company as it is key to the fulfilment of international agreements, air pollution limits, product efficiency regulation, etc. In 2018 sales volume increased by 1.1% when compared to 2017. One relevant contribution is a 38.4% increase in sales volume of plug-in hybrid electric vehicles (PHEV) and battery electric vehicles (BEV). We sold 142,617 PHEV and BEV worldwide. In Europe BMW Group leads the market for PHEV and BEV. This in turn forms the basis for continuing to invest, e.g. in further efficiency measures, new products and e-mobility to address proactively future regulatory requirements. We aim to have half a million electrified BMWs and MINIs on the roads by the end of 2019. In 2023 our portfolio will incorporate 25 electrified models (more than half fully electric). We expect a share of BEVs/PHEVs of 15-25% in 2025. Therefore BMW Group will be able to handle future requirements and maintain a competitive advantage in terms of regulatory requirements.

### **Time horizon**

Medium-term

### **Likelihood**

About as likely as not

### **Magnitude of impact**

Medium-low

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

Yes, an estimated range

### **Potential financial impact figure (currency)**

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

150,000,000

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

250,000,000

### **Explanation of financial impact figure**

It is difficult to estimate the financial implications of this opportunity as we cannot foresee the constantly changing regulations for our relevant markets and the impact of

changing customer needs. Based on historical information about our customers' behavior regarding technological changes we expect a rise in future sales. Compared to competitors we had a rise in sales due to our efficient dynamics strategy of at least 1% corresponding to approximately 150 to 250 Mio. € Gross profit annually, depending on the vehicles affected.

### **Strategy to realize opportunity**

Methods) A competitive advantage is the result of anticipating regulation and changing customer demands in the innovation management. BMW Group invests into R&D to increase CO<sub>2</sub>-efficiency. CO<sub>2</sub> management is included in the corporate strategy (target setting, monitoring) and the product development process (implementation of measures). BMW Group's Efficient Dynamics (ED) strategy is a comprehensive technologic approach. It includes efficient dynamics technologies (e.g. gradually refined combustion engines) as well as PHEVs and BEVs..

Examples) We invested major budgets in CO<sub>2</sub>-reduction ED technologies each year. Actually (2018) 48V systems are under development which will in coming years lead to CO<sub>2</sub> reductions in vehicles of 5 to 7%. We invest a significant share of the R&D expenditure in PHEVs/BEVs. Our portfolio will contain 25 electric vehicles in 2023, more than half being BEVs. Our target for 2019 is to have half a million BMW Group BEVs/PHEVs on the road. In 2018 we launched e.g. the PHEV version of the BMW long wheel base 5 series in China or worked on the BEV version of the MINI or the BMW X3. E.g. in EU28 we reduced fleet CO<sub>2</sub>-emissions by 42% between 1995 and 2018.

Cost calculation) Cost of management is set equal to R&D expenditures in 2018 (6.89 billion €). Due to competitive advantage issues we are not able to give here exact numbers but state that ED technologies / electrification took a significant share of the 2018 R&D expenditure.

### **Cost to realize opportunity**

6,890,000,000

### **Comment**

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#### **Identifier**

Opp2

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

Customer

#### **Opportunity type**

Products and services

#### **Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

#### **Type of financial impact**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

### Company-specific description

(i) Clear Description: Carbon Taxes impose higher costs for car pool owners. Consequently car pool owners could decide to switch to new and more efficient cars. The switch to new and more efficient cars provides opportunities for manufacturers of these cars. E.g. the values of the French bonus/malus scheme valid in 2018 increased again when compared to previous years (e.g. the malus for a vehicle emitting more than 185 g CO<sub>2</sub>/km increased from 10,000 € in 2017 to 10,500€ in 2018). For the future we expect further tightening of such systems.

(ii) Specific: A major market of the BMW Group is the management of car fleets. Due to the Efficient Dynamics strategy, BMW Group implemented fuel efficiency technology packages in the standard configuration in all vehicles and launched already the BMW i3 & i8, the BMW X1, X5, the 2 / 3 / 5 / 7 series models and a MINI Countryman model with plug-in-hybrid powertrain. Due to this strategy BMW Group has the broadest offer of electrified vehicles (PHEV, BEV) among its competitors. The switch of customers to new and more efficient cars provides opportunities for BMW Group. Due to the broad range of efficient fleet cars as well as PHEV and e-vehicle offerings BMW Group is likely to be a beneficiary of the described process. E.g. in Europe BMW Group was also in 2018 market leader for electrified vehicles.

### Time horizon

Medium-term

### Likelihood

About as likely as not

### Magnitude of impact

Low

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

Yes, a single figure estimate

### Potential financial impact figure (currency)

65,000,000

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

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

### Explanation of financial impact figure

BMW Group provides financing for fleet customers and fleet management under the brand "Alphabet" in 19 countries. In addition, international customers are serviced by Alphabet cooperation partners in numerous other countries. The financial impact is given by higher sales due to competitive advantage from an increased fuel and carbon efficiency and decreased total cost of ownership. Sales increase, including effects from our competitive positioning in fuel efficiency, is about 65 million € annually. This is



reflected e.g. by a 3% increase in the number of fleet contracts for BMW Group vehicles during the financial year 2018.

### Strategy to realize opportunity

Methods) Early identification of changing consumer behavior and development of CO<sub>2</sub>-efficient products were essential to gain a competitive advantage with fleet customers being ownership cost and CO<sub>2</sub>-emission aware clients. We invest into R&D to increase CO<sub>2</sub>-efficiency. CO<sub>2</sub> management is included in the corporate strategy (target setting, monitoring) and the product development process (implementation of measures). BMW Group's Efficient Dynamics (ED) strategy is a comprehensive technologic approach. It includes ED technologies (e.g. gradually refined combustion engines) as well as PHEVs and BEVs.

Examples) E.g. Direct injection in combination with variable valve control in all 3/4/6/8/12 cylinder gasoline engines or Auto Start Stop leads to high CO<sub>2</sub> efficiency. We offer plugin hybrid drivetrains for the 2, 3, 5, 7 Series, the X1, X5 and the MINI Countryman as well as in the BMW i8 and as BEV the BMW i3. Our portfolio will contain 25 electric vehicles in 2023, more than half being BEVs. Alphabet offers BMW i3 BEVs as well as e.g. 2, 3, 5 or 7 series PHEV models and introduced these vehicles into its Corporate Car Sharing offer AlphaCity.

Cost calculation) Cost of management is set equal to R&D expenditures in 2018 (6.89 billion €). Due to competitive advantage issues we are not able to give here exact numbers but state that ED technologies / electrification took a significant share of the 2018 R&D expenditure.

### Cost to realize opportunity

6,890,000,000

### Comment

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#### Identifier

Opp3

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

Customer

#### Opportunity type

Products and services

#### Primary climate-related opportunity driver

Shift in consumer preferences

#### Type of financial impact

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

### **Company-specific description**

(i) Clear Description: Changes in consumer behavior may occur due to rising consumer awareness on the subject of sustainability including climate change and rising costs for fuel use (fuel price, carbon taxes, and city tolls). Consumers with higher preferences for ecology and cost-efficiency may shift the focus on the CO<sub>2</sub>-efficiency of products as well as the ecological reputation of the company offering the products. The shift of focus towards CO<sub>2</sub> efficiency and sustainability provide opportunities (e.g. increased sales and new customers) for car manufactures with respective technologies and reputation.

(ii) Specific: Particularly in the premium car sector the effect of brand reputation is essential. BMW Group offers CO<sub>2</sub>-efficient cars and is sector leader in various key performance indicators regarding the sustainability of its production. We have been introducing consumption- and emission reducing technologies with the technology package "Efficient Dynamics". Our progress in this field is receiving recognition from customers and has thereby given the BMW Group a competitive edge, particularly in markets where a CO<sub>2</sub>-based vehicle tax is in place as in many countries of EU28. This is e.g. reflected by our market leadership in Europe for plug-in hybrid vehicles (PHEV) and battery electric vehicles (BEV). Furthermore services improving the eco-efficiency of driving, such as traffic intensity monitoring or the choice of drive modes such as EcoPro or applications easing the interconnection with other mobility services as public trains, can improve the ecological footprint of the customer. Therefore changing consumer behavior offers opportunities for the BMW Group (e.g. increased sales and new customers). An additional profitable line has been created by offering innovative mobility services. E.g. o our premium car-sharing services DriveNow & ReachNow already had almost 1.3 million customers in 2018.

The ParkNow Group served more than 29 million customers worldwide across all brands in 2018 with innovative digital parking services such as easy parking place finding or seamless payment. BMW Group plans to sustain that competitive advantage and further explore the described opportunities in the future.

### **Time horizon**

Medium-term

### **Likelihood**

More likely than not

### **Magnitude of impact**

Medium-high

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

Yes, an estimated range

### **Potential financial impact figure (currency)**

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

150,000,000

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

250,000,000

### Explanation of financial impact figure

The BMW Group has early established a competitive advantage in the segment of premium cars based on Efficient Dynamics. Information about customer behavior regarding technological changes points to a rise in future sales. Compared to competitors our sales rose due to our Efficient Dynamics strategy by at least 1% corresponding to approximately 150 to 250 Mio. € Gross profit annually, depending on the vehicles affected. New forthcoming technical features may lead to a further rise of that figure.

### Strategy to realize opportunity

Methods) With rising awareness of ecologic issues BMW Group can profit from a change of consumer demand by investing in CO<sub>2</sub> efficient products and services. The achievements in fuel-efficiency have given us a competitive advantage. The efficient dynamics (ED) strategy addresses CO<sub>2</sub> efficiency in our vehicles. Our mobility services (e.g. the car sharing offers DriveNow & ReachNow) or connectivity services (e.g. real time traffic information or ParkNow helping drivers to find free routes/parking places) are key areas to address changing customer needs.

Examples) (1) ED technologies: E.g. direct injection & variable valve control in all gasoline engines or Auto Start Stop lead to high CO<sub>2</sub> efficiency. (2) We offer PHEV models (2, 3, 5, 7 Series, the X1, X5, the MINI Countryman, BMW i8) and as BEV the BMW i3. We lead e.g. the BEV/PHEV market in Europe.

(3) Services: E.g. our car-sharing services DriveNow & ReachNow had almost 1.3 million customers and the ParkNow Group served more than 29 million customers worldwide across all brands in 2018. With the investment fund BMW i Ventures (500 Mio. € venture capital) we invest in startups in areas like mobility services and e-mobility.

Cost calculation) Cost of management is set equal to R&D expenditures in 2018 (6.89 billion €). Due to competitive advantage issues we are not able to give here exact numbers but state that ED technologies / electrification / development of services took a significant share of the 2018 R&D expenditure.

### Cost to realize opportunity

6,890,000,000

### Comment

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#### Identifier

Opp4

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

Direct operations

#### Opportunity type

Markets

**Primary climate-related opportunity driver**

Other

**Type of financial impact**

Other, please specify

Increased capital availability

**Company-specific description**

(i) Clear Description: The number of sustainable investment funds operating in Europe and US is growing. Private investors look upon sustainability ratings as indicator for future performance and therefore may grant credits at lower interest rates. Companies with a good sustainability rating could therefore profit from those lower interest rates and have a competitive advantage against other companies.

(ii) Specific: Many ratings and awards attest the BMW Group sustainability leadership. Efficient technologies, solutions for sustainable mobility, and clean production are just some of the aspects that ensure the leading role of the BMW Group regarding sustainability. Market research and media analyses show that the corporate image of the BMW Group is influenced very positively by its sustainability performance, thus increasing its attractiveness for potential investors. The reputation is directly influencing our credit rating and thus our funding costs for the financial service business. Moody's has upgraded BMW AG's long-term rating to A1 already in 2017. Our company had in 2018 the highest Standard & Poor's rating of any European automobile manufacturer. We are since many years one of the leading companies in the sustainability ratings CDP and DJSI. In 2018, the BMW Group was the only German automobile manufacturer to be listed once again in the DJSI "World" and "Europe" and is the only company in the automotive industry that has been continuously listed on the index since the very beginning.

**Time horizon**

Current

**Likelihood**

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)**

100,000,000

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

Our excellent sustainability reputation is directly influencing our credit rating and thus our funding costs for the financial service business (e.g.: a potential advantage could be -0,10%-points interest rate relative to our competitors, which equals approximately 100 million € income).

**Strategy to realize opportunity**

Methods) Ecological reputation relies on the ecological performance of BMW Group and its products. Among other objectives, to maintain BMW’s good reputation regarding sustainability we invest in efficient technologies, solutions for sustainable mobility and clean production. Accompanying sustainability performance communications are essential to keep investors informed about progress.

Examples) Basis for our reputation are the results achieved in product and production efficiency. BMW efficient dynamics technologies and a broad range of PHEV in our main product lines and BEV (2018: 142,617 PHEVs/BEVs sold) as well as mobility services add to the substances behind our reputation. Likewise contributes our “Clean Production” approach to reduce negative impacts on the environment (e.g. -62% in CO2 emissions per vehicle produced since 2006).

We improve image and reputation by transparent communication e.g. through our annual report & the sustainable value report, ratings such as DJSI / CDP or investor relation meetings and conferences.

Cost calculation) Improving resource & CO2-efficiency in our operations / of our products is integral part when developing & realizing solutions to meet our customer’s needs. People are behind all that which is why we set management costs equal to personnel expenses (2018: 12,479 Mio. €). These contain also several FTEs (e.g. in investor Relations) to realize a transparent communication to all stakeholders.

**Cost to realize opportunity**

12,479,000,000

**Comment**

**C2.5**

**(C2.5) Describe where and how the identified risks and opportunities have impacted your business.**

	Impact	Description
Products and services	Impacted	Description: Our products and services are impacted by climate change related opportunities in the areas of electro mobility, mobility services and efficiency technologies. Electro mobility is one of the central topics of the future when it comes to making urban living and traffic sustainable. E-vehicles have zero local emissions, along with the potential of significantly reducing the emission of CO2 and air pollutants over the whole product life cycle, while also markedly reducing traffic noise in cities. The BMW Group develops electric vehicles that combine the

		<p>advantages of sustainable mobility with a new driving experience for customers. We have more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman &amp; the BMW i8) and are active in 74 markets worldwide. In 2019 we will launch a Battery Electric Vehicle (BEV) version of the MINI and in 2020 of the BMW X3. This means electric drivetrain offers for many high volume models. In 2018, the BMW Group sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788). The company led e.g. in the reporting year the market for electrified vehicles in Europe and is a key driver of electromobility. We aim to sell half a million electrified BMWs and MINIs on the roads by the end of 2019. In 2025 we expect a 15-25% share of BEVs and PHEVs. Mobility services enable sustainable mobility patterns as well as connected and automated vehicles. BMW Group wants to enable efficient and resource-saving traffic and is continuously developing its mobility services with this aim in mind. This includes our car-sharing services DriveNow and ReachNow (on-demand mobility services) with about 1.3 Mio. users worldwide, our digital parking service ParkNow and digital networking BMW Connected Services. We are also conveying the benefits of our mobility services in pilot projects in selected cities to improve quality of life in these. Magnitude of Impact: Because of these developments the impact is high.</p>
<p>Supply chain and/or value chain</p>	<p>Impacted</p>	<p>Description: All supplier sites, approximately 12,000 in 2018, are evaluated with our sustainability risk filter. All direct suppliers (production material), about 4,500 in 2018, and indirect suppliers with relevant contract volumes have to fill out a sustainability questionnaire. Each potential new supplier must consider the BMW Group sustainability requirements in their quotation. This is a key decision-making indicator in the procurement process. If they don't fulfill key requirements they will not be nominated as a supplier. One key contractually fixed compliance demand is to establish and maintain a certified Environmental Management System (EMS) in accordance with ISO 14001. Energy consumption and CO2 emissions are key impact categories and so energy- and CO2-efficiency have to be key improvement targets. In 2018 sustainability deficits (e.g. lack of environmental policy / management system) were identified at 2,320 potential and existing supplier locations and corrective measures were defined for 1,123. This is one way we influence improvement in our supply chain and mitigate climate related risks. BMW Group uses a tailor-made natural catastrophes risk analysis tool to evaluate supplier sites. Risks are analyzed for hazards like flood, storm or droughts etc. All results are considered for choosing specific suppliers /supplier locations and to define appropriate adaption and mitigation measures with suppliers. We participate in the CDP supply chain. This increases the level of transparency with regards to resource efficiency in the supply chain and acts as a basis for developing approaches for increasingly efficient handling of resources together with our suppliers. Within a cooperative approach we aim that 60% of our</p>

		<p>suppliers participating in the CDP Supply Chain Programme have at least a B rating in the CDP scoring system by 2020. One focus of our engagement is with suppliers of our high voltage battery cells. Depending on the size of the battery pack the contribution to the CO2-emissions in production of BEV could be up to 50%. We agree with our suppliers on specific measures to increase energy efficiency, use of renewable energies as well as use of recycled material. Magnitude of Impact: Because of these activities the impact is high.</p>
Adaptation and mitigation activities	Impacted	<p>Description: Our clean production philosophy contributes to the global adaption and mitigation efforts by reducing environmental impacts of the production and the procurement. Risks as higher prices for CO2-emissions (e.g. through trading schemes) further motivate our efforts to maximize resource efficiency and increase the use of renewable energy. To improve global adaption and mitigation we continue reducing CO2 through further increase of energy efficiency, utilization of combined heat and power plants (CHP) and increase of the share of energy from renewable sources. We reduced energy consumption per vehicle produced by 38%, CO2-emissions per vehicle produced by 61.9%, and water consumed per vehicle produced by 26.7%, all between 2006 and 2018. To counter direct physical impacts we take measures, e.g. include vulnerability risks in planning of new production sites. For suppliers we assessed sustainability risks at about 4,200 nominated and potential locations of suppliers and sub-suppliers (2017: about 4,900). Our focus is on suppliers with a large tendering volume. Sustainability deficits (e.g. lack of environmental policy / management system) were identified at 2,320 potential and existing supplier locations and corrective measures were defined for 1,123. BMW Group uses a tailor-made natural catastrophes risk analysis tool, also to evaluate supplier sites. Depending on the vulnerability of the goods on the site, the geographical position and elevation all relative risks (in %) will be analyzed for hazards like flood, storm or droughts etc. On basis of individual risk parameters each (own and supplier) location worldwide can be analyzed in detail. A clear internal process regarding the analysis was introduced. All results are considered for choosing specific suppliers / supplier locations and to define appropriate adaption and mitigation measures with suppliers. Magnitude of Impact: low to high, dependent on the specific locations.</p>
Investment in R&D	Impacted	<p>Description: Climate change is influencing our industry with the need to decrease emissions and the trend to electro mobility and mobility services. R&amp;D is therefore of key importance for the BMW Group as a premium provider within the transformation of the industry. With its Strategy NUMBER ONE &gt; NEXT, the BMW Group is focusing on the topics of electric mobility, digitalization and autonomous driving. At 31 December 2018, over 15,000 people at 16 locations in five countries were working in the BMW Group's global research and innovations network. R&amp;D expenditure rose significantly year-on-year to € 6,890 million (2017: € 6,108 million; + 12.8</p>



		<p>%). One key development direction of the BMW Group is focusing its efforts on building a broad drive technology base so that in the coming years BMW Group can offer innovative solutions for the different mobility needs of our customers worldwide. With the BMW iNext in 2021, we will be introducing the fifth generation of our electric drive, which will be available as a scalable modular assembly unit. This uncouples the vehicle architecture from the drivetrain technology, meaning that every model can be fitted with a conventional, electric or hybrid drive as required and cars with different drivetrains can be produced at the same production sites. Another key development direction relates to individual mobility services. An example are our car sharing services DriveNow and ReachNow. DriveNow is one of the strongest drivers of electro mobility in Germany. To date, over 420,000 customers have driven more than 29.6 million emission-free kilometres with the electric BMW i3 since 2013. Magnitude of Impact: Due to these activities the magnitude is high.</p>
Operations	Impacted	<p>Description: Our company is facing the challenge of conserving resources and tackling climate change. This is also very relevant for our production processes. For this reason, we continuously increase our energy and resource efficiency and minimize CO2 and pollutant emissions from our production. In addition, these measures help us reduce production costs, meet the needs of our stakeholders and prepare for new legal requirements. We have established environmental management systems at all of our existing production plants and plan to install them at all future locations. We continuously work on improving our resource efficiency in order to achieve a 45% improvement by 2020, taking 2006 as a base year. In order to reduce energy consumption as well as CO2 and VOC emissions, we optimize processes and invest in more efficient technologies. We also rely on optimized processes and state-of-the-art technology to reduce our water consumption as well as waste and waste water. Since 2006, in vehicle production the BMW Group has reduced its energy consumption per vehicle by 38% and its water consumption by 26.7%. CO2 emissions per vehicle produced were reduced by 61.9%. In 2018, all of our production locations in Europe draw their electricity exclusively from renewable sources. Over the next few years, we will see different types of drivetrains on the roads. We are preparing our sites for this diversity by creating flexible architectures and plants. This will allow us to produce models with efficient combustion engines alongside electric vehicles and plug-in hybrids. From 2020 on, the use of scalable modular electric construction kits will enable us to fit all model series with any type of drivetrain. This will make us extremely flexible, whichever way demand develops. Magnitude of Impact: Due to this activities the impact is high.</p>
Other, please specify		

## C2.6

**(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.**

	Relevance	Description
Revenues	Impacted	<p>Description: In the BMW Group, the drive for sustainable mobility pushes us to develop innovative technologies with direct impact on our revenues. We set ourselves ambitious goals for increasing the efficiency of our drivetrain systems as well as to develop battery electric vehicles and Plug-In electric vehicles and like this reducing CO<sub>2</sub>-emissions. Since 2007, Efficient Dynamics technologies are standard. These include efficient engines/ gearboxes, optimized aerodynamics, intelligent energy management, light-weight design, tires with reduced rolling resistance, energy recovery, ECO PRO driving mode, active coasting and proactive driving assistant or Auto Start Stop function. We offer connectivity services e.g. to find the fastest or the most efficient routes and simplify the search for a parking place. We have more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman &amp; the BMW i8) and are active in 74 markets worldwide. In 2019, we will launch an all-electric powertrain version of the MINI and in 2020 of the BMW X3. This means electric drivetrains for many high volume models. We started with the BMW i3 and i8 and expect a 15-25% share of BEVs / PHEVs in 2025. In 2018 we sold 142,617 BEVs respectively PHEVs contributing to the BMW Group revenues. In fact, BMW Group has in this fast growing segment already a much larger market share than in traditional drivetrains. The company led e.g. in the reporting year the market for electrified vehicles in Europe and is a key driver of electromobility. The competitive edge achieved through this is one of the reasons why the BMW Group had its eighth consecutive record year of sales in 2018 globally. This shows the impact on our revenues. Magnitude of Impact: Because of this worldwide drive to sustainable mobility the impact on revenues is high.</p>
Operating costs	Impacted	<p>Description: Our company is facing the challenge of conserving resources and tackling climate change. This is also very relevant for our production processes. For this reason, we continuously increase our energy and resource efficiency and minimize CO<sub>2</sub> and pollutant emissions from our production in our worldwide production network. These measures help us reduce production costs and prepare for new legal requirements. Like this climate change is a driving force for efficiency increase and therefore cost savings. The BMW Group target is to reduce its resource consumption (energy, water, waste, solvents) per vehicle produced by 45% by 2020 (base year 2006). Since 2006, in vehicle production, the BMW Group has reduced its energy consumption per vehicle by 38% and its water consumption</p>

		<p>by 26.7%. CO2 emissions per vehicle produced were reduced by 61.9%. Magnitude of Impact: Since 2006, due to our efficient use of resources and here in particular energy, we made cost savings totaling € 167 million which is a low impact on our operating costs.</p>
Capital expenditures / capital allocation	Impacted	<p>Description: A major factor in the success of the BMW Group is its consistent focus on the future. Shaping individual mobility and finding innovative solutions today for the needs of tomorrow is a key driving force for the BMW Group. Research and development (R&amp;D) is therefore of key importance for the BMW Group as a premium provider. R&amp;D expenditure rose significantly year-on-year to € 6,890 million (2017: € 6,108 million; + 12.8 %). A significant share of the R&amp;D expenditures is spend for electrification of the product range across all brands. We have more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman &amp; the BMW i8) and are active in 74 markets worldwide. In 2019 we will launch Battery Electric Vehicle (BEV) version of the MINI and in 2020 of the BMW X3. This means electric drivetrain offers for many high volume models. In 2018 the BMW Group sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788). The company led e.g. in the reporting year the market for electrified vehicles in Europe and is a key driver of electromobility. We aim to sell half a million electrified BMWs and MINIs on the roads by the end of 2019. In 2025 we expect a 15-25% share of BEVs and PHEVs. Over the next few years, we will see different types of drivetrains on the roads. A high level of capital expenditures are for preparing our sites for this diversity by creating flexible architectures and plants. This will allow us to produce models with efficient combustion engines alongside electric vehicles and plug-in hybrids. From 2020 on, the use of scalable modular electric construction kits will enable us to fit all model series with any type of drivetrain. This will make us extremely flexible, whichever way demand develops.</p> <p>Magnitude of Impact: Because of these significant expenditures the impact is high.</p>
Acquisitions and divestments	Impacted	<p>Description: Climate change is a driving force for transformation of the automotive industry. Electrification is a priority area in BMW Groups Strategy NUMBER ONE &gt; NEXT, which provides us with a strategic roadmap up to 2025. China is the world's largest market for electro mobility. Following our successful strategy for expansion of the BMW Group's global production network which is production follows the market the BMW Group is in advanced discussions to ramp up the global success of its MINI brand through a new joint venture in China. A key element of the brand's continued strategic development will be local production of future battery-electric MINI vehicles. To this end, the BMW Group signed a 50:50 joint venture agreement with Great Wall Motor in the presence of Chinese Prime Minister Li Kequiang and German Chancellor Angela Merkel in Berlin.</p>

		<p>Expanding the charging infrastructure is a fundamental condition for the breakthrough of electro mobility. Positive political framework conditions can further support the process. Customers only switch to electric cars if they can rely on an adequate charging infrastructure for everyday driving and enjoy advantages in the form of privileges compared to vehicles with combustion engines. In founding the IONITY joint venture, the BMW Group, Daimler AG, Ford Motor Company and Volkswagen Group, including Audi and Porsche, are setting the course for creating the largest high-performance rapid charging network for electric vehicles in Europe. Construction and operation of around 400 rapid charging stations in total by 2020 are important steps to ensure electro mobility on longer distances, too, and establishing these in the market.</p> <p>Magnitude of Impact: Due to the strategic importance of acquisitions in this area the impact is high.</p>
<p>Access to capital</p>	<p>Impacted</p>	<p>Description: Climate change and scarcity of resources are big challenges our society is facing today. Thus solutions from companies are required. Shaping individual mobility and finding innovative solutions for products and services today for the needs of tomorrow is a key driving force for the BMW Group. Key is product efficiency and electrification. Since 2007, Efficient Dynamics technologies are in the standard configuration. We launched already in 2013 the full electric BMW i3 and in 2014 the BMW i8. We have more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman &amp; the BMW i8) and are active in 74 markets worldwide. We sold in 2018 142,617 electrified vehicles and led e.g. in the reporting year the European market for electrified vehicles and are a key driver of electromobility. Until 2023 our portfolio will consist of 25 electrified models, more than half of them pure electric, with an expected share of BEVs/PHEVs of 15-25% in 2025. We continuously increase our resource efficiency &amp; minimize CO2 emissions from our production. Since 2006, in vehicle production, the BMW Group reduced its energy consumption per vehicle by 38% and its water consumption by 26.7%. CO2 emissions per vehicle produced were reduced by 61.9%. In 2018 all of our production locations in Europe draw their electricity exclusively from renewable sources and our target is to achieve this worldwide until 2020. A major factor in the success of the BMW Group is its consistent focus on the future. We are one of the most profitable OEMs worldwide. Our long term thinking is recognized by capital market. Since many years we are among the leading companies in sustainability ratings (CDP, DJSI). Our sharp focus on the future, combined with solid financials, enables us to have easier access to international capital markets. Since December 2013, BMW AG has had a long-term rating of A+ (stable outlook) and a short-term rating of A-1 from the rating agency Standard &amp; Poor's. This represents the highest rating currently given</p>

		<p>by Standard &amp; Poor's to a European car manufacturer. Already in January 2017, Moody's raised its long-term rating for BMW AG from A2 (positive outlook) to A1 (stable outlook). The P-1 short-term rating was confirmed. Magnitude of Impact: With sustainability being one among other reasons for our good rating performance we assume the impact to be moderate.</p>
<p>Assets</p>	<p>Impacted</p>	<p>Description: Technical and process related knowledge and Intellectual properties, beside others in the field of future mobility solutions, has been created within a long tradition of innovation. Finding innovative solutions today for the needs of tomorrow is a key driving force for the BMW Group. Research and development (R&amp;D) are therefore of key importance for us as a premium provider. R&amp;D expenditure amounted to € 6,890 million in the year under report (2017: € 6,108 million), increasing our knowledge in all fields of mobility and low &amp; zero carbon technologies and thus impacting our intangible assets.</p> <p>The high flexibility of our global production network lays the foundation for our continued growth. The company currently operates 31 facilities in 15 countries and continue to invest both in our locations in Germany and worldwide. We are preparing our sites for the diversity in powertrain systems to allow us to produce models with efficient combustion engines alongside electric vehicles and plug-in hybrids. Our sites are built on safe ground. Sustainability criteria are part of the criteria for choosing new sites. E.g. in the planning of our new plants in Brazil and Mexico, risks of flooding after hard rain are included and managed accordingly. Depending on the location we define from the beginning mitigation measures to ensure continuous operations. E.g. the site in Brazil has been raised to a higher level by ca. 3 meters to minimize risks of flooding after hard rain. Measures include also roofing of storage areas and hail protection. This shows how climate change impacts our fixed assets.</p> <p>Our employees are a key asset. Our most recent employee survey shows: 90% of our associates say they are proud to work for the BMW Group, more than 80% say they are familiar with our strategy. This shared understanding will give us even greater momentum. The BMW Group's worldwide workforce increased in 2018 to a total of 134,682 employees (2017: 129,932 employees; + 3.7 %). In conjunction with the implementation of the Group's Strategy NUMBER ONE &gt; NEXT, an increasing number of experts in future-oriented fields such as artificial intelligence and autonomous driving, electric mobility, smart production and logistics, data analysis and software development were hired.</p>

		Magnitude of Impact: The impact is high as it is related to the core assets of BMW.
Liabilities	Impacted	<p>Description: Our financial liabilities serve mainly for refinancing our Financial Services segment: The BMW Group is a leading provider of financial services in the automobile sector, operating more than 50 entities and cooperation arrangements with local financial services providers and importers worldwide. The segment’s main business is credit financing and the leasing of BMW Group brand cars and motorcycles to retail customers. Customers can also choose from an attractive array of insurance and banking products. Operating under the brand name Alphabet, the BMW Group’s international multi-brand fleet business provides financing and comprehensive management services for corporate car fleets in 19 countries. Through its multi-brand business Alphaera, the BMW Group provides credit financing, leasing and other services to retail customers. The segment also supports the BMW Group’s dealership organization, for example by financing dealership vehicle inventories. We do not see a direct link of these activities to climate change. Our core business of developing, producing and selling vehicles and motorcycles is basically financed out of the cash flow of these two segments. Therefore we do actually see no significant impact from climate change on BMW Group liabilities.</p> <p>However specific BMW Group activities are eligible for investment loans designed to promote sustainable development, e.g. by the KfW Förderbank which finances investments in the areas of environmental and climate protection or by the European Investment Bank EIB providing finance and expertise for sustainable investment projects that contribute to EU policy objectives. Those loans contribute to our target of having a liability structure, comprising a balanced mix of financing Instruments. Furthermore those loans come along with favorable conditions. A specific example is the paint shop in BMW Groups new site in San Luis Potosí in Mexico financed by a KfW loan. Within R&amp;D programs are financed by such loans to further develop efficient dynamics technologies as well as electro mobility.</p> <p>Magnitude of impact: Due to the very small proportion of liabilities directly related to our climate change (e.g. KfW loans) the impact is very low.</p>
Other		

### C3. Business Strategy

#### C3.1

**(C3.1) Are climate-related issues integrated into your business strategy?**

Yes



## C3.1a

**(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?**

Yes, qualitative and quantitative

## C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

**(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

Yes

## C3.1c

**(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.**

**Process & examples)** The strategic approach in the new strategy NUMBER ONE > NEXT is to leverage innovative technologies, digitalization and sustainability to deliver unique customer experiences. It is part of our culture and anchored in our processes to mitigate climate risks and explore opportunities arising from the global efforts of combating climate change (CC). Our three-level sustainability organization managed by the head of sustainability ensures that CC aspects are integrated into our business strategy: The Sustainability Board SB (full Board of Management, head of strategy, head of sustainability) determines the strategic alignment for sustainability issues. The Sustainability Circle SC (senior vice president level), part of the structure circle, is in charge of the implementation of all sustainability activities in the departments to reach agreed targets and reports to the SB. This process influenced e.g. our strategic approach to e-mobility: We have PHEV models in the 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman & BMW i8 and sold 142,617 BEVs/PHEVs in 2018. By 2023, we will offer 25 electrified models, more than half of them pure electric. By 2025, we expect electrified vehicles to account for between 15-25% of our global sales. Core principles, ongoing discussed between managers and employees, ask all to save resources and promote innovations, e.g. through our worldwide employees idea management system. Trainings sharpen the understanding of their responsibility. Resource efficiency targets are set for the production network and each site. Measures are implemented (e.g. for the paint shop). Environmental managers in each site monitor their effect and report monthly to the site managers/half-yearly to the board member responsible for production. Group-wide target monitoring is done through central departments. Progress is reported back to SC and SB.

**Aspects)** CC increases physical risks, e.g. through weather extremes. This directly exposes our production and supply chain. Awareness of CC and the need for action also changes regulations and consumer behavior. We take on our responsibility to mitigate CO2 emissions along the whole value chain.



a) Vehicles fleet regulations / CO<sub>2</sub> taxations aim for mitigation. The included regulatory risks challenge BMW Group with different necessities. But changes in consumer behavior towards demand of more sustainable mobility also offer opportunities for our Efficient Dynamics (ED) strategy (efficiency improvements for conventional cars / components, PHEV, BEV) and new mobility services.

b) Our clean production philosophy contributes to the global mitigation efforts by reducing environmental impacts of the production and the procurement. Risks as higher prices for CO<sub>2</sub>-emissions (e.g. through trading schemes) further motivate our efforts to maximize energy efficiency and increase the use of renewable energy.

**Short term strategy)** Our short term strategy aims towards mitigating CO<sub>2</sub> emissions both from a) product use and b) the value chain of our production, accounting for indirect risks and opportunities from regulations and changing consumer behavior and adoption of direct physical risks from CC.

a) To improve global mitigation and meet regulations and changing consumer demand we further develop the ED technology package to meet fleet emission targets worldwide. We intend to set standards in electromobility. We aim to have half a million electrified BMWs and MINIs on the roads by the end of 2019.

b) To improve global mitigation we continue reducing CO<sub>2</sub> emissions through further increase of energy efficiency, utilization of combined heat and power plants (CHP) and increase of the share of energy from renewable sources. We reduced CO<sub>2</sub> emissions per vehicle produced by 61.9% between 2006 and 2018. To counter direct physical risks we take measures, e.g. include vulnerability risks in planning of new production sites and selection of suppliers.

**Long term strategy and targets)**

a) By offering sustainable individual mobility BMW Group mitigates climate-related physical risks and develops business opportunities. We are proceeding in our ED strategy: Further increase efficiency of conventional cars, roll out PHEVs / BEVs in a broad range of models, develop hydrogen solutions & develop sustainable mobility services. Our target: Emissions reduction by at least 25% in CO<sub>2</sub> emissions of our worldwide fleet from 2008 to 2020 and 15-25% share of BEVs and PHEVs of new sales in 2025.

b) Our target to further improve global mitigation: Reduce absolute 2015 production site emissions by -20% until 2020 and aim to reduce CO<sub>2</sub> emissions of all our locations to zero until 2050. The targets as described in a) and b) are clear contributions to the INDCs in our markets. We stress test via scenario analysis our planning of product offers, sales volumes and R&D investments against upcoming regulations on climate change, taking into account the ambition from the COP21 agreement. When reviewing existing targets until 2020 and developing new targets for CO<sub>2</sub> efficiency in production we check for consistency with Science Based Targeting.

**Strategic Advantage)** Early introduction of a group wide environmental strategy led to a competitive advantage. Through ED technology in all vehicles we were able to reduce CO<sub>2</sub> emissions of our newly sold vehicles worldwide since 2008 by 22.5% to 141 g CO<sub>2</sub>/km in 2018. Our PHEV and BEV offers supported this. In EU28 we were in 2018 the leading provider of BEVs & PHEVs. The BMW i3 is among the most successful BEVs worldwide. The decreased total costs of ownership give us a competitive edge particularly in markets with a CO<sub>2</sub>-based

vehicle tax. Our leading position in sustainability, fostered by our success in CDP or DJSI, supports sales, leads to growth and positively influences our credit rating and funding costs.

**Decisions)**

- a) The opportunities of changing consumer behavior and regulatory risks regarding our products highly affected the following decisions in 2018.
  - Increase of R&D expenditures to 6.89 billion € to develop models with further increased efficiency, PHEVs, BEVs & mobility services.
  - Launch of the PHEVs i8 Roadster and the 530Le in China.
  - Launch of five operating joint ventures between BMW AG and Daimler AG, in the areas of car sharing, ride hailing, parking, charging and multimodality, with e.g. car sharing serving as an enabler for electric vehicles.
- b) The need to mitigate CC highly affected the following decisions in 2018 in production and supply chain:
  - Signature of a 50:50 joint venture agreement with the car manufacturer Great Wall Motor to produce MINI electric vehicles in China.
  - Decision for 100% CO2-free electricity in Plant San Luis Potosi / MX.
  - Decision to invest 200 Mio EUR in Plant Munich to prepare for the BMW i4 (4 door premium midrange segment BEV) as well as to setup flexible platforms to produce different drive trains (BEV, PHEV, diesel or petrol).

### C3.1d

**(C3.1d) Provide details of your organization’s use of climate-related scenario analysis.**

Climate-related scenarios	Details
Other, please specify  Future regulatory requirements	Description of (a) scenario identification, (b) time horizon and company relevance and (c) areas considered:  (a) We simulate the average CO2 emissions of our future fleet (based on long range planning), considering future powertrain mix (conventional powertrains as well as shares of PHEV (Plug-In hybrid electric vehicles) / BEV (battery electric vehicles) powertrains) and corresponding capital expenditures/capital allocation against upcoming regulations on climate change via scenario analysis, assuming e.g. fleet emission limits in main markets such as EU28, USA or China after 2020.  (b) We consider regulation scenarios until 2030 and expect that governments will further intensify limit regulations based on existing and future scientific analyses, as well as what is technologically possible. These future limits are expected to be very ambitious and will entail considerable investment and development work for manufacturers.  (c) The scenario analysis is related to the use phase of our new vehicle fleet in the corresponding market.  Specific description of (a) results, (b) usage in strategy/business development and (c) influence on strategy/business development:  (a) The key result is: BMW Groups needs to further invest into electrification to

	<p>achieve compliance with the simulated regulation scenarios. In all markets for all future fuel efficiency levels under discussion future target compliance is heavily depending on the market success of electro mobility. Market success depends on several factors such as attractive products as well available charging infrastructure and supporting policies for the ramp up.</p> <p>(b) This result significantly influences our e-mobility strategy. BMW Group contributes to market success of e-mobility by offering attractive BEV and PHEV to its customers. We will offer 25 electrified vehicles already in 2023 – two years earlier than originally planned. We expect to see a steep growth curve towards 2025: Sales of our electrified vehicles should increase by an average of 30 percent every year. Expanding the charging infrastructure is fundamental for the breakthrough of electro mobility. BMW contributes to the development of the charging infrastructure. From 2015 to 2018, we were active in over 50 projects for improving the charging infrastructure. E.g. our ChargeNow service currently provides access to around 223,000 public charging points from different providers worldwide (2017: 137,000). As another example BMW Group and other carmakers together founded the IONITY JV, which aims to build up a high-performing fast-charge network across Europe along important traffic corridors. A total of 45 of the 400 IONITY rapid charging stations planned by 2020 have already been installed.</p> <p>Positive political framework conditions can further support the process. This has become clear in fast-growing markets for electro mobility, such as Norway and California. As part of the political dialogue, we advocate for measures to promote electro mobility, whether by financial support or non-monetary packages (for example the use of bus lanes and/or introduction of dedicated lanes, preferential parking).</p> <p>(c) Under the term Efficient Dynamics, the BMW Group has been successfully working on reducing fuel consumption and vehicle emissions. We are proceeding in our efficient dynamics strategy and further increase efficiency of conventional cars, roll out PHEVs / BEVs in a broad range of models, develop hydrogen solutions and develop sustainable mobility services. As an example we reduced CO2 emissions in newly-sold vehicles in EU28 by around 42% between 1995 and 2018 and were in 2018 market leader of electrified vehicles (BEV, PHEV) in the EU28.</p>
<p>2DS</p>	<p>Description of (a) scenario identification, (b) time horizon and company relevance and (c) areas considered:</p> <p>(a) We analysed the BMW Group CO2 emissions for our own operations within the methodology as outlined by the technical paper “SECTORAL DECARBONIZATION APPROACH (SDA): A method for setting corporate emission reduction targets in line with climate science” of the Science Based Targets Initiative respectively the specifications as given in the Nature Climate change letter “Aligning corporate greenhouse-gas emissions targets with climate goals” (Authors: Oskar Krabbe, Giel Linthorst, Kornelis Blok, Wina Crijns-Graus, Detlef P. van Vuuren, Niklas Höhne, Pedro Faria, Nate Aden and Alberto Carrillo Pineda). We did our analysis on the basis of an Excel calculation from the consultancy ECOFYS for our production emissions where</p>

	<p>general available data respectively general assumptions as for the increase of premium vehicle production were used.</p> <p>(b) In a second step we adjusted the general assumption internally (we did not make the data transparent to ECOFYS) to our concrete data from planning until 2020 to assess our existing target of reducing absolute 2015 production site CO2-emissions by -20% until 2020 against the 2 degree scenario, as well as to consider target levels for 2030.</p> <p>(C) The area considered within this approach is emissions from our production network respectively from all BMW Group locations.</p> <p>Specific description of (a) results, (b) usage in strategy/business development and (c) influence on strategy/business development:</p> <p>(a) Based on the intensity target curve corresponding to the carbon budget of the International Energy Agency (IEA) industry sector “Other Industries” we calculated a company specific target curve. We found that the target value of our 2020 target for scope1 and scope 2 emissions is well below the science based targets emission curve.</p> <p>(b) When considering energy efficiency and CO2 targets until 2030 and beyond we took into account the results of this scenario analysis (target requirements from the 2 degree scenario). However, strategic decisions respectively business decisions are not made by just considering one framework such as scenario analysis based on a 2 degree scenario. This is only one influencing factor.</p> <p>(c) For example we set as target to reduce absolute 2015 production site CO2-emissions by -20% until 2020. Until 2050 we aim to reduce CO2 emissions of all BMW Group locations to zero. The scenario analysis directly influenced the decision to set these targets.</p> <p>Since 2017 all European production sites purchase electricity which comes to 100% from renewable sources. From 2020 on, the BMW Group will only purchase electricity from renewable sources, an important step towards the 2050 target.</p> <p>When deciding for new production sites and technologies, energy efficiency and emissions is always assessed. New technologies have to contribute to our targets for energy efficiency and CO2 reduction.</p>
<p>Other, please specify</p> <p>Environmental profit and loss estimate</p>	<p>Description of (a) scenario identification, (b) time horizon and company relevance and (c) areas considered:</p> <p>(a) We performed an environmental profit and loss calculation for one of our best selling cars (3 series). Based on the economic model of multiregional input- output analysis as well as quality-assured data of international environment and resource statistics we analyzed GWP, water depletion as well as airborne pollutants (e.g. PM10/PM2.5, NMVOC, NOx, SO2 or NH3) and land use as impact categories. From these, following the corresponding impact pathways until the so called “endpoints” human health, impact on nature and human made environment (Eco toxicity, human toxicity, damage to</p>

human made environment such as buildings) we derived price tags caused by these impacts (external costs). Scenario analysis is done by considering CO<sub>2</sub>-price scenarios (the CO<sub>2</sub> price is the dominating factor for external costs) as well as degrees of internalization through (future) regulations and estimate impacts on our business model.

(b) The time horizons is in particular 2030, but is also varied. Company relevance arises from our core business of producing and selling vehicles and motorcycles which cause CO<sub>2</sub>-emissions along the whole life cycle.

(c) Areas considered are in particular BMW Groups own operations, the use phase of our products and our supply chain.

Specific description of (a) results, (b) usage in strategy/business development and (c) influence on strategy/business development:

(a) By calculating external costs different impacts categories can be compared and their relative relevance can be assessed. A result of the analysis was that for BMW Group the by far most dominant impact category is CO<sub>2</sub> emissions followed by airborne pollutants (e.g. PM<sub>10</sub>/PM<sub>2.5</sub>, NMVOC, NO<sub>x</sub>, SO<sub>2</sub> or NH<sub>3</sub>) and water depletion.

(b) From these price tags our focus of our strategy Number ONE NEXT on GWP and airborne pollutants and, with minor impact, worldwide water depletion have been confirmed. Furthermore we got insights into price tags from external costs which could materialize through regulations in operational costs of BMW Group and its supply chain as well as e.g. in additional costs of ownership for our customers. However, strategic decisions respectively business decisions are not made by just considering one framework such as scenario analysis based on E P&L.

(c) Increasing CO<sub>2</sub>-efficiency of our products as well as of our production network are key areas we address to reduce the impact category GWP and like this anticipate future regulation. The results of the scenario analysis influenced the following parts of our strategy:

-Products: We are proceeding in our efficient dynamics strategy and further increase efficiency of conventional cars, roll out PHEVs / BEVs in a broad range of models, develop hydrogen solutions and develop sustainable mobility services. Our target: Emissions reduction by at least 25% in CO<sub>2</sub> emissions of our worldwide fleet from 2008 to 2020 and a 15-25% share of BEVs and PHEVs of new sales in 2025.

-Production: We set as target to reduce absolute 2015 production site CO<sub>2</sub>-emissions by -20% until 2020. We aim to reduce CO<sub>2</sub> emissions of all BMW Group locations to zero until 2050. Since 2017 all European production sites purchase electricity which comes to 100% from renewable sources. From 2020 on, the BMW Group will only purchase electricity from renewable sources, an important step towards our 2050 target.

## C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e

### (C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization's low-carbon transition plan.

**Vehicles:** It is our goal to create solutions and innovations that inspire our customers. Strategy NUMBER ONE > NEXT is the path to the BMW Group's success over the long-term. It provides a roadmap for our transformation towards sustainable and digital mobility. Our future is electric. The BMW Group develops electric vehicles that combine the advantages of sustainable mobility with a new driving experience for customers. We have actually more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5, the MINI Countryman and the BMW i8) and are active in 74 markets worldwide, more than any other new or traditional premium manufacturer. We have sold 142,617 BEVs/PHEVs in 2018 (BEVs: 34,829; PHEVs: 107,788) and led e.g. the market for electrified vehicles in Europe. We set clear goals for sustainable mobility: A total of half a million electric vehicles and plug-in hybrids on the roads by the end of 2019. 25 electrified models already in 2023, more than half of them pure electric. The next fully-electric models will be the MINI E (2019), BMW iX3 (2020), BMW i4 (2021) and BMW iNEXT (2021). This means that, from 2021, the BMW Group will have five fully-electric series-production vehicles. By 2025, we expect electrified vehicles (BEVs + PHEVs) to account for between 15-25% of our global sales.

**Autonomous driving:** Sustainable mobility and autonomous driving go hand in hand for us. We will be launching autonomous driving in the iNEXT in 2021. To reach our targets for automated and networked vehicles by 2021, existing alliances with MobilEye and Intel were deepened, as were those with the HERE navigation service. In 2017, the BMW Group also bundled all competencies for vehicle connectivity and automated driving in a new "Autonomous Driving Campus" in Unterschleissheim near Munich/DE. Automated and digitally networked vehicles have the potential to significantly reduce the number of accidents and traffic congestion, reduce emissions and increase the quality of life in cities. This applies especially when using electrification. With our planned BMW iNEXT model, we want to set new standards by 2021 and bring solutions for highly and fully automated driving up to series maturity.

**Services:** At the start of 2017, we took full ownership of DriveNow. We also acquired Parkmobile LLC – making the BMW Group the largest international provider of digital parking solutions. We now have all the options we need for continued strategic development of our mobility services. We want to be customers' first stop for individual mobility. Herein, we will build a customer base of 100 million active customers by 2025. Our goal is to create a complete, all-inclusive ecosystem. By 31 December 2018, the DriveNow car-sharing service had 1,175,000 customers across Europe (2017: 1,026,000) and is now available in twelve European cities. The DriveNow fleet currently comprises around 6,500 vehicles, of which around 15% are purely electric BMW i3 vehicles. Over 420,000 customers have driven more than 29.6 million emission-free kilometres with the electric BMW i3 since 2013. DriveNow is one of the strongest drivers of electromobility in Germany. Our ReachNow service in the USA



counted more than 103,000 customers by the end of the year (2017: 82,000). More than 1,000 vehicles are available to members, of which around 8% are purely electric BMW i3 models. The ParkNow Group served more than 29 million customers worldwide across all brands in 2018. For the China market, we also continue to operate our carsharing fleet in the city of Chengdu China with 100 Battery Electric BMW i3. In December 2018, we launched a ride hailing (car with driver) business with 200 BMW 5 Series, 50% of the fleet is made up of BMW 530Le plug in hybrid models with innovative wireless charging technology.

**Production:** Over the next few years, we will see different types of drivetrains on the roads. We are preparing our sites for this diversity by creating flexible architectures and plants. This will allow us to produce models with efficient combustion engines alongside electric vehicles and plug-in hybrids on the same production line. From 2020 on, the use of scalable modular electric construction kits will enable us to fit all model series with any type of drivetrain. This will make us extremely flexible, whichever way demand develops. We have clear targets to reduce resource consumption and CO2 emissions to further improve global mitigation: Reduce absolute 2015 production site emissions by -20% until 2020 and aim to reduce CO2 emissions of all BMW Group locations to zero until 2050. When reviewing existing targets until 2020 and developing new targets for CO2 efficiency in production we check for consistency with Science Based Targeting. We already reduced CO2 emissions per vehicle produced by 61.9% between 2006 and 2018.

## C4. Targets and performance

### C4.1

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

Both absolute and intensity targets

### C4.1a

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

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**Target reference number**

Abs 1

**Scope**

Scope 1 +2 (market-based)

**% emissions in Scope**

82

**Targeted % reduction from base year**

20

**Base year**



2015

**Start year**

2015

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

1,267,485

**Target year**

2020

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

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

**% of target achieved**

100

**Target status**

Achieved

**Please explain**

BMW Groups target is to reduce total CO2 emissions of its production network from 2015 to 2020 by 20%. Scope of target: The target includes the BMW vehicle production network (including the Chinese JV). From the 2015 emissions figures we got as percentage of emissions in scope 82% (Exclusions: Emissions from the BMW Group owned vehicle fleet and airplanes, central administration and R&D Munich (Germany), motorcycle plant Berlin (Germany) as well as International R&D offices, BMW Group owned branches and other buildings). In 2018, total emissions in our production network amounted to 962.545 tonnes of CO2, a 24% decrease in overall CO2 emissions when compared to 2015 (marked based calculation for Scope2 emissions). This means that we already achieved our 2020 target. Increase of energy efficiency was one key factor. Our target is to reduce energy consumption per vehicle produced by 45% between 2006 and 2020. By 2018 we achieved a 38% reduction. Supply of energy from renewable sources was another key element. In 2018 we purchased for vehicle production about 1,600 GWh of electricity, heat and cooling from renewable sources, among other things via certificates of origin.

All European production sites are delivered with green electricity. In Spartanburg (USA) we replaced around 50% of our natural gas needs by utilizing landfill gas. In the next years we want to continue to expand electricity supply from renewable sources at our plants outside of Europe.

Remark: We analysed the BMW Group CO2 emissions within the methodology as outlined by the technical paper "SECTORAL DECARBONIZATION APPROACH (SDA): A method for setting corporate emission reduction targets in line with climate science" of the Science Based Targets Initiative respectively the specifications as given in the Nature Climate change letter "Aligning corporate greenhouse-gas emissions targets with climate goals" (Authors: Oskar Krabbe, Giel Linthorst, Kornelis Blok, Wina Crijns-Graus, Detlef P. van Vuuren, Niklas Höhne, Pedro Faria, Nate Aden & Alberto Carrillo Pineda). We did our analysis on the basis of an Excel calculation from the consultancy ECOFYS

for our production emissions using our planning until 2020 to find that the target value for scope1 & scope 2 emissions is well below the science based targets emission curve.

**Target reference number**

Abs 2

**Scope**

Scope 1 +2 (market-based)

**% emissions in Scope**

94

**Targeted % reduction from base year**

100

**Base year**

2015

**Start year**

2015

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

1,440,000

**Target year**

2050

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

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

**% of target achieved**

25

**Target status**

Underway

**Please explain**

We are pursuing our vision of a CO<sub>2</sub>-free energy supply of BMW Group and aim to reduce CO<sub>2</sub> emissions of all BMW Group locations to zero until 2050. The absolute target Abs1 for the BMW Group production network is a major, joining the RE100 initiative of the Climate Group at the COP21 in Paris and commit to purchase 100 % renewable electricity in the future a further step to achieve the target Abs2 (for details of our renewable energy target within the RE100 initiative please see C4.2). Since Abs1 as well as the renewable energy target in C4.2 are interim targets to achieve Abs2, measures in 2018 are the same as described there. Procedure: On the way to 100% renewable energy supply of our locations BMW Group takes a holistic approach. Top priority is given to systematic reduction of energy consumption, as energy savings are always the best alternative, both for the environment and for our business. To cover the

remaining energy requirements, we are expanding our own renewable energy generation systems and are increasingly drawing power from local renewable sources. The renewable energy target in C4.2 addresses only CO<sub>2</sub>-emissions from purchased electricity. Abs1 includes also emissions from heat supply as well as from fuel combustion inside the BMW Group. On a mid to long-term perspective we see the potential to replace in an economically reasonable way fossil fuels by renewable fuels (e.g. biogas) and are doing this e.g. in Spartanburg (USA) with landfill gas. Scope of target: The emissions in Scope include all BMW Group locations including the Joint Venture locations in China. It excludes emissions from company owned vehicles and airplanes. From the 2015 emissions figures we get as percentage of emissions in scope 94%.

Remark: To calculate the % of emissions in scope we included in the denominator emissions from company owned cars and planes since these are BMW Group Scope 1 & Scope 2 emissions. In the method as outlined by the technical paper "SECTORAL DECARBONIZATION APPROACH (SDA): A method for setting corporate emission reduction targets in line with climate science" of the Science Based Targets Initiative these two categories belong however to other industry sectors. For our own sector, which belongs in the actual methodology to "Other Industries", the target Abs2 means zero net CO<sub>2</sub> emissions which is a science based target.

## C4.1b

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

---

### Target reference number

Int 1

### Scope

Scope 3: Use of sold products

### % emissions in Scope

100

### Targeted % reduction from base year

25

### Metric

Grams CO<sub>2</sub>e per kilometer\*

### Base year

2008

### Start year

2008

### Normalized base year emissions covered by target (metric tons CO<sub>2</sub>e)

182

**Target year**

2020

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

No, but we are reporting another target that is science-based

**% of target achieved**

90

**Target status**

Underway

**Please explain**

The BMW Group has committed itself to a long term reduction target for the fleet tailpipe emissions. The target refers to the Copenhagen Conference where the BMW Group communicated to reduce these emissions by 25% until 2020. The 25 % reduction is to be achieved by continuous development of our Efficient Dynamics (ED) strategy. Since 2007 our ED is a comprehensive technologic approach for the consistent reduction of fuel consumption and emissions in the standard configuration of all cars of the BMW Group. It includes both highly-efficient automobiles with gradually refined combustion engines and all-electric cars and low-emission plug-in hybrids. ED technologies include e.g. efficient engines, optimized aerodynamics, intelligent energy management, light-weight design or Auto Start Stop function. Our future is electric. We have already more than 10 PHEV models (in 2, 3, 5 and 7 Series, X1, X5 and the MINI Countryman) and are active in 74 markets worldwide. In 2018, we sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788), a further increase in volume by 38.4% compared to 2017, and led e.g. in 2018 the market for electrified vehicles in Europe. Our fleet averaged CO<sub>2</sub> emissions per kilometer calculated from the core market values EU28, USA, China, Japan and Korea were 141 g CO<sub>2</sub>/km. This value is not directly comparable to the 2017 value of 141 g CO<sub>2</sub>/km as reported in our last years CDP response due to a change in regulation. Since 2018 cars in EU28 are approved according to the new driving cycle WLTP but compliance with EU fleet CO<sub>2</sub> emission regulation until 2021 is done in the NEDC. Retroactive calculation of NEDC fleet emissions from the WLTP values, so called "NEDC corr." values, are higher due to the amended WLTP test constraints (2017: 122 in NEDC, 128 in NEDC corr.). Using the NEDC corr. value also in 2017 to keep comparability we find as Group value 143 g CO<sub>2</sub> / km. This means a 1.4% reduction of fleet averaged CO<sub>2</sub> emissions of 2018 when compared to 2017. We set clear goals for sustainable mobility: A total of half a million electric vehicles and plug-in hybrids on the roads by the end of 2019. 25 electrified models already in 2023, more than half of them pure electric, and an expected share in our newly sold vehicle fleet in 2025 between 15 and 25%.

**% change anticipated in absolute Scope 1+2 emissions****% change anticipated in absolute Scope 3 emissions**

## C4.2

**(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.**

### Target

Other, please specify  
Electricity purchased

### KPI – Metric numerator

Electricity purchased from renewable sources

### KPI – Metric denominator (intensity targets only)

Electricity purchased

### Base year

2015

### Start year

2015

### Target year

2020

### KPI in baseline year

42

### KPI in target year

67

### % achieved in reporting year

100

### Target Status

Achieved

### Please explain

In 2015 BMW Group joined the RE100 initiative of the Climate Group at the COP21 in Paris and committed to purchase 100% of electricity from renewable sources for its operations and to develop a pathway to achieve this. We set as an interim target to purchase more than two third of our electricity from renewables by 2020. The present target corresponds to this interim target. In 2018 we already achieved a 74% share of electricity purchased from renewable sources for our worldwide operations. Increase of energy efficiency was one key factor. The target is to reduce energy consumption per vehicle produced by 45% between 2006 and 2020. By 2018 we achieved a 38% reduction. Supply of energy from renewable sources was another key element. In 2018 we purchased e.g. for vehicle production about 1,600 GWh of electricity, heat and cooling from renewable sources, among other things via certificates of origin. All

European production sites are delivered with green electricity. In the next years we want to continue to expand electricity supply from renewable sources at our plants outside of Europe.

Scope of target: The emissions in Scope include all BMW Group locations and the production sites in China. The electricity purchased in 2015 for the BMW Group production network (including China), for the corporate functions, development and administration in Munich (Germany) and for the motorcycle plant in Berlin (Germany) of 2,485,881 MWh makes about 95% of BMW Groups whole electricity purchased. The base year electricity consumption is derived by dividing 2,485,881 MWh by 0.95 and rounding.

### Part of emissions target

Relation of this target to Abs1 & Abs2: This target addresses only CO<sub>2</sub>-emissions from purchased electricity. Abs1 includes also emissions from heat supply as well as from fuel combustion inside the BMW Group. Abs2 goes on a mid to long term perspective far beyond these two targets. On a mid to long-term perspective we see the potential to replace in an economically reasonable way fossil fuels by renewable fuels (e.g. biogas) to achieve CO<sub>2</sub> neutral operations. Where available BMW Group has such solutions already in place: We operate one combined heat and power plants (in Spartanburg USA) with landfill gas. Our site in Rosslyn (South Africa) is supplied with electricity generated with biogas (source: cattle farm).

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

RE100

## 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 CO<sub>2</sub>e savings.**

	Number of initiatives	Total estimated annual CO <sub>2</sub> e savings in metric tonnes CO <sub>2</sub> e (only for rows marked *)
Under investigation	345	
To be implemented*	108	11,875
Implementation commenced*	64	35,624
Implemented*	129	47,499
Not to be implemented	44	

## C4.3b

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

---

### Initiative type

Energy efficiency: Building services

### Description of initiative

Lighting

### Estimated annual CO<sub>2</sub>e savings (metric tonnes CO<sub>2</sub>e)

27,812

### Scope

Scope 2 (location-based)

### Voluntary/Mandatory

Voluntary

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

16,000,000

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

50,000,000

### Payback period

4 - 10 years

### Estimated lifetime of the initiative

16-20 years

### Comment

We replace conventional lightning in BMW Groups production network with LED lightening step by step. In 2018 additional BMW Group locations have been equipped with LED lightening. This reduces electricity consumption by about 49,000 MWh per year.

We calculate Scope2 emission reductions throughout 4.3 using the “location-based” method in accordance with the GHG Protocol Scope 2 Guidance: Overall third-party electricity and heat purchased is calculated using emission factors from the Association of the German Automotive Industry (VDA). Due to our high percentage of electricity from renewable sources (74% of pure green electricity) this is more appropriate to make CO<sub>2</sub> reductions from energy efficiency measures visible.

---

### Initiative type

Energy efficiency: Processes



**Description of initiative**

Heat recovery

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

1,067

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

116,000

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

815,000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

At BMW Groups vehicle production site Spartanburg (USA) we implemented heat recovery measures to use the heat generated during compressed air generation. This reduces natural gas consumption by about 5,900 MWh per year.

---

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Heat recovery

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

1,519

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

329,000

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

1,254,000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

In BMW Groups vehicle production site Oxford (UK) we implemented heat recovery measures to reuse heat, generated for thermal afterburning of paint shop exhaust gases. This reduces natural gas consumption by about 8,300 MWh per year.

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Heat recovery

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

352

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

450,000

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

1,325,000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

In BMW Groups foundry in our engine production site in Landshut (Germany) we implemented measures to use the waste heat from the melting furnaces to preheat the incoming fresh air. This reduces natural gas consumption by about 1,900 MWh per year.

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

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

1,092

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

148,000

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

364,000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

16-20 years

**Comment**

In BMW Groups engine production site Steyr (AT), by retrofitting butterfly valves for circulating air operation and the installation of frequency converters we increased energy efficiency in the process of cleaning engine components necessary during the mechanical production. This reduces electricity consumption by about 1,900 MWh per year.

We calculate Scope2 emission reductions throughout 4.3 using the “location-based” method in accordance with GHG Protocol Scope 2 Guidance: Overall third-party electricity and heat purchased is calculated using emission factors from the Association of the German Automotive Industry (VDA). Due to our high percentage of electricity from renewable sources (74% of pure green electricity) this is more appropriate to make CO2 reductions from energy efficiency measures visible.

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Other, please specify  
Energy efficiency measures

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

15,657

**Scope**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

4,520,000

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

25,890,000

**Payback period**

4 - 10 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

In 2018 further 124 measures lead to a reduction of additional 15,657 t CO<sub>2</sub> in Scope1 & Scope 2 emissions per year (about 75% being Scope2 emission reductions which is why we choose "Scope2"). Due to this large number we concentrated above on 32 exemplary measures (28 of those being single projects at 28 BMW Group locations to install LED lightening). Instead of adding further 92 entries which would be similar to the above ones, with decreasing contributions to CO<sub>2</sub> reduction, we add here only one additional entry. This entry collects all the additional measures from our worldwide continuous improvement process and investments in specific efficiency measures for existing technologies.

We calculate Scope2 emission reductions throughout 4.3 using the "location-based" method in accordance with GHG Protocol Scope 2 Guidance: Overall third-party electricity and heat purchased is calculated using emission factors from the Association of the German Automotive Industry (VDA). Due to our high percentage of electricity from renewable sources (74% of pure green electricity) this is more appropriate to make CO<sub>2</sub> reductions from energy efficiency measures visible.

### C4.3c

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

Method	Comment
Internal price on carbon	Climate change and rising energy prices demand efficient energy usage as well as the increased use of alternative energy sources. Our target is to be leading in the usage of renewable energies. Furthermore, achievements will not only improve the company's environmental impact assessment but, due to increasing energy prices, also the company's profitability. This drives investment to reduce carbon emissions and thereby avoids rising costs for energy and expected costs for CO <sub>2</sub> -emissions due to "Cap and trade", carbon taxes, etc. Investments are internally assessed with an integrated catalogue of measurements for quality, productivity and efficiency. This

	catalogue also accounts for an internalization of external CO2 costs, e.g. from carbon trading schemes, on an investment level.
Compliance with regulatory requirements/standards	Compliance with regulatory requirements and standards is one of the basic prerequisites for the success of the BMW Group. Current law provides the binding framework for our wide range of activities around the world. Markets such as the US, Japan, Korea, China and Europe are introducing increasingly strict carbon emissions performance requirements for vehicles. The increasing number of regulations and standards drives investment in emissions reduction activities and thereby fosters innovation.
Internal finance mechanisms	The integration of environmental aspects in the early stages of major investment decisions increases the profitability of these projects. Considering the costs of carbon emissions in the planning phase of investment decisions increases the incentive to implement emissions reduction activities. Costs of carbon emissions are included in profitability calculations and are reflected in the return on investment.
Employee engagement	With the aim of establishing sustainability even more thoroughly in all areas of the company, a number of sustainability and environmental protection training courses have been established. Examples: Sustainability topics and the relevance of resource efficiency is addresses at the introductory event for new employees as well as in courses of our trainees. Another example are the annual environmental protection and health and safety courses. Ideas developed are implemented within our employee's idea management system which was established a long time ago. In addition to the permanently active online supported suggestion scheme, campaigns have been running to specific subjects as for example energy saving measures. In 2018 about 2,600 ideas were implemented which address among others also sustainability issues like energy and water savings.
Internal incentives/recognition programs	The strategic approach in the new strategy NUMBER ONE > NEXT is to leverage innovative technologies, digitalization and sustainability to deliver unique customer experiences. It is part of the BMW Group culture and anchored in our processes to mitigate climate risks and explore opportunities arising from the global efforts of combating climate change. Corporate sustainability measured in balanced scorecard terms (at Group level) is included as a formal corporate objective since 2009. Detailed targets are then derived for each of the divisions within the Group in the area of climate change. Those targets are for example a 25% reduction in fleet averaged CO2 emissions of new vehicles (2008-2020) and 45% less energy consumption per vehicle produced (2006-2020). Management bonus payments (all management positions) are directly linked to the fulfilment of corporate and divisional targets. The proportion of variable remuneration to total

	remuneration increases commensurate to the position within the corporate hierarchy.
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## C4.5

**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

## C4.5a

**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.**

### Level of aggregation

Group of products

### Description of product/Group of products

Low carbon products contribute to the transition of a low carbon economy. BMW Group interpretation is, that only battery electric vehicles (BEV) and plug-in hybrid vehicles (PHEV) (xEV's) belong to this category. In addition to the i3 and the i8 model, introduced in 2013 respectively 2014, we offered in 2018 plug-in hybrid drivetrains for the 2, 3, 5 and 7 Series, the X1, X5 and the MINI Countryman. We are active in 74 markets worldwide, more than any other new or traditional premium manufacturer and were e.g. in 2018 market leader for electrified vehicles in Europe.

### Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

### Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Impact of electro mobility

### % revenue from low carbon product(s) in the reporting year

5.7

### Comment

To get a rough estimate of the total emissions avoided per year we calculate averaged fleet emissions of our xEV fleet in the EU28 in 2018 (38 g CO<sub>2</sub>/km) and compare it to EU28 fleet emissions without xEV's (134 g CO<sub>2</sub>/km). We calculate one main market (39% of our retail volume) because fleet emissions of xEV's and conventional cars depend on the test cycles in the corresponding legislation. We multiply the difference of (134 - 38) g CO<sub>2</sub>/km with an averaged mileage of 15,000 km per year and the whole Volume of xEV's worldwide of 142,617 units to find about 204,000 t CO<sub>2</sub> avoided in 2018. The percentage of total revenues from Climate Change Products in 2018 is calculated as follows. To estimate the percentage of revenue for Low Carbon Products

we divided the number of “Low carbon products” of 142,617 vehicles by the total vehicles sold (2,490,664) and get 5.7%.

### **Level of aggregation**

Company-wide

### **Description of product/Group of products**

The use of all BMW Group cars sold in 2018 enable our customers to reduce CO<sub>2</sub> emissions, both compared to the use of comparable products of competitors as well as compared to older BMW Group vehicles which are to be replaced. Starting in 2007 we step by step introduced Efficient Dynamics (ED) technologies in the standard configuration. We continuously improve and extend the ED technology package to bring down the CO<sub>2</sub> emissions from vehicle generation to vehicle generation. We offer the BEV i3 plug-in drive trains in the 2, 3, 5 and 7 Series, the X1, X5 and the MINI Countryman) and sold 142,617 PHEVs and BEVs (xEVs). By 2023, we plan to offer 25 electrified models, of which more than half will be BEVs. We expect a xEV share in 2025 between 15 and 25%. We were e.g. able to reduce CO<sub>2</sub> emissions of our newly sold vehicles in Europe (EU-28) by around 42% between 1995 and 2018. The fleet averaged CO<sub>2</sub> emissions per kilometer worldwide in 2018 calculated from the core market values EU28, USA, China, Japan and Korea were 141 g CO<sub>2</sub>/km (2017: 143 g CO<sub>2</sub>/km) when taking into account properly the new EU28 test cycle reporting requirements in both years.

Other examples how our products & services contribute to avoid GHG emissions are our Car Sharing services DriveNOW & ReachNOW or features such as ConnectedDrive or ECO PRO mode:

- (1) By 31 December 2018, the DriveNow & ReachNow car-sharing services had almost 1.3 Million in total and e.g. 1,175,000 customers across Europe DriveNow is one of the strongest drivers of electro mobility in Germany. To date over 420,000 customers have driven more than 29.6 million emission-free kilometres with the electric BMW i3 since 2013.
- (2) Connected Drive is a package of intelligent technologies that interconnect the driver, vehicle occupants, the vehicle itself and the environment. Contributions are made e.g. by identifying the fastest and most efficient routes or simplifying the search for a parking place – an activity that currently still accounts for about 30 % of city traffic.
- (3) All BMW models come standard with a Drive Performance control for activating the ECO PRO mode. Depending on individual driving style, the ECO PRO mode allows additional fuel savings of about 15%. As this mode is not activated in the usual test cycles, the full fuel savings are realized only in real day-to-day driving.

### **Are these low-carbon product(s) or do they enable avoided emissions?**

Avoided emissions

### **Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify



Use phase fuel consumption

**% revenue from low carbon product(s) in the reporting year**

88

**Comment**

To get a rough number we proceed as for “Low Carbon Products” and calculate the total CO<sub>2</sub> emissions avoided in 2018 for EU28 (39% of retail volume). Each model equipped with the newest Efficient Dynamics technology package saves annually a certain amount of fuel when compared to its predecessor (we compare the fuel consumption in the New European Driving Cycle and assume cars to be driven by 15,000 km each year on average). Summing up the fuel saving of all vehicles with the efficient dynamics technology package sold in Europe (EU28) but not taking into account the BEV’s and PHEV’s sold in 2018 gives a total amount of gasoline and diesel saved. Applying the emissions factor of 2.38 CO<sub>2</sub>e per litre for vehicles with gasoline engines and 2.66 kg CO<sub>2</sub>e per litre (diesel engines) and a GWP of CO<sub>2</sub> emissions equal to 1, the total amount of 206,000 metric tons CO<sub>2</sub>e avoided is derived. We extrapolate emissions avoided worldwide by dividing the EU28 figure by 39% and find round about 530,000 t CO<sub>2</sub>. Since we estimate in this category avoided emissions by third parties we add to the avoided emissions worldwide from conventional cars the avoided emissions from low carbon products to find about 734,000 t CO<sub>2</sub> avoided. The percentage of total revenues from Products in 2018 which avoid emissions is calculated as follows: To estimate the percentage of revenue for products & Services avoiding emissions we divide the revenues from the automotive segment by the total revenue of the BMW Group and find 88%.

## C5. Emissions methodology

### C5.1

**(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).**

#### Scope 1

---

**Base year start**

January 1, 1990

**Base year end**

December 31, 1990

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

246,060

**Comment**

#### Scope 2 (location-based)

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**Base year start**

January 1, 1990

**Base year end**

December 31, 1990

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

489,063

**Comment**

**Scope 2 (market-based)**

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**Base year start**

January 1, 1990

**Base year end**

December 31, 1990

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

489,063

**Comment**

## C5.2

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations

European Union Emissions Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for aircraft operators

ISO 14064-1

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

## C6. Emissions data

### C6.1

**(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)**

581,703

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

## C6.2

**(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**

## C6.3

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

**Reporting year**

**Scope 2, location-based**

1,539,378

**Scope 2, market-based (if applicable)**

538,622

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

Market-based emissions were calculated in accordance with the GHG Protocol Scope 2 Guidance. Landfill gas and wood pellets used in our operations as well as electricity from renewable energy sources has been multiplied with an emission factor of zero when calculating the BMW Group CO2 emissions. We applied our supplier's electricity labelling in Germany plus updated VDA factors.

Location-based emissions were calculated by multiplying the third-party electricity and heat purchased with the newest VDA factors (VDA: German Automotive Association).

## 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

**(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.**

---

**Source**

Some international R&D offices, BMW Group owned branches and other buildings.

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

**Relevance of market-based Scope 2 emissions from this source (if applicable)**

Emissions are not relevant

**Explain why this source is excluded**

These emissions are estimated to account for less than 5% of our total CO<sub>2</sub>e emissions. By assessing and managing our CO<sub>2</sub> emissions, we are driven by materiality. We therefore focused first on our vehicle production sites where about 90% of emissions occurs. Next largest amount of emissions steam from administration and R&D located in Munich as well as from the motorcycle production sites. These are included in our CDP response since 2015 and are externally verified by PWC since 2016. The same is true since 2018 for administration and R&D of BMW Groups Joint Venture BBA in Shenyang, China. We consider emissions from other international R&D offices, BMW Group owned branches and other buildings as to be not relevant because they account for less than 5% of total emissions but collection would cause disproportionately high costs since various locations distributed around the world contribute (disadvantageous cost/benefit relation).

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**Source**

CO<sub>2</sub>e emissions from VOC and N<sub>2</sub>O.

**Relevance of Scope 1 emissions from this source**

Emissions are not relevant

**Relevance of location-based Scope 2 emissions from this source**

Emissions are not relevant

### Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

### Explain why this source is excluded

These emissions in CO<sub>2</sub> equivalent account for <1 % of our total CO<sub>2</sub> equivalent emissions. By assessing and managing our CO<sub>2</sub> emissions, we are driven by materiality. Due to the very small percentage these emissions are therefore not listed in our sustainable value report 2018 and the annual report 2018. To be consistent with the already published data we omit them here too.

Remark: Nevertheless reduction of VOC is an important target but not due to its carbon potential but its effects on human health. We set as target a reduction of VOC emissions per vehicle by 45% between 2006 and 2020. Between 2006 and 2018 solvent emissions were already reduced by 62.9%.

## C6.5

### (C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

#### Purchased goods and services

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##### Evaluation status

Relevant, calculated

##### Metric tonnes CO<sub>2</sub>e

17,221,109

##### Emissions calculation methodology

(i) Types and sources of data: The BMW Group analyses the environmental impact over the entire product life cycle and monitors the respective targets with the well-established instrument of life cycle analysis (LCA; ISO 14040/ISO 14044) using the commercial life cycle inventory GaBi4. Main input for the LCAs are detailed, car model specific material inventories, containing weights and material compositions of all parts. Emission figures are derived from processing procedure models, data as well as emission factors of GaBi4. Global warming potentials (GWP) applied are from the Institute of Environmental Sciences (CML) of the university Leiden (Netherlands). Emissions from purchased goods and services are one contribution to the overall emission figure calculated from the LCAs which can be separated. To calculate the emission figure we used in addition exact volumes of all vehicles respectively model types produced in 2018. (ii) Data quality: The data quality of our product specific material inventories and therefore the basis of our calculations are assessed to be high. Limitations in exactness come from two sources: (1) Use of industry average processing models and average data of GaBi4, necessary as the BMW Group depends on information from members of the supply chain who do not yet report their Scope 1 & 2 emissions to provide exact figures. (2) BMW Group prioritized the main models (1, 3, 5, 7, X3, X5, i3) in analyzing full scale LCAs. Other sale figures are attributed to the most comparable model to calculate total CO<sub>2</sub> emission from purchased goods and services. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumptions,

allocations: Based on detailed material inventories we calculated the LCAs of the BMW 1, 3, 5, 7, X3, X5 Series and i3 with the life cycle inventory GaBi4 and the CML GWPs and extracted the emission figures of the purchased goods and services. We then allocated all vehicles produced in 2018 to the model which fits best. Multiplying the number of assigned vehicles with the emission figure of the corresponding model we calculated as sales weighted emission figure 17,221,109 metric tons CO<sub>2</sub>e for purchased goods and services.

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

100

**Explanation**

**Capital goods**

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on emission reductions. We do not regard this scope3 category to be of particular relevance because of our limited influence on these suppliers. The corresponding emissions are estimated to be below 5% of our total scope3 emissions in 2018. The selection of new equipment or buildings focuses on the use phase (increased resource efficiency, minimized CO<sub>2</sub> emissions). Our influence on operations and therefore on CO<sub>2</sub> emissions of these kinds of suppliers is less than e.g. for suppliers of production material where we often have closely collaborated for many years. Nevertheless measures to improve CO<sub>2</sub> emissions performance are the same applying for all direct and indirect suppliers which are described in more detail in C12.1a (e.g. contractually fixed requirement to install an environmental management system).

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

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. According to our estimates the scope 3 emissions of "Fuel-and-energy-related activities" are below 1% of total BMW Group scope 3 emissions. Furthermore BMW Group cannot directly influence the efficiency losses in energy grids and transport. Consequently the scope 3 category "Fuel-and-energy-related activities" is not of substantial relevance. To get a rough estimate of the scope 3 emissions of "Fuel-and-energy-related activities" we used fuel and country specific CO<sub>2</sub> emission factors for indirect emission (provided by GEMIS, VDA emission

factors and IEA CO<sub>2</sub> emissions from fuel combustion 2006). These emission factors were multiplied with real activity data on the fuel input of BMW Group.

## Upstream transportation and distribution

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### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

1,563,919

### Emissions calculation methodology

(i) Types and sources of data: Real activity data in tons transport capacity per kilometer was used to calculate CO<sub>2</sub> emissions for upstream transportation and distribution. Total transport capacity (inbound and outbound) in 2018 was 40,268 million tkm. With the 2018 system boundaries, we have reached an estimated coverage of about 90 % of the CO<sub>2</sub> emissions from logistics. The scope currently comprises: Inbound volumes (material supplies to plants and spare parts delivery) for BMW and MINI vehicles in Germany, UK, USA, South Africa, China, Thailand, India and CKD/SKD locations as well as for delivery of spare parts to the parts supply center in Dingolfing (Germany). Outbound volumes (distribution of vehicles and spare parts) are included up to arrival at the distribution centers in the markets worldwide as well as for some markets up to arrival at the dealerships. Emission factors for freight by road (about 73 g CO<sub>2</sub>/tkm), train (between 14 and 23 g CO<sub>2</sub>/tkm depending on the train type), air (570 respectively 733 g CO<sub>2</sub>/tkm depending on the airplane type) and ship (about 10 g CO<sub>2</sub> /tkm for container carriers and 33 g CO<sub>2</sub> /tkm for car carriers) are used according to direct reporting of CO<sub>2</sub> factors by transport companies and Tremod. (ii) Data quality: The data quality is assessed to be high as real activity data was used. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumptions, allocations: CO<sub>2</sub> emissions are calculated in accordance with DIN EN 16258. Transport capacities for road, rail, air and sea transport were measured. Limitations in scope are described under (i). For each transport capacity average emission factors described under (i) were multiplied with transport capacities. Other assumptions than average emissions were not made.

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

100

### Explanation

## Waste generated in operations

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### Evaluation status

Not relevant, explanation provided

### Explanation



BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. According to our estimates the scope 3 emissions of “Waste generated in operations” are below 0.1% of total BMW Group scope 3 emissions. In consequence this category is not of substantial relevance. However, due to our strong commitment to recycling and closed loops with many initiatives implied already in recent years total waste for disposal was reduced to 9,906 tons in 2018 (–77.5 since 2006) which is equivalent to a reduction in scope3 emissions in this category.

## Business travel

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### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

159,039

### Emissions calculation methodology

(i) Types and sources of data: CO<sub>2</sub> emissions from Business travel are calculated from real activity data in regard to destinations, transport kilometers and the mode of transport used. Business travel in scope covers more than 90% of the total BMW Group business travel. Air travel is based on data from sold tickets respectively passenger miles booked with Bavaria-Lloyd Reisebüro GmbH (German and Austrian entities), global business travel is based on data delivered from the international BMW Group offices. Travel with rental cars is based on data of all bookings (national and international) within the BMW accounts with Sixt and AVIS. Travel by train is considered without Germany (our German rail business travel is CO<sub>2</sub> neutral). To calculate the emission figure from these data we used the publicly available “GHG Protocol tool for mobile combustion. Version 2.6”. The emission factors of this tool come from the UKs DEFRA, the US EPA and the IPCC 2006 Guidelines for National Greenhouse Gas Inventories. (ii) Data quality: The data quality is assessed to be high as real activity data was used. A few markets send only a list of destinations. In this case we calculated the corresponding distances by our own. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumptions, allocations: In a few markets we had to calculate the travel distances from the delivered lists of destinations. We allocated the business travel respectively the distances travelled to the categories of each mode of transport as given by the GHG Protocols mobile combustion tool (e.g. domestic, short or long haul air travel with economy, business or first class). We put in the distances into the mobile combustion tool (excel based). The emission figure for business travel of 159,039 metric tons CO<sub>2</sub>e is calculated automatically by this tool.

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

100

### Explanation

## Employee commuting

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### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

136,608

### Emissions calculation methodology

(i) Types and sources of data: To calculate CO<sub>2</sub>-emissions from employee commuting BMW Group relies on real activity data for trips to and from destinations for 62% of employees of the BMW Group. The travel data was aggregated to the following modes: "Car kilometers", "public transport kilometers", "plant bus kilometers" and "bicycle" respectively "foot kilometers". These activity data were multiplied with corresponding emission factors: For the total sum of kilometers driven with the employee cars we used 175 g CO<sub>2</sub> / km, for the total sum of kilometers travelled via public transportation we used 75 g CO<sub>2</sub> / km and for the total sum of kilometers driven with the plant buses we used 742 g / km. The average emission factors for car travel and public transport were taken from the ifeu institute and Tremod. For plant busses we gathered information on the fuel consumption directly from the bus companies and used the diesel emission factor of 2.66 kg CO<sub>2</sub> per litre. The mileage was assessed by census at the production sites. (ii) Data quality: The data quality is assessed to be high as real activity data was used. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumptions, allocations: For the activity data census were carried out in recent years and further validated by comparisons with parking spot use, public transport job ticket holders, plant bus registrations and the number of available parking spots for bicycles. . Further assumptions based on the census were: 1.08 BMW employees travelled on average per car and the average daily distance was 27 km. The average public transport distance was 20 km and the average plant bus distance was 44 km. Finally the bicycle and pedestrian average distance was 4 km. To calculate the emission figure we summed up the kilometers travelled by the employees in each mode in 2018 and multiplied with the corresponding emission factors. Finally the so obtained emission figure is divided by 0.62 (62% of employees are covered by the real activity data) to extrapolate the emissions from employee commuting for the whole BMW Group.

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

62

### Explanation

## Upstream leased assets

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### Evaluation status

Not relevant, explanation provided

### Explanation

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. Emissions from upstream leased assets belonging to our production network are included in our scope1 and scope2 emission figures. In addition to this, leased assets worldwide such as office buildings not included in scope 1 and scope2 make a negligible contribution when compared to our total scope3 emissions. Therefore emissions from upstream leased assets are of minor relevance.

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## Downstream transportation and distribution

### Evaluation status

Not relevant, explanation provided

### Explanation

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. The scope 3 category "Downstream transportation and distribution" is assessed to be close to 0 and so to be of no relevance: According to the GHG Protocol "Downstream transportation and distribution" is defined as "Transportation and distribution of products sold by the reporting company between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company)". Transportation of our products to pick-up of customer in either BMW Group owned or BMW Group franchised dealerships is paid for by BMW Group and therefore included in the scope 3 category "Upstream transportation and distribution". Retail and Storage of our products is also accordingly accounted for in either scope 1+2 (BMW Group owned dealerships) or in the scope 3 category "Franchises".

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## Processing of sold products

### Evaluation status

Not relevant, explanation provided

### Explanation

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. BMW Groups core business, premium mobility products and services are consumer goods, which are not further processed. We sell small amount of engines / powertrains to other companies resulting in negligible emissions from further processing. Consequently the scope 3 category "Processing of sold Products" is not relevant for BMW Group.

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## Use of sold products

### Evaluation status

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

52,759,567

**Emissions calculation methodology**

(i) Types and sources of data: The emission figure is based on real activity data of the main markets Europe (EU28), USA, China Japan and Korea, covering about 86% of our worldwide sales. By law we have to know the exact average CO<sub>2</sub> emission figure of each car and, in consequence, for the fleet of new vehicles sold in the corresponding market (e.g. 128 g CO<sub>2</sub> / km in EU28 in 2018 when taking into account properly the new EU28 test cycle as well as reporting requirements in place since 2018 as described in footnote 1 on p. 35 in [https://www.bmwgroup.com/content/dam/bmw-group-websites/bmwgroup\\_com/responsibility/downloads/en/2019/2019-BMW-Group-SVR-2018-Englisch.pdf](https://www.bmwgroup.com/content/dam/bmw-group-websites/bmwgroup_com/responsibility/downloads/en/2019/2019-BMW-Group-SVR-2018-Englisch.pdf)), accounting for different driving cycles depending on the country and according to national legislation. Furthermore we used the sales volumes of 2018 in these markets as well as the total sales volume of 2,490,664 vehicles. (ii) Data quality: Due to the regulated and standardized measurement of the CO<sub>2</sub> emissions in driving cycles of the corresponding markets, data quality is assessed to be high. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumption, allocations: To calculate total emissions from the use of sold products additional assumption is an average mileage of 150,000 km over life time. We multiplied the average fleet emissions (g CO<sub>2</sub> / km) of the above mentioned markets with the corresponding sales volumes to get a sales volume weighted average emission figure. Multiplying this figure with the average mileage of 150,000 km and the total worldwide sales volume gives the total emissions from the use phase of our cars sold in 2018.

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

100

**Explanation****End of life treatment of sold products****Evaluation status**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

1,252,835

**Emissions calculation methodology**

(i) Types and sources of data: BMW Group analyses the environmental impact over the entire product life cycle and monitors the respective targets with the well-established instrument of life cycle analysis (LCA; ISO 14040/ISO 14044) using the commercial life cycle inventory GaBi4. Main input are detailed, car model specific material inventories, containing weights and material compositions of all parts. Emission figures are derived from processing procedure models, data as well as emission factors of GaBi4. GWPs applied are from the Institute of Environmental Sciences (CML) of the university Leiden

(Netherlands). Emissions from end of life treatment of sold products are one contribution to the overall emission figure calculated from the LCAs which can be separated. To calculate the emission figure we used in addition exact volumes of all vehicles respectively model types produced in 2018. (ii) Data quality: The data quality of our product specific material inventories and therefore the basis of our calculations is assessed to be high. Limitations in exactness come from two sources: (1) Use of industry average processing models and average data of GaBi4. (2) BMW Group prioritized the main models (1, 3, 5, 7, X3, X5, i3) in analyzing full scale LCAs. Other sales figures are attributed to the most comparable model to calculate total CO<sub>2</sub> emission from end of life treatment of sold products. The data as well as the emission figure has been checked by PwC in limited assurance. (iii) Methodologies, assumption, allocations: Based on detailed material inventories we calculated the LCAs of the BMW 1, 3, 5, 7, X3, X5 Series and i3 with the life cycle inventory GaBi4 and the CML GWPs. When modelling the end of life treatment we follow the standard processes as given by the EU directive for end-of-life vehicles (2000/53/EC) as well as the directive (2005/64/EC). When calculating the emission figures we did not account for "credits" from energy recovery or recycling. We extracted the emission figures of the end of life treatment of sold products from the LCAs. We then allocated all vehicles sold in 2018 to the model which fits best. Multiplying the number of assigned vehicles with the emission figure of the corresponding model we calculated as sales weighted emission figure 1,252,835 metric tons CO<sub>2</sub>e from the end of life treatment of sold products in 2018.

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

100

### **Explanation**

### **Downstream leased assets**

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#### **Evaluation status**

Not relevant, explanation provided

#### **Explanation**

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. Scope3 emissions from downstream leased assets stem from Alphabet, which is a multi-marque fleet funding company, part of the BMW Group, currently operating in 19 countries. To calculate a total emission figure we have to exclude from the total volume of lease contracts the leased cars of the BMW Group since these are already included in the calculation of the use phase emissions. Emissions from vehicles of other brands contribute to the whole Scope3 emissions <1%. Furthermore BMW Group has limited influence on the fuel efficiency of vehicles from other OEMs as well as on customer's preferences. Therefore we consider this category as "not relevant, explanation provided".

### **Franchises**

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### Evaluation status

Not relevant, explanation provided

### Explanation

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. According to our estimates the scope 3 emissions of “Franchises” are below 2% of total BMW Group scope 3 emissions. Furthermore BMW Group has limited influence on BMW Group dealerships, for which we do not have operational control. Nonetheless, we started raising awareness of resource- and CO<sub>2</sub>-matters amongst our international, independent dealer network, by launching a sustainability initiative within the sales & marketing division of the BMW Group, also involving the country representatives. Part of this initiative is a worldwide dealer competition on ‘sustainability leadership’ amongst our entire dealer network. Due to the relative small amount of total scope 3 emissions in the category “Franchises” and limits to our operational influence we assess “Franchises” as not of particular relevance concerning BMW Groups scope3 emissions. To get a rough estimate of the scope 3 emissions of “Franchises” we calculated the intensity figure for CO<sub>2</sub> emissions/per automobile sold in BMW Group owned dealerships in Germany, relying on directly monitored information on CO<sub>2</sub>-emissions. This intensity figures was then multiplied with global retail figures, excluding the retails of BMW Group owned dealerships, to estimate the total CO<sub>2</sub>-emissions of BMW Groups independent global dealership network. We acknowledge limited accuracy due to the assumptions of “new vehicles sold” as CO<sub>2</sub>-intensity for total dealership CO<sub>2</sub> emissions.

## Investments

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### Evaluation status

Not relevant, explanation provided

### Explanation

BMW Group focuses on scope 3 emission categories which are identified as relevant according to the following two criteria: Share in total BMW Group scope 3 emissions and influence of BMW Group on Emission Reductions. According to our estimates the scope 3 emissions from “Investments” are significantly below 1% of the total BMW Group scope 3 emissions. Due to the low amount of emissions in relation to the total BMW Group scope 3 emissions the scope 3 category “Investments” is not of substantial relevance. To estimate the emissions we analyzed in a first step all assets and identified those with material emissions (companies in the transportation or production sector, BMW Group share >5%). The joint venture BMW Brilliance Automotive Ltd. (Shenyang, China) is a major example which however is already included in BMW Groups Scope 1 & 2 emissions. SGL Carbon Fibers LLC (Delaware, USA) is another example. We then estimated roughly from energy data and the newest VDA emission factors corresponding CO<sub>2</sub> emissions.

## Other (upstream)

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### Evaluation status

**Explanation**

**Other (downstream)**

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**Evaluation status**

**Explanation**

**C6.7**

**(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

No

**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.**

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**Intensity figure**

0.0000115

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

1,120,325

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

97,480,000,000

**Scope 2 figure used**

Market-based

**% change from previous year**

0.9

**Direction of change**

Decreased

**Reason for change**

Increased CO2 efficiency due to emission reduction activities caused the decrease in CO2 emissions / revenue by 0.9% when compared to the 2017 figure of 0.0000116



although revenue has decreased by 0.8% when compared to 2017 (Remark: The 2017 value is changed compared to the one given in the last years CDP response. In the Annual Report 2018 total revenue of 2017 was adjusted to a value of 98.282.000.000 € due to first-time application of IFRS 15. Please see footnote 1 on p.5 of the BMW Group Annual Report 2018). The intensity figure is calculated by dividing emissions from production, administration and company owned vehicles and planes by revenue. In particular increase in energy efficiency as well as use of environmentally friendly and economically sustainable energy resources and purchase of electricity produced from regenerative sources helped to reduce the CO<sub>2</sub> emissions in production and administration in 2018 by 1.4%.

**Intensity figure**

0.4

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

905,072

**Metric denominator**

vehicle produced

**Metric denominator: Unit total**

2,248,249

**Scope 2 figure used**

Market-based

**% change from previous year**

2.4

**Direction of change**

Decreased

**Reason for change**

Increased CO<sub>2</sub> efficiency due to emission reduction activities caused the decrease in CO<sub>2</sub> emissions / vehicles produced in the BMW Group production network without volumes of partner plants by 2.4% when compared to the 2017 figure of 0.41 although the volume of vehicles produced has decreased by 0.9%. The intensity figure is calculated by dividing emissions from BMW Group production sites by the number of vehicles produced. In particular increase in energy efficiency as well as use of environmentally friendly and economically sustainable energy resources and purchase of electricity produced from regenerative sources helped to reduce the CO<sub>2</sub> emissions in production in 2018 by 2.4%.

## C7. Emissions breakdowns

### C7.1

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

No

### C7.2

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

Country/Region	Scope 1 emissions (metric tons CO <sub>2</sub> e)
Germany	412,250
China	35,733
United States of America	56,131
United Kingdom of Great Britain and Northern Ireland	55,206
South Africa	10,856
Austria	9,715
India	87
Thailand	20
Brazil	1,705

### C7.3

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

By business division

### C7.3a

**(C7.3a) Break down your total gross global Scope 1 emissions by business division.**

Business division	Scope 1 emissions (metric ton CO <sub>2</sub> e)
BMW Group production network	461,021
Company owned vehicles	88,272
BMW Business Aviation	6,182
Central Administration & Research and Innovation Centers	26,228

## C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO<sub>2</sub>e.

	Gross Scope 1 emissions, metric tons CO <sub>2</sub> e	Comment
Transport OEM activities	461,021	Emissions from our production network (car and motorcycle production).

## C7.5

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

Country/Region	Scope 2, location-based (metric tons CO <sub>2</sub> e)	Scope 2, market-based (metric tons CO <sub>2</sub> e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Germany	711,535	42,136	1,449,660	1,249,952
China	439,873	281,753	644,965	202,200
United States of America	157,789	157,789	292,201	0
United Kingdom of Great Britain and Northern Ireland	93,250	0	224,158	224,158
South Africa	73,293	51,314	62,430	18,721
Austria	52,428	0	211,243	211,243
India	3,048	3,048	2,709	0
Thailand	2,504	2,504	4,252	0
Brazil	5,658	78	18,371	17,399

## C7.6

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

By business division

## C7.6a

**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
BMW Group Production Network	1,366,714	509,332
Central Administration & Research and Innovation Centers	172,664	29,290

## C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

**(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.**

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Transport OEM activities	1,366,714	509,332	Emissions from our production network (car and motorcycle production).

## C-TO7.8

**(C-TO7.8) Provide primary intensity metrics that are appropriate to your indirect emissions in Scope 3 Category 11: Use of sold products from transport.**

### Activity

Light Duty Vehicles (LDV)

### Emissions intensity figure

0.000141

### Metric numerator (Scope 3 emissions: use of sold products) in Metric tons CO2e

52,759,567

### Metric denominator

p.km

### Metric denominator: Unit total

373,600,000,000

**% change from previous year**

-1.4

**Vehicle unit sales in reporting year**

2,490,664

**Vehicle lifetime in years**

15

**Annual distance in km or miles (unit specified by column 4)**

10,000

**Load factor**

1

**Please explain the changes, and relevant standards/methodologies used**

Changes: Since 2007 BMW Group's Efficient Dynamics (ED) is a comprehensive technologic approach for the consistent reduction of fuel consumption and emissions in the standard configuration of all cars of the BMW Group. It includes highly-efficient cars with gradually refined combustion engines and BEVs / PHEVs. In 2018 we offered plug-in hybrid drivetrains for the 2, 3, 5 and 7 Series, the X1, X5 and the MINI Countryman as well as the BEV BMW i3 and the PHEV BMW i8.

In 2018, we sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788), a 38.4% increase compared to 2017, and led e.g. in 2018 the market for electrified vehicles in Europe. Worldwide fleet average CO<sub>2</sub> emissions per kilometer fell by 1.4% to 141 g CO<sub>2</sub>/km (2017: 143 g CO<sub>2</sub>/km), mainly due this increase (Remark on the changed test cycle procedure in the EU28: We calculated both, the 2017 & 2018 emission figure with the EU28 fleet emission value consistent with the new regulation for fleet emission reporting in place since 2018).

Standards / Methodologies: The emission figure is based on data of the main markets Europe (EU28), USA, China Japan and Korea, covering about 86% of our worldwide sales. By law we have to know the exact average CO<sub>2</sub> emission figure of each car and for the fleet of new vehicles sold in the corresponding market, accounting for different driving cycles depending on the country and according to national legislation. The emissions intensity figure of 141 g CO<sub>2</sub> / km (which equals to 0.000141 t CO<sub>2</sub> / km) is calculated by multiplying the average fleet emissions (g CO<sub>2</sub> / km) of the above mentioned markets with the corresponding sales volumes to get a sales volume weighted average emission figure. To calculate total emissions additional assumption is an average kilometrage of 150,000 km over life time (10,000 km per year, 15 years of life time). Multiplying the sales volume weighted average emission figure by 150,000 km and the total worldwide sales volume of 2,490,664 vehicles gives the total emissions from the use phase of our cars sold in 2018 of 52.759.567t CO<sub>2</sub>. We use 1 as load factor. This is consistent with worldwide regulations as well as with the world wide fuel economy figure as presented in company communications and our sustainability report. Furthermore we do not have precise information about the load factor of our vehicles due to customer's privacy.

## 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	24,870	Increased	2.2	<p>In 2018 the amount of electricity from renewable sources delivered to the BWM Group locations was slightly reduced resulting in a 24,870 t CO2 increase when compared to 2017 and, correspondingly, to a 2.2% increase (<math>2.2\% = 24,870 / 1,135,983</math>) with the 2017 Scope1&amp;2 emissions of 1,135,983 t CO2.</p> <p>In 2018 again 100% of the BMW Group European sites were delivered with electricity from renewable sources.</p> <p>Our vehicle production site in Araquari (Brazil) was added in 2018 to our vehicle production sites delivered with 100% green electricity. In total we got 1,895,961 MWh of electricity from renewable sources in 2018. However, the production volume in Europe and in particular in Germany dropped (e.g. German sites: -9%) and therefore the green electricity volume dropped by about 100,000MWh.</p> <p>When compared to the 2017 value of total green electricity delivered of 1,994,629 MWh we got 98,668 MWh less electricity from renewable sources. Assuming constant CO2 efficiency when calculating CO2 emissions for 2017 due to the change in output means to assume a reduced amount of green electricity of 16,309 MWh.</p> <p>Taking into account all that we find a</p>

				reduction in green electricity delivered to BMW Group of 1,994,629 MWh minus 1,895,961 MWh minus 16,309 MWh respectively 82,359 MWh. Taking into account the exact quantities of green electricity in the countries and the corresponding emission factors we find an increase in CO2 emissions of 24,870 t CO2.
Other emissions reduction activities	29,730	Decreased	2.6	BMW Group systematically analyses emission reduction potentials with a special focus on the production sites owned by BMW Group and realized a 2.6 % decrease in CO2 emissions due to emission reduction activities in 2018. This corresponds to a total decrease of 29.730 t CO2 ( $2.6\% = 29.730 / 1,135,983$ ) with the 2017 Scope1&2 emissions of 1,135,983 t CO2. Implementation of 129 measures to improve energy efficiency of existing processes / technologies (e.g. paint shops) led to a decrease in CO2 emissions despite an increase in extreme weather situations and a slight decrease of production volume with the shift model remaining unchanged in some plants, both being effects which increase energy consumption.
Divestment				
Acquisitions				
Mergers				
Change in output	9,908	Decreased	0.9	The decrease of CO2 emissions from the BMW Group own operations of 0.9% due to the change in output is related to the decrease in vehicle and motorcycle production volume (e.g. a 0.9% decrease in vehicle production volume) and equals to 9.908t CO2 ( $0.9\% = 9.908 / 1,135,983$ ) with the 2017 Scope1&2 emissions of 1,135,983 t CO2. To calculate the CO2 increase from the 2017 emissions due to the change in output we assume constant CO2 efficiencies. Due to the significance of contract production, only vehicles manufactured at BMW production plants



				are taken into account when calculating the vehicle volume. Efficiency of contract production is assessed separately.
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other	890	Decreased	0.1	In 2018 BMW Group continued to expand its international production network resulting in international travel activities. One example are activities in terms of the construction of our site extension in Shenyang, China. Another example is the finalization of our new site in San Luis Potosi (Mexico). Furthermore, the variety of new models and technologies to be developed for series maturity result in testing activities and in addition in travel to e.g. suppliers with company owned cars and correspondingly in fuel consumption. CO2 emissions from BMW Group owned planes as well as vehicles have been slightly decreased by 890 t CO2 in 2018 when compared to 2017. This leads to a decrease in CO2 emissions of 0.1% ( $0.1\% = 890 / 1,135,983$ ) with the 2017 Scope1&2 emissions of 1,135,983 t CO2.

### 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 0% but less than or equal to 5%

### C8.2

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

	Indicate whether your organization undertakes this energy-related activity
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	Yes
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 MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	205,540	3,070,590	3,276,130
Consumption of purchased or acquired electricity		1,895,961	617,347	2,513,308
Consumption of purchased or acquired heat		26,640	368,969	395,609
Consumption of purchased or acquired cooling		1,072	0	1,072

Consumption of self-generated non-fuel renewable energy		1,091		1,091
Total energy consumption		2,130,304	4,056,906	6,187,210

## 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	No
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.**

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

161,971

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

0

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

0

**Comment**

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

212,233

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

0

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

0

**Comment**

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

2,669,457

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

1,727,359

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

942,098

**Comment**

---

**Fuels (excluding feedstocks)**

Landfill Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

205,320

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

0

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

205,320

**Comment**

---

**Fuels (excluding feedstocks)**

Fuel Oil Number 1

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

2,888

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

2,888

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

0

**Comment**

---

**Fuels (excluding feedstocks)**

Jet Kerosene

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

24,041

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

0

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

0

**Comment**

---

**Fuels (excluding feedstocks)**

Wood

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

220

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

220

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

0

**Comment**

## C8.2d

**(C8.2d) List the average emission factors of the fuels reported in C8.2c.**

### Diesel

---

**Emission factor**

2.66

**Unit**

kg CO2 per liter

**Emission factor source**

Internal specification (the emission factor depends e.g. on the fuel quality and therefore has to be specified)

**Comment**

### Fuel Oil Number 1

---

**Emission factor**

0.27

**Unit**

metric tons CO2e per MWh

**Emission factor source**

This is an averaged emission factor for our production network. We use in our calculations country specific emissions factors from the Association of the German Automotive Industry (VDA) in its newest version. However, for oil and gas these emission factors do not vary significantly from country to country.

**Comment**

### Jet Kerosene

---

**Emission factor**

0.07

**Unit**

metric tons CO2 per GJ

**Emission factor source**

Emission factors as given by the German Emissions Trading Authority (DEHSt)

**Comment**

**Landfill Gas**

---

**Emission factor**

0

**Unit**

metric tons CO2 per MWh

**Emission factor source**

We treat landfill gas used in our combined heat and power plant in Spartanburg (USA) as biogas with a corresponding Association of the German Automotive Industry (VDA) emission factor of 0.

**Comment**

**Motor Gasoline**

---

**Emission factor**

2.38

**Unit**

kg CO2 per liter

**Emission factor source**

Internal specification (the emission factor depends e.g. on the fuel quality and therefore has to be specified)

**Comment**

**Natural Gas**

---

**Emission factor**

0.2

**Unit**

metric tons CO2 per MWh

**Emission factor source**

This is an averaged emission factor for our production network. We use in our calculations country specific emissions factors from the Association of the German



Automotive Industry (VDA) in its newest version. However, for oil and gas these emission factors do not vary significantly from country to country.

**Comment**

**Wood**

**Emission factor**

0

**Unit**

metric tons CO2 per MWh

**Emission factor source**

We use in our calculations the emissions factor for biomass as given in the latest version of the Association of the German Automotive Industry (VDA) emissions factors.

**Comment**

**C8.2e**

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

	<b>Total Gross generation (MWh)</b>	<b>Generation that is consumed by the organization (MWh)</b>	<b>Gross generation from renewable sources (MWh)</b>	<b>Generation from renewable sources that is consumed by the organization (MWh)</b>
Electricity	416,877	416,877	52,543	52,543
Heat	2,080,588	2,080,588	67,301	67,301
Steam	0	0	0	0
Cooling	0	0	0	0

**C8.2f**

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

**Basis for applying a low-carbon emission factor**

Energy attribute certificates, Guarantees of Origin

**Low-carbon technology type**

Solar PV

Wind

Hydropower  
Biomass (including biogas)  
Other low-carbon technology, please specify  
Landfill gas

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

1,632,123

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

BMW Group purchased guarantees of origin for 1,632,123 MWh of 100% green electricity. RWE, the balance group manager in Germany, delivers electricity to the BMW Group locations in Germany. ENAMO and Verbund AG are the electricity suppliers for our engine plant in Steyr (Austria). In Steyr 100% of electricity purchased is from renewable sources. In UK Engie delivered BMW Group with 100% renewable electricity backed by Renewable Energy Guarantees of Origin (REGOs).

---

**Basis for applying a low-carbon emission factor**

Contract with suppliers or utilities (e.g. green tariff), not supported by energy attribute certificates

**Low-carbon technology type**

Biomass (including biogas)

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

26,640

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

Fernwärme Steyr GmbH contractually guarantees to distribute heat generated to 100% from the Biomass-KWK-Power Plant of Bioenergie Steyer, Ramingsdorf, to the BMW AG. In 2018 the heat distributed amounted to 26,640 MWh.

---

**Basis for applying a low-carbon emission factor**

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

**Low-carbon technology type**

Wind

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

25,518

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

Electricity from four on-site wind turbines is directly used in the Leipzig plant in Germany. In 2018 the wind turbines produced 25,518 MWh of electricity.

---

**Basis for applying a low-carbon emission factor**

Contract with suppliers or utilities (e.g. green tariff), not supported by energy attribute certificates

**Low-carbon technology type**

Other low-carbon technology, please specify  
Düker drainage pipe systems

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

1,072

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

A total amount of 1,072 MWh of community cooling is delivered from Stadtwerke Munich (municipal utilities) to the Central Administration & Research and Innovation Center (FIZ), using nearsurface ground water.

---

**Basis for applying a low-carbon emission factor**

Contract with suppliers or utilities (e.g. green tariff), not supported by energy attribute certificates

**Low-carbon technology type**

Biomass (including biogas)

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Africa

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

18,721

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

In Rosslyn (South Africa) a biogas-powered twin-unit power station started operation and delivered 18,721 MWh of electricity via a direct line. It is operated by the new independent provider Bio2Watt. The biogas used comes from recycled waste from cattle ranches and chicken farms as well as food waste.

---

**Basis for applying a low-carbon emission factor**

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

**Low-carbon technology type**

Solar PV

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

3

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

Electricity from company owned photovoltaic systems (3 MWh) is produced in our production site Leipzig (Germany).

---

**Basis for applying a low-carbon emission factor**

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

**Low-carbon technology type**

Solar PV

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Asia Pacific

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

956

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

Electricity from company owned photovoltaic systems (956 MWh) is produced in our production site in Chennai (India).

---

**Basis for applying a low-carbon emission factor**

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

**Low-carbon technology type**

Solar PV

**Region of consumption of low-carbon electricity, heat, steam or cooling**

North America

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

132

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

Electricity from company owned photovoltaic systems (132 MWh) is produced in our production site in Spartanburg (USA).

---

**Basis for applying a low-carbon emission factor**

Power Purchase Agreement (PPA) without energy attribute certificates

**Low-carbon technology type**

Wind

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Asia Pacific

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

202,200

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

In China for our production sites in Shenyang a power purchase agreement with an electricity supplier has been signed to deliver 202,200 MWh produced from wind mills.

---

**Basis for applying a low-carbon emission factor**

Energy attribute certificates, I-RECs

**Low-carbon technology type**

Wind

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Latin America

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

17,399

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0

**Comment**

In Brazil for our production sites in Araquari we purchased and redeemed 17,399 MWh of I-REC standard attribute tracking certificates. This electricity was produced from wind mills.

**C-TO8.4**

**(C-TO8.4) Provide any efficiency metrics that are appropriate for your organization's transport products and/or services.**

**Activity**

Light Duty Vehicles (LDV)

**Metric figure**

2.12

**Metric numerator**

MWh

**Metric denominator**

Production: Vehicle

**Metric numerator: Unit total**

4,756,049

**Metric denominator: Unit total**

2,248,249

**% change from previous year**

-2.3

**Please explain**

The metric numerator is given by the energy consumption for production of the vehicles in the BMW Group production network in 2018 of 4,756,049 MWh. This metric measures the energy efficiency of the BMW Group production technologies which is why we subtracted the losses of our own Combined Heat and Power plant installations. The

metric denominator is given by 2,248,249 vehicles produced in the BMW Group owned facilities of. The metric is then calculated by dividing the energy value with the vehicle number and gives 2.12 MWh per vehicle produced. In 2018, we were able to reduce energy consumption from our vehicle production by 2.3% compared to the previous year to 2.12 MWh per vehicle produced (2017: 2.17). In 2018 we implemented e.g. 129 single measures to improve energy efficiency of existing processes / technologies (e.g. paint shops). Due to these measures we were able to further improve energy efficiency despite an increase in extreme weather situations and a slight decrease of production volume with the shift model remaining unchanged in some plants.

## C9. Additional metrics

### C9.1

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

### C-TO9.3/C-TS9.3

**(C-TO9.3/C-TS9.3) Provide tracking metrics for the implementation of low-carbon transport technology over the reporting year.**

---

#### Activity

Light Duty Vehicles (LDV)

#### Metric

Sales

#### Technology

Other, please specify  
Number of PHEVs and BEVs (xEVs)

#### Metric figure

142,617

#### Metric unit

Units

#### Explanation

It is our goal to create solutions and innovations that inspire our customers. Strategy NUMBER ONE > NEXT is the path to the BMW Group's success over the long-term. It provides a roadmap for our transformation towards sustainable and digital mobility. Our future is electric. The BMW Group develops electric vehicles that combine the advantages of sustainable mobility with a new driving experience for customers. In 2018 we offered plug-in hybrid drivetrains for the 2, 3, 5 and 7 Series, the X1, X5 and the MINI Countryman as well as the battery electric vehicle BMW i3 and the plug-in hybrid



vehicle BMW i8. In 2018, we sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788), a further increase in volume by 38.4% compared to 2017, and led e.g. in 2018 the market for electrified vehicles in Europe (2017: 103,080). We set clear goals for sustainable mobility: A total of half a million electric vehicles and plug-in hybrids on the roads by the end of 2019. By 2023, 25 electrified models, of which more than half will be purely electric. A xEV share in 2025 between 15 and 25%.

## C-TO9.6/C-TS9.6

**(C-TO9.6/C-TS9.6) What is your investment in research and development (R&D), equipment, products and services and which part of it would you consider a direct investment in the low-carbon transition?**

---

### Activity

Light Duty Vehicles (LDV)

### Investment start date

January 1, 2018

### Investment end date

December 31, 2018

### Investment area

R&D

### Technology area

Other, please specify  
drivetrain, electrification, services

### Investment maturity

Large scale commercial deployment

### Investment figure

6,900,000,000

### Low-carbon investment percentage

61-80%

### Please explain

According to CDP low carbon investments contribute to ensure that the global average temperature increase above preindustrial level stays below 2°C. In the transition phase efficiency increase in parallel to alternative technologies are needed to achieve this. BMW Groups R&D expenditures in 2018 were 6.9 billion €. Part of it goes into the further development of Efficient Dynamics (ED) technologies which are standard in our cars. These include efficient engines / gearboxes, optimized aerodynamics, light-weight design, ECO PRO mode, proactive driving assistant or Auto Start Stop function and energy recovery. Our intelligent generator management system utilizes the engine's thrust phases to convert kinetic energy into electrical power. In the next few years BMW

Group will e.g. roll out 48 V systems in medium and larger vehicles, at the moment under development, to increase the recovery potential through a more efficient electrical system to achieve a CO<sub>2</sub> reduction of 5 – 7 %. We develop scalable modular electric construction kits to be able to fit all model series with any type of drivetrain. All our brands will gradually be electrified. Several models will be launched soon, e.g. in 2019 a battery-electric MINI, in 2020 the first fully electric model from the core BMW brand, the X3, followed in 2021 by the iNEXT. In 2023 our portfolio will consist of 25 electrified models (more than half of them fully electrified) and expect a share of BEVs/PHEVs of 15-25% in 2025. Mobility services enable sustainable mobility patterns as well as connected and automated vehicles. This includes our car-sharing services DriveNow and ReachNow (on-demand mobility services), our digital parking service ParkNow and digital networking BMW Connected Services. Those services help to find e.g. the fastest/most efficient routes and simplify the search for a parking place which saves a significant amount of fuel. Sustainable mobility and autonomous driving go hand in hand. We will be launching the next major step in autonomous driving in the iNEXT in 2021. To reach our targets for automated and networked vehicles by 2021, existing alliances e.g. with MobilEye or Intel were deepened. Automated and digitally networked vehicles have the potential to significantly reduce the number of accidents and traffic congestion and reduce emissions. This applies especially when using electrification.

---

**Activity**

Light Duty Vehicles (LDV)

**Investment start date**

January 1, 2017

**Investment end date**

December 31, 2021

**Investment area**

Equipment

**Technology area**

Electrification

**Investment maturity**

Full/commercial-scale demonstration

**Investment figure**

200,000,000

**Low-carbon investment percentage**

81-100%

**Please explain**

According to CDP low carbon investments contribute to ensure that the global average temperature increase above preindustrial level stays below 2°C. In the transition phase efficiency increase in parallel to alternative technologies are needed to achieve this.

BMW Group invests in various ways in efficiency and new technologies. This would create a long list of projects. E.g. in 2018 alone we are investing again more than €1 billion in our German sites to upgrade and prepare them for electric mobility. Instead of creating long lists we focus here on one important example, namely the investment in a new competence centre for battery cells in Munich:

The BMW Group continues to focus on the implementation of its electro-mobility strategy, with the company concentrating all its technological expertise relating to battery cells at a new competence centre. This interdisciplinary competence centre aims to advance battery cell technology and introduce it into production processes. The company will invest a total of 200 million euros in the location over the next four years, creating 200 jobs. The centre will open in 2019.

We will be concentrating all our in-house expertise along the battery-cell value chain at our new high-tech competence centre. International experts working in the new development labs and facilities will conduct important research to refine cell chemistry and cell design. We will focus on further improvements in battery performance, lifespan, safety, charging and also costs. By producing battery-cell prototypes, we can analyse and fully understand the cell's value-creation processes. With this build-to-print expertise, we can enable potential suppliers to produce cells to our specifications. The knowledge we gain is very important to us, regardless of whether we produce the battery cells ourselves, or not.

## 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)	Third-party verification or assurance process in place
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 and/or Scope 2 emissions and attach the relevant statements.**

**Scope**

Scope 1

**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**

-  CDP Verification Report\_SVR 2018.pdf
-  2019-BMW-Group-SVR-2018-Englisch.pdf
-  2019-BMW-Group-SVR-2018-Deutsch.pdf

**Page/ section reference**




Page 123-124 / Sustainable Value Report 2018, Appendix: Independent Practitioner's Limited Assurance Report (assured scope 1 & 2 & 3 emissions are found on page 63). In addition to the "Independent Practitioner's Limited Assurance Report" we attached the independent Practitioner's Limited assurance report in German. In Addition we attached a "CDP Verification Report\_SVR 2018" from PWC to be 100% sure that CDP accepts our assurance.

**Relevant standard**

ISAE3000

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

100

-  CDP Verification Report\_SVR 2018.pdf
-  2019-BMW-Group-SVR-2018-Englisch.pdf
-  2019-BMW-Group-SVR-2018-Deutsch.pdf

---

**Scope**

Scope 2 location-based

**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**

-  CDP Verification Report\_SVR 2018.pdf
-  2019-BMW-Group-SVR-2018-Englisch.pdf

 2019-BMW-Group-SVR-2018-Deutsch.pdf

**Page/ section reference**

Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report (assured scope 1 & 2 & 3 emissions are found on page 63. Location based Scope2 emissions can be found in Footnote 5). In addition to the "Independent Practitioner's Limited Assurance Report" we attached the independent Practitioner's Limited assurance report in German.

In Addition we attached a "CDP Verification Report\_SVR 2018" from PWC to be 100% sure that CDP accepts our assurance.

**Relevant standard**

ISAE3000

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

100

 CDP Verification Report\_SVR 2018.pdf

 2019-BMW-Group-SVR-2018-Englisch.pdf

 2019-BMW-Group-SVR-2018-Deutsch.pdf

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**Scope**

Scope 2 market-based

**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**

 CDP Verification Report\_SVR 2018.pdf

 2019-BMW-Group-SVR-2018-Englisch.pdf

 2019-BMW-Group-SVR-2018-Deutsch.pdf

**Page/ section reference**

Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report (assured scope 1 & 2 & 3 emissions are found on page 63). In addition to the "Independent Practitioner's Limited Assurance Report" we attached the independent Practitioner's Limited assurance report in German.

In Addition we attached a "CDP Verification Report\_SVR 2018" from PWC to be 100% sure that CDP accepts our assurance.

**Relevant standard**

ISAE3000

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

100

 CDP Verification Report\_SVR 2018.pdf

 2019-BMW-Group-SVR-2018-Englisch.pdf

 2019-BMW-Group-SVR-2018-Deutsch.pdf

## C10.1b

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

---

**Scope**

Scope 3- all relevant categories

**Verification or assurance cycle in place**


Annual process

**Status in the current reporting year**

Complete

**Attach the statement**

 CDP Verification Report\_SVR 2018.pdf

 2019-BMW-Group-SVR-2018-Englisch.pdf

 2019-BMW-Group-SVR-2018-Deutsch.pdf

**Page/section reference**

Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report (assured scope 1 & 2 & 3 emissions are found on page 63. Location based Scope2 emissions can be found in Footnote 5). In addition to the "Independent Practitioner's Limited Assurance Report" we attached the independent Practitioner's Limited assurance report in German.

In Addition we attached a "CDP Verification Report\_SVR 2018" from PWC to be 100% sure that CDP accepts our assurance.

**Relevant standard**

ISAE3000

## 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?**

Yes

## C10.2a



**(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?**

 CDP Verification Report\_SVR 2018.pdf


 2019-BMW-Group-SVR-2018-Englisch.pdf


 2019-BMW-Group-SVR-2018-Deutsch.pdf


 BMW-GB18\_en\_Finanzbericht\_190315\_ONLINE.pdf

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISAE3000	<p>Please read Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report where it is stated that the whole Sustainable Value Report (SVR) has been verified in limited assurance. This includes all statements as well as all figures. We report e.g. since several years year by year Scope1, 2, 3 emission figures, compare them to previous years as well as with respect to our targets. Assured Scope1 &amp; 2 &amp; 3 from 2014 until 2018 can be found on page 63 of the SVR2018.</p> <p> 1, 2</p>
C8. Energy	Renewable energy products	ISAE3000	<p>Please read Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report where it is stated that the whole Sustainable Value Report (SVR) has been verified in limited assurance. This includes all statements as well as all figures. We report e.g. since several years year by year Scope1, 2, 3 emission figures, compare them to previous years as well as with respect to our targets. Assured Scope1, 2, 3 emission figures from 2014 until 2018 can be found on page 63 of the SVR2018. Our market based emissions are verified and with them all renewable energy products. On SVR2018 on p. 78 we report the Share of green electricity purchased from third parties from 2015 until 2018.</p> <p> 1, 2</p>



C12. Engagement	Other, please specify Supplier engagement	ISAE3000	Please read Page 123-124 / Sustainable Value Report, Appendix: Independent Practitioner's Limited Assurance Report where it is stated that the whole Sustainable Value Report (SVR) has been verified in limited assurance. This includes all statements as well as all figures. We report e.g. from p.80 to p.87 on our supply chain engagement. An overview of our stakeholder engagement can be found from p.20 to p.23.  1, 2
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 <sup>1</sup>2019-BMW-Group-SVR-2018-Englisch.pdf

 <sup>2</sup>2019-BMW-Group-SVR-2018-Deutsch.pdf

## 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 systems in which you participate.**

**EU ETS**

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

62

**Period start date**

January 1, 2018

**Period end date**

December 31, 2018

**Allowances allocated**

182,127

**Allowances purchased**

110,834

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

362,699

### Details of ownership

Other, please specify

Own facilities operated & own aircrafts

### Comment

The above mentioned allowances (182,127) are those allocated in the reporting year 2018. The difference between the verified emissions of 362,699 metric tonnes CO<sub>2</sub>e in the reporting year and the allocated allowances in the reporting year are, depending on the country, covered either with allocated allowances from the past years which we have saved due to our CO<sub>2</sub> efficient operations, or with additional purchased allowances (about 110,000 t CO<sub>2</sub>e). Purchased allowances are needed although we increased energy efficiency since 2006 by 38.0% and reduced in 2018 total CO<sub>2</sub>-emissions in production and administration, including BMW Group owned aircrafts and vehicles by 1.4% when compared to 2017. A major reason for the need to purchase allowances is the use of cogeneration plants (combines heat and power generation) which increase over all CO<sub>2</sub>-efficiency (Scope1 plus scope2 efficiency) and at the same time cost efficiency. For almost all of BMW Groups cogeneration plants CO<sub>2</sub> emissions are counted fully within the ETS (verified emissions). However, allowances are only given for heat used.

## C11.1d

### (C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

The strategy of BMW Group for complying with the EU ETS is first and foremost the continuous reduction of CO<sub>2</sub>-emissions through our Clean Production strategy. BMW Group is continuously improving CO<sub>2</sub> emission efficiency. For example our target is a 45% reduction of energy consumption per vehicle produced in comparison with 2006. Between 2006 and 2018 we increased energy efficiency already by 38.0%. We want to be the leading OEM in renewable energy usage in production and the value-added chain. The BMW Group aim is to have each production site worldwide being powered by the most ecologically and economically sustainable energy resource available. The USA plant in Spartanburg for example, covers around 50 % of its fuel needs by utilizing gas recovered from a nearby landfill site. Our target is a fully renewable energy supply (Scope 1 & 2) of all our facilities until 2050. In 2018 we made another step in this direction. Total emissions in production and administration, including BMW Group owned aircrafts and vehicles, amounted to 1,120,325 tons of CO<sub>2</sub> (2017: 1,135,983 tons). This is a further 1.4% reduction in CO<sub>2</sub> emissions (in 2017 we already reduced these CO<sub>2</sub> emissions by 21% when compared to 2016). Key measures to increased CO<sub>2</sub>-efficiency in 2018 were in particular the increase in energy efficiency and adoption of our energy mix. Energy from renewable sources added in 2018 to more than 2,100 GWh.

To ensure compliance with the EU ETS all allowances of our European production sites are pooled and handled by a central function "environmental protection and sustainability". As a benefit of our group wide targets for the production network to reduce the key indicator energy

consumption per vehicle produced we profit from allowances saved through our performance in previous years. In the 3rd phase of the ETS (since 2013) EUA allocation is reserved merely for heat and will face a reduction from 80% in 2013 to 30% in 2020. The price for EUAs increased already significantly and varied in 2018 around about 20€ per tonne. We expect the price to further increase significantly in the following years which is also reflected in our business case calculations. The exposure of the BMW Group is minimized due to the advancements in resource and energy efficiency. Use of cogeneration plants cause actually the need to purchase additional allowances but contribute to our overall Scope 1 & Scope 2 CO<sub>2</sub>- and cost efficiency and have on a midterm the potential, to reduce Scope 1 CO<sub>2</sub> emissions if the availability of renewable fuels improves on a larger scale in the EU. The BMW Group uses "banking of allowances" for the 3rd Phase of the ETS.

## C11.2

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

No

## C11.3

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

Yes

## C11.3a

**(C11.3a) Provide details of how your organization uses an internal price on carbon.**

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### **Objective for implementing an internal carbon price**

- Drive energy efficiency
- Drive low-carbon investment
- Identify and seize low-carbon opportunities

### **GHG Scope**

- Scope 1
- Scope 2
- Scope 3

### **Application**

BMW Groups core business is the production and purchase of vehicles. The carbon price is applied Company-wide for all vehicle projects. From the EU fleet regulation until 2020 a price tag for investments in technical measures to reduce CO<sub>2</sub> emissions of our products (abatement costs of CO<sub>2</sub>) in terms of opportunity costs can be derived on the basis of penalty cost. Missing the overall target by 1g leads to a price tag of 475 € per tonne and vehicle sold.

We use a bonus / malus system in all vehicle business case (BC) calculations. We defined a g CO<sub>2</sub>/km target line. E.g. BEVs have zero g CO<sub>2</sub>/km emissions and get a

significant bonus which contributes positively to their BC. In contrary the BC of conventional cars above the target line is negatively impacted by a malus. Due to this "internal fee", investments are driven into low carbon products (BEVs, PHEVs) and efficient conventional cars.

### **Actual price(s) used (Currency /metric ton)**

475

### **Variance of price(s) used**

A single price is used for BMW Groups core business of producing and purchasing vehicles. It is used in the business calculations of all vehicle projects.

### **Type of internal carbon price**

Internal fee

### **Impact & implication**

We use this price tag as "internal fee" to steer our investments into efficient dynamics technologies and low carbon products (BEVs, PHEV): Efficient Dynamics technologies are standard in all BMW Group cars. These include efficient engines/ gearboxes, optimized aerodynamics, intelligent energy management, light-weight design, tires with reduced rolling resistance, energy recovery, ECO PRO mode, active coasting and proactive driving assistant or Auto Start Stop function. In 2018 we offered plug-in hybrid drivetrains for the 2, 3, 5 and 7 Series, the X1, X5 and the MINI Countryman as well as the battery electric vehicle BMW i3 and the plug-in hybrid vehicle BMW i8. In 2018 BMW Group sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788), achieved a 38.4% increase when compared to 2017 and led e.g. the market for electrified vehicles in Europe. Our target for 2019 is to have half a million electrified BMWs and MINIs on the roads. In 2019 we will launch a BEV version of the MINI and in 2020 of the BMW X3. In 2025 we expect a 15-25% share of BEVs / PHEVs. We offer e.g. connectivity services to find the fastest/most efficient routes and simplify the search for a parking place. All this results in reduced fuel & energy consumption and so GHG emissions & pollution reduction. We were e.g. able to reduce CO<sub>2</sub> emissions of our newly sold vehicles in Europe (EU-28) by around 42% between 1995 and 2018. The fleet averaged CO<sub>2</sub> emissions per kilometer worldwide decreased from 143 g CO<sub>2</sub>/km in 2017 to 141 g CO<sub>2</sub>/km in 2018 (both figures calculated consistent with the new EU28 test cycle and reporting requirements). PHEVs and BEVs contributed significantly.

Remark how the price tag is derived: Failing CO<sub>2</sub> compliance by 1 g CO<sub>2</sub> / km in 2020 (for the EU car fleet the limit is 95 g CO<sub>2</sub> / km) the company must pay 95€ per 1 g CO<sub>2</sub> / km for each vehicle sold. Using an averaged mileage of 200.000 km over vehicle lifetime, consistent with the Association of the German Automotive Industry (VDA) assumption, 1 g CO<sub>2</sub>/km corresponds over lifetime to 0.2 tons CO<sub>2</sub>. Therefore, if marginal costs per vehicle to reduce CO<sub>2</sub> fleet emissions by another gram CO<sub>2</sub> / km exceed 95 €/0.2 t = 475 €/t then opportunity costs of paying the fine would be advantageous from an economical perspective. However, paying fines instead of complying with regulations is no option for the BMW Group.

## C12. Engagement

### C12.1

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

Yes, our suppliers

Yes, our customers

### C12.1a

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

##### Type of engagement

Engagement & incentivization (changing supplier behavior)

##### Details of engagement

Run an engagement campaign to educate suppliers about climate change

Climate change performance is featured in supplier awards scheme

Other, please specify

Part of the supplier nomination process

##### % of suppliers by number

35

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

90

##### % Scope 3 emissions as reported in C6.5

20

##### Rationale for the coverage of your engagement

Rationale for the coverage of our engagement: In the period under review, we initiated the process to identify and assess sustainability risks at 4,168 nominated and potential locations of suppliers and sub-suppliers (2017: 4,886) worldwide. These suppliers were selected from our total number of suppliers of 11,800 because each of them have a significant tendering volume (each >2 Mio. € for BMW production material suppliers and >10 Mio. € for non-production material suppliers), making up 90% of our total procurement spends and having the most impact on climate. The benefit cost ratio to assess the remaining high number of suppliers with the remaining 10% of our procurement spend would be disproportionate.

“% of suppliers by number”: From these numbers we find as “% of suppliers by number” assessed in the reporting year 2018 about 35% of all suppliers (4,168/11,800). This represents about 90% of our procurement spends.

“% Scope 3 emissions as reported in C6.5”: We performed an environmental profit and

loss calculation for a car representative for our vehicle fleet (3 series, about 6% of sales). Based on the economic model of multiregional input- output analysis as well as quality-assured data of international environment and resource statistics we analyzed beside other impact categories GWP. Following the corresponding impact pathways until the so called “endpoints” human health, impact on nature and human made environment we derived price tags (external costs). Within the model supply chain impact has been assessed for direct suppliers (Tier 1) as well as for sub suppliers (Tier 2 – Tier n). Our Tier1 suppliers cause roughly 20% of CO2 emissions of the emissions from “Purchased goods and services” and “Upstream transportation and distribution”. The described “Engagement & incentivization” is primarily with our Tier1 suppliers. Therefore “% Scope 3 emissions as reported in C6.5” are about 20%.

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

Impact of engagement: All direct suppliers (production material) about 4,500 in 2018, and indirect suppliers with relevant contract volumes have to fill out a questionnaire. Each potential new supplier must consider our sustainability requirements in their quotation. If they don't fulfill key requirements they will not be nominated. One key contractually fixed demand is to implement a certified Environmental Management System (EMS) in accordance with ISO 14001. Therefore one impact of engagement is that all production suppliers have implemented a certified EMS before start of production. Energy consumption and CO2 emissions have to be key improvement targets. We are member of the CDP Supply Chain Program. Suppliers who took part made up 75 % of our purchasing volume in 2018 (BMW Groups key suppliers). A competitive comparison of the scoring results is played back during annual supplier development interviews on top management level. Energy, CO2 (and water) efficiency improvements are considered there. In case performance is significantly behind our expectations we engage to positively impact on suppliers resource efficiency, e.g. by knowledge sharing, and agree on improvement measure. We reach e.g. agreements with key suppliers to increase their share of renewable energy.

Measures of success: We expect and check installation of a certified EMS latest at start of production (SOP) and submission of a corresponding certificate. Therefore one key performance indicator is: 100% of production material suppliers have an assured EMS latest at start of production. Energy, CO2 (and water) efficiency trends are assessed and are part of our suppliers rating in our supplier performance and competency management system. This is assessed with respect to our own efficiency improvements (we reduced energy consumption and GHG emission per vehicle produced by 38% respectively 61.9 % between 2006 and 2018). Within the CDP supply chain program we measure the CDP rating (the average score of our participating suppliers is C) as well as integration of climate change measures in the strategy, targets set or share of renewable energies. We measure success against our target: 60% of our suppliers participating in the CDP Supply Chain Programme have at least a B rating in the CDP scoring system by 2020.

### **Comment**

## C12.1b

**(C12.1b) Give details of your climate-related engagement strategy with your customers.**

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### **Type of engagement**

Education/information sharing

### **Details of engagement**

Share information about your products and relevant certification schemes (i.e. Energy STAR)

### **% of customers by number**

100

### **% Scope 3 emissions as reported in C6.5**

100

### **Please explain the rationale for selecting this group of customers and scope of engagement**

Rationale for the coverage of our engagement:

“Size of engagement”: Climate change is an integral component of our Strategy Number ONE NEXT and considered as a key issue to be addressed. This is why we inform all of our customers (100%) through various information channels about our efforts / achievements. Since 2007 BMW Group’s Efficient Dynamics (ED) is a comprehensive technologic approach for the consistent reduction of fuel consumption and emissions in the standard configuration of cars of the BMW Group. It includes both highly-efficient automobiles with gradually refined combustion engines and all-electric cars and low-emission plug-in hybrids. ED in different levels of detail is explained on the BMW Group homepage and in main publications such as the annual report and the sustainability report, as well as in communication channels that reach big audiences (e.g. TV spots, marketing campaigns). BMW Group is obliged by many fleet customers to fill out the ECOVADIS questionnaire as a prerequisite for tendering processes or is asked via CDP supply chain to explain its approach to fuel efficiency and zero emission mobility. To our customers we explain efficient dynamics technologies or BEV/PHEV powertrains as well as e.g. connectivity services on the corresponding BMW Group pages where our customers can inform themselves about technical features of the specific vehicle under interest. On launch events, in product campaigns as well as e.g. in product marketing guidelines we address ED features. We include also environmental certificates (e.g. BMW i3/i8, 740 Li/Le iPerformance, 530 iA/530e iPerformance) containing externally audited life cycle comparisons between new models with its predecessors and between plug-in hybrid and combustion engine cars. Furthermore ED features are included in sales catalogues at the point of sale. Because climate related information is shared via all these channels we assume that 100% of our customers can access these information. This is why we selected 100% in “Size of engagement”.



“% Scope 3 emissions as reported in C6.5”: In correspondence to the Seize of engagement being 100% we also cover 100% of our scope3 emissions from the use phase.

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

The impact of our comprehensive information to customers on our efficiency and e-mobility efforts is a higher demand for these products.

In 2018 we sold 142,617 electrified vehicles worldwide (BEVs: 34,829; PHEVs: 107,788), a 38.4% increase to 2017. We led e.g. in 2018 the market for electrified vehicles in Europe. Average fleet CO<sub>2</sub> emissions per kilometer in 2018 in the core markets (EU, USA, China, Japan and Korea) were 141 g CO<sub>2</sub>/km. This value is not directly comparable to the 2017 value of 141 g CO<sub>2</sub>/km due to a change in regulation. Since 2018 cars in EU28 are approved according to the new driving cycle WLTP but compliance with EU fleet CO<sub>2</sub> emission regulation until 2021 is done in the NEDC. Retroactive calculation of NEDC fleet emissions from the WLTP values, so called NEDC corr. values, are higher due to the amended WLTP test constraints (2017: 122 in NEDC equal 128 in NEDC corr.). Using the NEDC corr. value also in 2017 to keep comparability we find 143 g CO<sub>2</sub> / km. This means a 1.4% reduction of fleet averaged CO<sub>2</sub> emissions from 2017 to 2018. PHEV and BEV contributed significantly to this value.

The number of users of our car sharing services DriveNow and ReachNow increased in 2018 by 15.3% to 1,279,000 users (2017: 1,108,000). DriveNow is e.g. one of the strongest drivers of electro mobility in Germany. To date, over 420,000 customers have driven more than 29.6 million emission-free kilometres with the electric BMW i3 since 2013.

Measures of success: We measure market success in each market and analyze market shares, e.g. of our BEVs and PHEVs (xEVs). We measure the worldwide number of xEVs or e.g. customers of DriveNow or ReachNow. Sustainability aspects form part of the customer surveys, on products & services as well as on our sustainability performance. We conduct surveys on an annual basis for product & service optimization according to the needs of our customers. We continuously establish customer satisfaction on the basis of uniform global standards, assessing e.g. if expectations on fuel economy or services (e.g. real time traffic information, searching services for parking place) are met. We measure sustainability performance also by rating results such as DJSI or CDP. We measure fuel economy in all main markets. Financial indicators, in particular the EBIT margin in our core automotive segment, is a measure of meeting customer's needs.

## **C12.3**

### **(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?**

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

Other

## C12.3a

### (C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Other, please specify CO2-based vehicle taxations	Support with major exceptions	<p>(1) Name of legislation: CO2-based vehicle taxations have been introduced e.g. in 20 out of 28 EU member states as well as for example in South Africa or Singapore and are under discussion in South-Korea or China and other countries as e.g. Thailand. A focus in 2018 was our engagement about the WLTP introduction and related taxation systems in the EU respectively the 20 member states with CO2 based taxation. (2) Geographies in which legislation applies: EU respectively the 20 member states with CO2 based taxations such as Germany or UK. (3) Type of engagement: The BMW Group is committed to enhance the fuel efficiency of its products and strongly supports the introduction of CO2-based vehicle taxation worldwide putting a price tag on CO2 emissions emitted by vehicles in the use phase but does not support a tax on engine displacement or retail price of vehicles as existent in some European countries. Beside these major exceptions already fixed in the taxation systems, which we continuously discuss, our focus in 2018 was again on the way of introducing the WLTP driving cycle as basis for taxation. BMW Group argued for a “one shot” introduction without additional costs for vehicle owners, where the taxation base is switched to WLTP at one single point in time for all vehicles. We engage in worldwide markets in a similar way in a dialogue with political stakeholders and governmental bodies as well as NGOs and scientific</p>	<p>BMW Group strongly supports the introduction of CO2-based vehicle taxation worldwide. In our engagement we do not seek a fundamental debate about the “if” of taxation of automobiles but on alternatives “how” to do it best. We promote putting a “price tag” on CO2 use phase emissions through governments but do not support a tax on engine displacement or retail price of vehicles which does not incentivize highly efficient vehicles with innovative technologies for CO2 emission reduction within the same engine displacement class. This is giving a clear signal to customers to replace an old inefficient vehicle by a new efficient one and to comparing vehicles of one category in terms of efficiency. This is all the more important since experience in major markets like UK, France and Netherlands shows that the effect of changes in taxation is much stronger than a purely economic analysis would indicate. We argue for a “one shot” switch to the WLTP as taxation base without introduction scenarios e.g. adopted to each OEMs model line replacements to keep equality of competition respectively comparability.</p>

		<p>institutions to promote CO2-based taxation and product labelling. In 2018 various consultations took place with the EU commission and e.g. German or UK governmental bodies (like the corresponding ministries for Environment) about the WLTP introduction and related taxation and labelling systems.</p>	<p>Furthermore there should be no additional costs for vehicle owners just because the test cycle is changed.</p>
<p>Other, please specify CO2 fleet regulation</p>	<p>Support with major exceptions</p>	<p>(1) Name of legislation: We address CO2 fleet regulations in markets such as the European Union (EU28), USA, China or South Korea. A focus in 2018 was our engagement in the EU28 on the CO2 fleet regulation for the time period beyond 2021 (2) Geographies of legislation: The mentioned legislations apply to the member states of the EU28 (3) Type of engagement: The regulations contain weight based CO2 targets for the OEMs and key flexibility based on eco- innovations. The EU Commission, Council and Parliament concluded in the 5th trilogue in December 2018 the final package including an increase in ambition for 2025 of 15% and for 2030 of 37,5% versus 2021 WLTP car fleet average. Additionally they decided a benchmark approach for zero and low emission vehicles (&lt;50g/km in WLTP) of 15% in 2025 and 35% in 2030. In case of over compliance by individual OEMs a bonus up to 5% on the corresponding CO2 target level will be granted as an incentive to spur up the market introduction of those vehicles. From the perspective of the BMW Group, the ambitious CO2 car fleet targets for 2025 and 2030 can only be achieved by significantly increasing the share of electrified vehicles. We already offer our customers a broad portfolio of models that we are continually expanding. By 2023, we plan to offer 25 electrified models. More than half of</p>	<p>Future target compliance is heavily depending on the market success of electro mobility. Customer acceptance is still at very low level on EU average. So we do not anticipate a linear market development for those vehicles. A European-wide harmonized regulatory approach for improving the e-mobility framework conditions is needed to overcome the fragmented and largely ineffective national policies in several important EU markets.</p>

		<p>them will be purely electric. As one of the market leaders for electromobility in Europe, we find that the political factors promoting electromobility have a considerable impact on our sales. In our view, the fact that EU requirements placed on vehicle manufacturers are not accompanied by an ambitious program to increase the demand for electrified vehicles is risky. Instead, there are fragmented and largely ineffective national policies in a number of large markets. Therefore, BMW Group argued in 2018 e.g. in several discussions with the European decision makers the need of a European-wide harmonized regulatory approach for improving the e-mobility framework conditions.</p>	
<p>Other, please specify low Carbon mobility</p>	<p>Support</p>	<p>(1) Name of legislation: Development of framework conditions to reach the targets of the German Federal Government's National Dvpmnt Plan for Electric Mobility including the target of "a million electric vehicles on the road in Germany by 2020". (2) Geographies in which legislation applies: Germany. (3) Type of engagement: We have contributed to the „National Platform Electromobility“(NPE), established by the German Government GG, since May 2010. The NPE, a body comprising highly reputed experts from industry, science and civil society, analyses the developments in the field electro mobility and formulates recommendation on how the targets of the "national development plan electro mobility" can be reached. A board member of the BMW Group is co-head of the working group "Framework Conditions". In April 2017 NPE published its roadmap for common standards until 2020, as basis for the further run-up of the PHEV and BEV market. This roadmap addresses</p>	<p>BMW Group holds the position that the goal of having "a million electric vehicles on the road in Germany by 2020" will not be met in time under the current conditions with respect to the funding volume, a delayed start of the funding program, the currently unsatisfactory status of existing public charging infrastructure and the barriers for private charging opportunities in apartment houses. We recommend addressing the areas of high priority in order to increase the market appeal of electric vehicles: a broad market penetration for electric vehicles in the business sector and support for the creation of a convenient and comfortable charging infrastructure. Many measures proposed have been adopted by the German government by early 2015 in the electro</p>

	<p>beside others future challenges like high power charging: Vehicles as well as infrastructure should be developed for a charging power between 150 kW up to 400 kW. The GG is continuously assessing various suggestions by the NPE and supporting a broad spectrum of projects. The BMW engagement in these projects addresses the remaining issues required prior to wide-scale market introduction: Increasing the range of vehicles through the installation of public fast-charging infrastructure, realization of High Power Charging, implementation of inductive charging and improving managed charging for the integration of renewable energy. The GG has already implemented several of the key measures proposed by the NPE within the electro mobility law (introduced in June 2015) and the charging pillar regulation following the EU directive 2014/94/EU (introduced in June 2016): Disadvantage compensation for the purchase of electric company cars, a 10-year vehicle tax exemption for electric cars, simplification of taxing monetary benefits from charging, a 300 Mio € funding of public infrastructure, a 600 Mio € direct purchase funding (in addition to the 600 Mio € funding of the industry) and a 100 Mio € program for public procurement.</p> <p>Internationally, the BMW Group is a member of the international advisory committee of China EV 100, as well as VELOZ, a non-profit organisation in the US state of California which promotes e-mobility.</p>	<p>mobility law (among them are measures like special labelling, use of bus lanes, privileged parking and specific access to restricted areas) and in the governmental funding program from mid of 2016 (direct purchase incentives, funding of public charging infrastructure and public procurement program). Besides these special rights and funding programs additional legislative measures for removing the barrier to electric mobility in everyday life are proposed especially in the field of building legislation and energy cost regulation. Only if there is a holistic approach for the energy and transport sector a successful integration of electro mobility can be achieved. The speed of implementing the charging infrastructure program and though visibility towards the customer will determine the acceptance of electro mobility at the point of sale.</p>
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### C12.3b

**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

## C12.3c

**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.**

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### Trade association

Association of the German Automotive Industry (VDA)

### Is your position on climate change consistent with theirs?

Consistent

### Please explain the trade association's position

The VDA nationally and internationally promotes the interests of the entire German automotive industry. VDA addresses a wide spectrum, including safety, quality and sustainability issues such as environmental protection in production, fuel efficiency and alternative drive technology as well as e-mobility. VDA promotes corresponding policies to these issues which reflect the opinion of the member companies about most appropriate actions and measures. An example of particular interest is the post 2020 CO<sub>2</sub> regulation in the EU. The existing regulation is aligned solely to the technical efficiency of new cars. CO<sub>2</sub> values on the street, however, are influenced by many different factors. These include vehicle efficiency, kilometres travelled, driving style or the CO<sub>2</sub> content of energy carriers. A convincing and comprehensive political strategy must consider all factors. Further reduction of fleet averaged CO<sub>2</sub>-emissions is one component not in question by the VDA. However the 95 g CO<sub>2</sub>/km target in 2020 is already only achievable with great and increasingly expensive technical efforts and, in particular for premium manufacturers, electrification. A linear continuation of reduction requirements after 2020 means that car prices significantly increase and conventional drive trains have to be replaced by electric drive trains. In consequence cars get more expensive what could prevent clients to buy new efficient cars. The previous purely supply-side regulatory methodology must be supplemented with an overall strategy on the demand side. The idea is to reduce CO<sub>2</sub> emissions of all road transportation, not just those from new cars. VDA advocates measures to decrease emissions of existing fleets and proposed e.g. as instrument to incentivize decarbonisation of transportation fuels the inclusion into the Emission Trading System ("Cap and Trade"). Due to price transmission this not only effects fuel producers but also incentivizes car owners to drive fuel efficient cars and to change their driving behaviour. Concerning electric mobility VDA advocates to support electric mobility. EU and local regulations should temporarily subsidize electric mobility (e.g. bonuses / tax breaks for the purchase of e-vehicles, elimination of taxes). Charging infrastructure and measures such as special parking rights should be introduced.

### How have you influenced, or are you attempting to influence their position?

By the constant membership in the Managing Board & Presiding Board of the association and by the regular participation in all relevant working groups. BMW Group



is expressing its position in all activities, thus influencing the overall position on climate change of the VDA.

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**Trade association**

European Automobile Manufacturers Association (ACEA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

ACEA is an advocate for the automobile industry in Europe, representing manufacturers of passenger cars, vans, trucks and buses with production sites in the EU. ACEA aspires to define and advocate the common interests, policies and positions of the European automobile industry. One "industry topic" is "environment and sustainability". In this industry topic issues are addressed ranging from air quality, noise reduction or CSR in the supply chain to CO<sub>2</sub> emissions from cars and alternative drivetrains and e-mobility. The post 2020 CO<sub>2</sub> regulation in the EU is of particular interest. The current legislation is solely focused on vehicle technology. ACEA advocates for a comprehensive approach taking into account the usage of the vehicles in the existing fleet in order to accelerate further CO<sub>2</sub> emissions reduction. Since most CO<sub>2</sub> emissions from the existing fleet come from older cars which do not have the latest technologies ACEA sees fleet renewal incentives as well as incentivizing lower carbon fuels through an upstream ETS (fuel providers) as two effective tools to lowering emissions from the existing fleet. By 2021, the car industry will have reduced CO<sub>2</sub> emissions by almost 42% compared to 2005. Any progress beyond 95 g/km CO<sub>2</sub> relies heavily on growing electrification or hybridisation levels. This may not be possible considering the lack of sufficient support at EU or national levels for electrification.

ACEA supports policy measures (e.g. CO<sub>2</sub> based tax systems or charging infrastructure development) to achieve higher market shares of hybrid and electrically chargeable vehicles. In line with the EU climate package objectives, an overall effort from 2005 to 2030 is required at the level of -30% for non-ETS sectors from the 2005 baseline. With the 95 g/km target the European automobile industry is already overachieving relative to this objective. ACEA argues that the new post-2020 regime should ensure a level playing field between the industrial and transport sectors in the EU in order to distribute the regulatory burden more equally. It should reflect the client acceptance level of electric mobility.

**How have you influenced, or are you attempting to influence their position?**

By the constant membership in the ACEA Board of Directors and by the regular participation in relevant working groups. BMW Group is expressing its position in all activities, thus influencing the overall position on climate change of the ACEA.

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**Trade association**

Auto Alliance

### Is your position on climate change consistent with theirs?

Consistent

### Please explain the trade association's position

The Alliance of Automobile Manufacturers is the leading advocacy group for the auto industry in North America and represents 77% of all car and light truck sales in the United States. The Auto Alliance promotes constructive solutions to public policy challenges that promote sustainable mobility and benefit society in the areas of environment, energy and motor vehicle safety. "Auto Issues" of particular interest are (1) fuel economy and (2) electric readiness. (1) Fuel economy: The Alliance supports a comprehensive single, national program for fuel economy and greenhouse gas emissions, including consumer support of new, fuel efficient autos, which is critical to automakers meeting the program's demanding targets. (2) Electric readiness: The Alliance promotes efforts to support mass market commercialization of e-vehicles. Long-term efforts to reduce dependency on foreign oil while also reducing transportation sector greenhouse gas emissions will require the mass market commercialization of electric vehicles. That includes technologies such as hybrid electrics, plug-in hybrid electrics, battery electrics, and fuel cell vehicles. Widespread consumer acceptance of these technologies will require that efforts be focused on important considerations such as: supporting infrastructure, incentives for consumer adoption, the alignment of regulatory efforts and the removal of market barriers.

### How have you influenced, or are you attempting to influence their position?

By the constant membership in the Board of Directors and in the Executive Committee association and by the participation in relevant working groups. BMW Group is expressing its position in all activities, thus influencing the overall position on climate change of the Auto Alliance.

## C12.3d

### (C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

## C12.3e

### (C12.3e) Provide details of the other engagement activities that you undertake.

#### (i) Methods:

BMW Group enters into dialogue about climate change, in direct dialogues, panel discussions and in initiatives on climate change related topics. Examples in the field of e-mobility and mobility services are:

- 1) Engagement with academia, NGOs or governmental bodies on urban mobility in megacities.
- 2) We are a founding and board member of VELOZ, a Californian nonprofit partnership founded to accelerate the shift to electric cars through public-private collaboration, public engagement and policy education innovation. We hosted the VELOZ fall symposium in Los Angeles and helped to shape the 'Electric for All' campaign to harness traditional and social media, and events in communities across the state.
- 3) Engagement with city officials, academia and local stakeholders. Collaborative projects for sustainable transformation of urban mobility addressing specific urban pain points: pilot



neighborhoods in Berlin and Munich, cross-sector alliances for scaling e-mobility in Hamburg, Munich and Berlin, strategic scenario projects in Munich for collaborative development of visions and target pictures.

**(ii) Topics:**

The contents of our dialogue with political NGOs or scientific organizations as well as governmental bodies are national and international legislation in the context of mitigation and adaptation, CO<sub>2</sub>-legislation and framework setting, renewables and e-mobility as well as other sustainability topics, new sustainable products, technologies and processes.

- 1) Engagement for urban mobility in megacities addressing challenges and potential solutions – e.g. e-mobility, car-sharing and other mobility services.
- 2) Veloz aims to power the electric car movement with an innovative public message about the fun, emotional and compelling benefits of driving electric. ‘Electric For All’ is California’s first large-scale consumer awareness campaign.
- 3) The two projects “Neue Mobilität Berlin” and „Model City Munich 2030“ strive to accelerate the uptake of sustainable urban mobility systems (integrated mobility systems with car sharing & e-mobility) and the collaborative development of new urban frameworks to enhance the livability of growing cities.

**(iii) Engagement nature:**

Stakeholder dialogues on the topic of “urban mobility” in Los Angeles/US, Melbourne/AU, Shenzhen/CN, Rotterdam/NL, and Berlin/GE. Apart from dialogues and active participation in multi-stakeholder initiatives and conferences, our innovations demonstrate to be viable measures against climate change on a short to long-term: In conducted field trials with EVs or by series introduction of innovative solutions as well as through our CO<sub>2</sub> reduction and efficiency measures in our production sites worldwide. These measures are used in dialogues and stakeholder discussions as exemplary business solutions.

- 1) We hosted dedicated events or participated in large conferences to proactively discuss low carbon mobility (e.g. gold sponsor of the Sustainable Innovation Forum at the COP24 in Katowice in December 2018).
- 2) As founding and board member, we helped to shape the organization’s agenda, recruit new member organizations, provide BMW and MINI products for photo shoots and manage the direction that the organization and the digital campaign are taking.
- 3) BMW Group evaluated car dependencies of urban dwellers in several cities. Within the project “Neue Mobilität Berlin” alternative and integrated mobility supplies in joint citizen workshops have been elaborated. During the campaign „Deine Sommerflotte“ residents leave their cars, test multimodal mobility without car ownership in order to break up routines in day-to-day mobility behavior and unveil barriers for transformation processes.

**(iv) Actions advocated:**

Actions advocated are diverse, including provision of all our activities on future mobility solutions, e-mobility and e-mobility infrastructure. Another example are the advertisements of our business solutions to be adapted or supported e.g. by regulators or specific cities as well as by the whole transportation sector for upscaling of solutions.

- 1) We advocate for the following measures to increase the market appeal of e-vehicles: a broad market penetration for electric vehicles in the business sector and support for the creation of a

convenient charging infrastructure at home, in public and at the workplace. Further actions advocated are specific lanes for electric vehicles and privileged parking.

2) To help California's vehicle electrification targets by 2030, the "Electric For All" campaign aims to educate and inspire drivers / riders to go electric advocating that electric cars are affordable for everyone.

3) An integrated mobility supply with car sharing and adequate urban framework conditions like dedication of parking space for car sharing & electric vehicles is crucial for a swift and voluntary behavior change as it provides the adopters of e-mobility and sharing an advantage compared to owners of private cars (e.g. no parking space search).

## C12.3f

### **(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

BMW Group's positions regarding global legislative issues arising from our engagement with policy makers at the market level is centrally coordinated in Munich. Positions are worked out with the participation of corresponding central departments, e.g. the department within the Strategy unit responsible for monitoring and further developing CO<sub>2</sub> targets for each product line and each new vehicle project or the Strategy unit responsible for sustainability and environmental Protection, and market representatives, respectively.

Moreover the vice president for government and external affairs is permanent member of the structure/sustainability circle SC (the SC is in charge of the implementation of all sustainability activities in the departments and reports to the Sustainability Board comprising all board members). In this way all of our direct and indirect activities that influence policy are consistent with our overall climate change strategy.

The BMW Group actively engages in a proactive dialogue with policy makers on mitigation and adaptation as well as environmental legislative issues using a wide variety of communication channels. We discuss policy issues with various national and international trade organizations, NGOs, scientific institutions etc. Our Representative Offices in Berlin, Brussels, Beijing, London, Washington DC, Sacramento, Tokyo, Delhi, Singapore, Mexico, Seoul, Sao Paulo, Moscow and Thailand are focal points of direct communication with political decision-makers and NGOs. In addition to major markets with a Representative Office, the BMW Group National Sales Companies are active in establishing political contacts and engage in political dialogue in the respective markets in 43 countries. The same applies to Regional Offices serving importer markets and to our manufacturing facilities.

These structures and processes ensure that all engagement activities are in line with BMW Group climate change strategy.

## 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 mainstream reports

**Status**

Complete

**Attach the document**

 BMW-GB18\_en\_Finanzbericht\_190315\_ONLINE.pdf

**Page/Section reference**

Sustainability: p30-31 (CO2 emissions, renewable energy in production and the value chain); p63-64 (Financial and non-financial reporting, fleet CO2 emissions, resource efficiency)

Governance: p199ff (Sustainability Board, Supply Chain)

Strategy: p18 (electrification for emissions-free driving), p28-29 (R&D strategy electric vehicles)

Risks&Opportunities: p. 90ff (emission regulation)

Emissions figures: p4, 31, 46, 63, 88, 108

Emissions targets: p17

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

**Comment**

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**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

 2019-BMW-Group-SVR-2018-Englisch.pdf

**Page/Section reference**

p33-39: CO2 emissions

p40-47: Electromobility

p55-87: Production and Value Creation

**Content elements**

Governance



- Strategy
- Risks & opportunities
- Emissions figures
- Emission targets
- Other metrics

**Comment**

## C14. 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.**

### C14.1

**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	Harald Krüger, Chief Executive Officer BMW Group (CEO)	Chief Executive Officer (CEO)