

# Welcome to your CDP Climate Change Questionnaire 2020

## C0. Introduction

### C0.1

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

At BASF, we create chemistry for a sustainable future. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. The approximately 117,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world.

BASF's activities are grouped into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. In 2019, BASF posted sales of €59.3 billion and income from operations before special items of approximately €4.5 billion. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information on BASF is available on the internet at [www.basf.com](http://www.basf.com).

We carry out our corporate purpose, "We create chemistry for a sustainable future", by pursuing ambitious goals along our entire value chain. In this way, we aim to achieve profitable growth and take on social and environmental responsibility. Our products, solutions and technologies contribute to achieving the United Nations' Sustainable Development Goals (SDGs), for example, on sustainable consumption and production, climate action or fighting hunger. We are committed to contributing to the Paris climate agreement and support the recommendations of the Task Force for Climate-related Financial Disclosure (TCFD).

We have defined sustainability focus areas in our corporate strategy to position ourselves in the market and at the same time, meet the growing challenges along the value chain: We source responsibly; We produce safely for people and the environment; We produce efficiently; We value people and treat them with respect; We drive sustainable products and solutions.

Our leading position as an integrated global chemical company gives us the chance to make important contributions in the areas of resources, environment and climate, food and nutrition, and quality of life. Dealing with climate change is one of the major challenges to ensure a sustainable future. That's why we are committed to energy efficiency and global climate protection along the value chain.

Since 1990, we have been able to lower our overall greenhouse gas emissions from chemical operations by 49.9% and reduce specific emissions by 75%. Our current target is to grow CO<sub>2</sub>-neutrally until 2030. We commit to keeping our greenhouse gas emissions flat at the 2018 level until 2030 – even though we are targeting considerable annual production growth. We bundled

all measures that will help us reach our climate target and enable further reductions in the long term in a global Carbon Management. Regarding energy efficiency, we want to have introduced certified energy management systems (ISO 50001) at all relevant production sites by 2020, covering 90% of our primary energy demand (status 2019: 85.1%).

We also offer solutions that help our customers to avoid greenhouse gas emissions. They are classified as Accelerators “Climate Change and Energy” in our portfolio steering approach “Sustainable Solution Steering” and reflect our wide portfolio of climate protection products. For example, our expandable polystyrene granulates (EPS) Styropor® and Neopor® are used to insulate buildings and help to save heating energy and reduce carbon emissions. We invest about half of our annual Research and Development (R&D) expenditures (€2.158 billion total R&D expenses in 2019) on product and process innovations where the R&D target is related to energy/resource efficiency and climate protection.

Forward-Looking Statements: This document may contain forward-looking statements. These statements are based on current estimates and projections and currently available information. Future statements are not guarantees of the future developments and results outlined therein. These are dependent on a number of factors; they involve various risks and uncertainties; and they are based on assumptions that may not prove to be accurate. We do not assume any obligation to update the forward-looking statements contained in this report.

## C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1, 2019	December 31, 2019	Yes	1 year

## C0.3

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

- Algeria
- Argentina
- Australia
- Bahrain
- Belgium
- Brazil
- Canada
- Chile
- China
- Colombia
- Czechia
- Denmark
- Egypt

Finland  
France  
Germany  
India  
Indonesia  
Ireland  
Italy  
Japan  
Kazakhstan  
Malaysia  
Mexico  
Netherlands  
New Zealand  
Norway  
Panama  
Peru  
Poland  
Puerto Rico  
Republic of Korea  
Romania  
Russian Federation  
Saudi Arabia  
Singapore  
Slovakia  
South Africa  
Spain  
Sweden  
Switzerland  
Taiwan, Greater China  
Thailand  
Turkey  
United Arab Emirates  
United Kingdom of Great Britain and Northern Ireland  
United States of America  
Viet Nam

## **C0.4**

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

EUR

## **C0.5**

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

Other, please specify

Worldwide production sites of BASF SE, its fully consolidated subsidiaries (emissions included in full), and proportionally consolidated joint operations (emissions disclosed pro rata according to BASF's interest)

## C-CH0.7

**(C-CH0.7) Which part of the chemicals value chain does your organization operate in?**

**Row 1**

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### **Bulk organic chemicals**

- Lower olefins (cracking)
- Aromatics
- Ethylene oxide & Ethylene glycol
- Ethanol
- Methanol
- Polymers
- Adipic acid

### **Bulk inorganic chemicals**

- Ammonia
- Fertilizers
- Nitric acid
- Chlorine and Sodium hydroxide
- Carbon black
- Soda ash
- Titanium dioxide
- Hydrogen
- Oxygen
- Other industrial gasses

### **Other chemicals**

- Specialty chemicals
- Specialty organic chemicals
- Other, please specify

Approximately 45,000 sales products in total

## C1. Governance

### C1.1

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

Yes

## C1.1a

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

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	<p>Description of the position and relation to climate issues:</p> <p>The CEO of BASF has the overall responsibility for climate protection as part of the CEO's wider responsibility for the Corporate Development Division of BASF, which develops and integrates sustainability in BASF's strategies. In this role, the CEO takes care of the development of climate protection targets, monitoring of target performance, advancing measures towards target achievement and promoting/aligning climate-related issues in areas under responsibility of other Board members (e.g. accounting of greenhouse gas emissions, supply chain activities, sustainable finance). The head of BASF's Corporate Development Division, which has oversight for all climate protection topics in BASF, reports directly to the CEO.</p> <p>Example of a climate-related decision:</p> <p>In 2019, the CEO kicked off the work and promoted a feasibility study for supplying BASF's planned chemical complex in Mundra, India entirely with renewable energy. If realized, it would, to our knowledge, be the world's first petrochemical site with carbon-neutral energy supply.</p>

## 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	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding annual budgets</p>	<p>Our Management Board reviews at least annually major climate-related topics like, for instance:</p> <ul style="list-style-type: none"> <li>- Climate-related risks and opportunities</li> <li>- Target performance</li> <li>- Budgets for functions and business units involved in climate-related topics</li> <li>- Carbon price forecasts</li> <li>- Progress on specific measures supporting BASF's sustainability strategy</li> </ul> <p>In addition, depending on need, the following topics are addressed:</p>

	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	- Investment decisions - Requests for approval of specific action plans, e.g. new R&D initiatives.  Example of how a selected mechanism contributes to the Board's oversight of climate issues in more detail: In the context of reviewing and guiding risk management policies, the Board receives twice a year a summary of the aggregated opportunity/risk exposure of BASF, including climate-related risks. The information is provided by Corporate Controlling and Finance and major points are discussed in Board meetings. This mechanism warrants that the Board can keep track of changes to the company risk profile (including climate change-related issues) and initiate corrective measures in case of significant changes.
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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
President	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Environment/ Sustainability manager	Both assessing and managing climate-related risks and opportunities	As important matters arise

### 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).**

**President:**

**Position in the company:** The President of the Corporate Development Division represents the highest responsibility for overall governance for climate protection below Board of Directors (= delegation of governance from Board). The President leads the Corporate Development Division and reports directly to the CEO who is the Board member with overall responsibility for climate-related topics within BASF. The three major units of the Corporate Development Division – strategic planning (including sustainability strategy), technology assessments,

economic evaluations – provide core global functionalities for BASF’s greenhouse gas (GHG) emission steering, e.g. governance for emission reduction and energy efficiency activities, consideration of GHG emissions in investment decisions, assessment of long-term scenarios, and preparation of top management decisions on climate protection, such as corporate environmental goal setting.

**Responsibilities with regard to assessment and monitoring of climate-related issues:**

The President of the Corporate Development Division has oversight over the measures for GHG emission steering governed by the abovementioned three major units of the Corporate Development Division. Furthermore, the President is briefed regularly on current and emerging climate change-related issues highlighted by the Sustainability Manager heading the “Carbon Steering” unit within the Corporate Development Division, which covers these issues constantly as part of its core responsibilities. Finally, the President is a member of the Corporate Sustainability Board (CSB) led by a second Board member, which is BASF’s central steering committee for sustainable development. It is comprised of selected heads of business, corporate and functional units as well as of the regions. The CSB monitors the implementation of the sustainability strategy and cross-divisional initiatives, defines sustainability goals and approves corporate position papers on sustainability topics. Climate-related work under the head of BASF’s Corporate Development Division is discussed and aligned with the CSB in support of sustainable development and preparation of climate-related Board level discussions.

**Rationale for assignment:** Climate protection is a core element of BASF’s corporate strategy, which underpins BASF’s purpose “We create chemistry for a sustainable future”. The President of the Corporate Development Division has overall responsibility for the development and implementation of the BASF strategy and consequently, the responsibility for climate-related issues embedded in the strategy has been assigned to this role as well.

**Sustainability Manager:**

**Position in the company:** The Sustainability Manager heads the “Carbon Steering” unit within the Corporate Development Division and is in reporting line to the President of the Corporate Development Division (= delegation of governance from President). The Sustainability Manager is involved in briefings to Board members on a case-by-case basis.

**Responsibilities with regard to assessment and monitoring of climate-related issues:**

The unit led by the position is in charge of monitoring / analyzing climate change related risk and opportunities, treating requests of internal/external stakeholders, carbon accounting (corporate carbon footprint), updating the status of goals and emissions performance and guidance for continuous improvement, creating information materials, steering improvement projects. It maintains an internal network of experts with link into operations. Furthermore, it facilitates alignment of the three major units of the Corporate Development Division on GHG emission steering measures. Finally, the Management Team for Climate Protection (MTCP) is headed by the unit. This committee comprises members from different corporate units (e.g. sustainability strategy, advocacy, investor relations, procurement) and regional representatives, and constantly reviews climate-related topics, especially risks and opportunities. As head of the unit, the Sustainability Manager is supervising the outcomes of and issues arising from these activities, e.g. via regular meetings, jour fixes and internal updates, and is thus bearing responsibility for the assessment, monitoring and management of such climate related issues.

**Rationale for assignment:** The Sustainability Manager’s position and the entire “Carbon Steering” group have specifically been created as a focused organizational unit for optimum support of climate action within the BASF strategy implementation and for overall governance for climate-related topics within BASF.

### C1.3

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

### C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Board/Executive board	Monetary reward	Efficiency target	Actual annual variable compensation of Board members is based on the achievement of set targets and the company’s success. This includes the achievement of BASF’s climate protection target.
Executive officer	Monetary reward	Efficiency target	Depending on the individual function of the officer, a wide range of actions, e.g. increase of process/energy efficiency, reduction of emissions, reduction of supply chain impacts or increase of sales of climate protection products, is incentivized.
Environment/Sustainability manager	Monetary reward	Efficiency target	Depending on the individual function of the manager, a wide range of actions, e.g. increase of process/energy efficiency, reduction of emissions, reduction of supply chain impacts or increase of sales of climate protection products, is incentivized.
Process operation manager	Monetary reward	Efficiency target	In the context of continuous improvement of operational excellence, process operation managers are incentivized to increase energy efficiency and reduce emissions in BASF plants.



Other, please specify Marketing manager/account executive	Monetary reward	Other (please specify) Sales of climate protection products	Marketing manager's performance is measured, amongst other KPIs, against sales targets, including sales of climate protection products.
Other, please specify Project leaders R&D	Monetary reward	Other (please specify) Developing climate protection products	R&D managers pursue projects based on individual targets related to progress on the development of new products, for example in our focus research areas derived from the three major areas in which chemistry-based innovations will play a key role in the future: resources, environment and climate; food and nutrition; and quality of life.
All employees	Monetary reward	Other (please specify) Emissions reduction project	BASF is constantly running suggestion scheme campaigns at different BASF sites. Each idea that is implemented earns a premium paid to the employee which is proportional to the amount of cost savings. Regularly special campaigns are launched that focus on energy savings and carbon emission reductions. If greenhouse gas emissions are avoided an additional CO2 bonus is paid. The ideas implemented in 2019 result in an annual greenhouse gas emission reduction of about 12,000 metric tons of CO2e.

## C2. Risks and opportunities

### C2.1

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

Yes

#### C2.1a

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

	From (years)	To (years)	Comment
Short-term	0	2	Timeframe aligned with wider enterprise risk management process.

Medium-term	2	8	Timeframe aligned with wider enterprise risk management process.
Long-term	8		Timeframe aligned with wider enterprise risk management process.

## C2.1b

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

#### Definition of substantive impact:

We understand risk to be any event that can negatively impact the achievement of our short-term operational or long-term strategic goals. We define opportunities as potential successes that exceed our defined goals. A specific risk or opportunity is considered as having a substantive impact if the resulting deviation from planned earnings exceeds €2 million. We have further defined the magnitude of impact to be linked to the following net financial implications for BASF's EBIT: High = more than €100 million, Medium-high = €10-100 million, Medium = €2-10 million, Low-medium = less than €2 million and Low = insignificant. If a new risk is identified that could have an impact on earnings of more than €10 million or bears reputational risks, it must be immediately reported to the Board of Executive Directors.

#### Description of the quantifiable indicators used to define substantive impact:

(a) Potential financial implications for BASF: Depending on the nature of the risk or opportunity, different methods for quantification are considered. In case of a clear understanding about the direction of change driven by the risk/opportunity, the effects will be quantified based on expert assessments about the potential level of change and cause-effect-relationships. If the direction of change is unclear, i.e. the effect can be positive or negative and thus represents a volatility/uncertainty, a case-specific probability distribution over the impact range is estimated.

(b) Probability of occurrence: Financial impacts will only be considered where a risk or opportunity has a probability of occurrence of at least 1% or the potential to threaten BASF's license to operate. The method for estimation of probability depends on the nature of the risk or opportunity. In case that statistical data about the occurrence of the risk/opportunity are available (e.g. knowledge about return periods of weather events), such information will be the basis for calculation of likelihoods. If no such statistical relationship can be relied on (e.g. when assessing the probability of implementation of certain policy measures), likelihood will be subject to expert estimates. We classify probabilities as follows: low = less than 30%, medium = 30-70%, high = more than 70%.

## C2.2

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

**Value chain stage(s) covered**

Direct operations  
Upstream  
Downstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term  
Medium-term  
Long-term

**Description of process**

Climate-related risks and opportunities are integrated into the company-wide risk identification, assessment, and management process that is based on the international risk management standard COSO II Enterprise Risk Management – Integrated Framework (2004). Climate-related risk reporting is systematically integrated into the aggregated opportunity/risk exposure of the BASF Group delivered twice a year by Corporate Controlling and Finance to BASF Group's management.

Identification:

The climate-related exposure assessment under the ERM framework is provided by the BASF Management Team for Climate Protection (MTCP), including experts from environment, health and safety (EHS), corporate sustainability, advocacy, corporate technology, investor relations, new business, procurement, and regional representatives. The MTCP meets at least quarterly to exchange on the following risks and opportunities covering all value chain stages:

**Reputation:** The teams of investor relations, corporate strategy and advocacy monitor external stakeholder (e.g. investors, analysts, NGOs) expectations and brand perception and report regularly in the MTCP to assess effects for BASF's reputation on a consolidated basis.

**Market development:** BASF's subsidiary scouting for new business areas assesses opportunities for new climate protection products, and a team of business unit (BU) representatives regularly evaluates customer expectations regarding the carbon performance of our products. On this basis, the MTCP discusses trends relevant at corporate level, e.g. regarding fit with the BASF strategy.

**Technology:** BASF's corporate technology experts regularly review new technological developments with regard to their potential for process optimization and improved environmental performance, including lower emissions. The findings are integrated into medium-term and long-term strategic analyses on the future of BASF's production setup.

**Regulatory:** A team of experts from BUs and central functions analyses local and

regional developments of regulation affecting BASF directly (e.g. carbon pricing systems) or indirectly via BASF-relevant value chains (e.g. regulation for products of key customers). In addition, the corporate Energy and Climate Policy group reviews aggregated effects from local developments (e.g. global dissemination of ETS) and global progress on climate protection (e.g. Paris Agreement).

Climate/weather change: Potential physical risks from climate change for our sites in Europe, Asia, North America and South America are assessed by BASF-internal experts in close cooperation with renowned research institutions using own observations and public information. The information is shared with site managers to complement the standard procedures for long-term maintenance of the sites and with the MTCP for a comprehensive corporate risk assessment. The assessment includes a view on interruption of supply chains and logistics for BASF products, i.e. upstream and downstream risks.

#### Assessment:

All risks and opportunities are evaluated based on (a) their potential financial implications for BASF and (b) their probability of occurrence, with the results of the assessment highlighting those risks and opportunities which can have a substantial impact (>€2 million deviation from planned earnings / >1% probability of occurrence or threat to license to operate). The ERM framework, as laid out in a BASF Risk Management Policy and the Risk Management Process document, ensures that all risks and opportunities (including those related to climate as provided by the MTCP) are reported according to the same principles of quantification in a comparable manner. Corporate Controlling coordinates the integrity of the framework, guides reporting units and conducts an analysis of all reported risks with the goal to identify cross-divisional, cumulative risks and to assess the aggregated possible impact.

Depending on the type of risk/opportunity, the time horizons considered vary. For instance, regulations regarding the ETS and risks connected to it, are already currently affecting our operations, while emerging regulation requires a medium- and long-term perspective.

#### Responding:

Following the principle of decentralized ERM, climate-related risks and opportunities are usually managed by the local, regional, and corporate business and functional units responsible for identifying and assessing them. These units take the first decision to mitigate, transfer, accept or control climate-related risks, to capitalize on opportunities, and to prioritize risks in line with the policies and requirements laid out in the general ERM policies and requirements. In view of risks/opportunities of higher potential impact, these units also decide to escalate findings and decisions to upper management levels. The central MTCP can be involved by responsible units by (a) informing the MTCP about their decisions and management alignment steps, or (b) consulting the MCTP for guidance. The aggregation of risk management information at MCTP level warrants that individual management steps are aligned and appropriate also from a wider corporate perspective.

Case studies:

Physical risks (STAR approach): (a) Situation: Water availability at our sites may be affected by climate change, potentially endangering continuity of operations. (b) Task: BASF corporate environmental experts were tasked to update the risk exposure assessment of BASF's largest site in Ludwigshafen, based on findings from extreme weather conditions (high water temperature, low water levels) in 2018. (c) Action: Analysis of likelihood of occurrence and/or intensity of extreme weather events at the site in close cooperation with the federal water authority and proposal for respective climate change adaptation measures on site. (d) Result: In 2019, the site implemented a package of measures (e.g. time chartering ships with high load capacities in the case of low water, increase of cooling capacity) to make extremely long periods of low water more manageable.

Transition risks (STAR approach): (a) Situation: We expect increasing ETS certificate prices (e.g. due to tightening of EU 2030 climate targets) leading to higher costs for electricity production in our own power plants. (b) Task: Improve efficiency in our own power plants to reduce emissions and consequently cost burden from ETS. (c) Action: In 2019, we started the modernization of our combined heat and power plant in Schwarzheide, Germany, with investments of €73 million. (d) Result: After modernization, the plant will supply about 10% more electricity and the plant's emission intensity will decrease accordingly.

## C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Rationale for relevance: BASF as an energy- and emissions-intensive company is directly affected by current and emerging regulation targeting energy use and efficiency as well as reduction of emissions. Such regulation can result in significant cost burdens for production. +++ Risk example: A high number of power plants and chemical plants of BASF are regulated under the European ETS. Changes of prices for emission certificates can have a substantial impact on their cost of production. Hence, a team of experts from business units and central functions analyses emission certificate costs for all BASF plants included in the EU ETS based on the plants' emissions profiles as well as current and estimated future prices of certificates. The findings are fed back into the BASF Management Team for Climate Protection, which prepares the climate-related part of the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.

<p>Emerging regulation</p>	<p>Relevant, always included</p>	<p>Rationale for relevance: BASF as an energy- and emissions-intensive company is directly affected by current and emerging regulation targeting energy use and efficiency as well as reduction of emissions. Such regulation can result in significant cost burdens for production. +++ Risk example: BASF has operations in China, which may be affected by the national ETS, potentially leading to higher operational costs for BASF based on the GHG emissions that fall under the scheme. A team of experts from business units and central functions conducts an impact assessment for the planned regulation. The findings are fed back into the BASF Management Team for Climate Protection, which prepares the climate-related part of the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.</p>
<p>Technology</p>	<p>Relevant, sometimes included</p>	<p>Rationale for relevance: New technologies in GHG-intensive sectors in general and the chemical sector in particular (e.g. steam cracker with electric heating, carbon capture and storage or use) may result in a step change of production processes. BASF with its wide range of assets often interlinked for process optimization (Verbund principle) needs to be aware of these changes to maintain a competitive production setup. +++ Risk example: BASF’s corporate technology experts regularly review new developments for power-to-x technologies, given that chemicals are discussed to be a potential option for energy storage and sector coupling under the power-to-x concept. The findings are integrated into medium-term and long-term strategic analyses on the future of BASF’s production setup and reported to the BASF Management Team for Climate Protection as appropriate, depending on the magnitude and likelihood of impact. The Management Team prepares the climate-related part of the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.</p>
<p>Legal</p>	<p>Not relevant, explanation provided</p>	<p>BASF monitors the development of litigation in all areas and geographies relevant to the company. While there is an overall increase of such litigations, there is no case indicating that the chemical industry, nor BASF in particular, will become subject to lawsuits or other forms of legal disputes with a clear relation to climate change in the medium-term. Given that there are no clear and substantive early warning signs of company-specific risk from the trend monitoring, legal risks from climate change are not considered relevant at the moment, and not receiving an in-depth assessment. Please note that potential risks arising from current or future regulations are also categorized as legal risks within the BASF risk management and are monitored as described above under “current/emerging regulation”.</p>

<p>Market</p>	<p>Relevant, sometimes included</p>	<p>Rationale for relevance: BASF offers approximately 45,000 sales products for a wide range of value chains, e.g. automotive, construction, food. Megatrends in our customer industries may become a risk or opportunity for parts of our product portfolio, depending on the change in customer demand. Some of these changes may be driven by climate-related aspects (e.g. automotive: trend towards electric vehicles), while other parts of business are less affected by climate change (e.g. pigments). Hence, assessment of climate-related market risks only plays a more important role for the part of business considered to be more exposed to respective changes. +++ Risk example: BASF delivers many solutions to the automotive industry. Recent trends to more climate-friendly products and technologies for transport (e.g. electric vehicles) pose a risk for our sales of products for the established customer solutions (e.g. catalysts for mobile combustion engines). Therefore, BASF experts from different business units, cooperating under the internal Global Automotive Steering Committee, conduct impact assessments of the trends. The findings are integrated into strategic considerations for business development and reported to the BASF Management Team for Climate Protection as appropriate, depending on the magnitude and likelihood of impact. The Management Team prepares the climate-related part of the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.</p>
<p>Reputation</p>	<p>Relevant, always included</p>	<p>Rationale for relevance: BASF has a significant corporate carbon footprint (e.g. global Scope 1+2+3 emissions rank #63 of the Global 250 according to an analysis of Thomson Reuters, 2017– the latest publicly available data) and its portfolio comprises products with a high GHG emission intensity. As a global industry leader, BASF is expected to act proactively on the challenges of climate change. If major investors (e.g. BlackRock, the largest single shareholder of BASF who is becoming increasingly outspoken about the risk of climate change for the financial market) or sustainability oriented customers perceive BASF business activities to be misaligned with the growing global momentum to act against climate change this will pose a reputational risk to the company that can ultimately lead to lower sales and a reduced market valuation. +++ Risk example: BASF is in the company focus list of various investor-led initiatives aiming to engage with the world’s largest corporate GHG emitters to curb emissions, e.g. Climate Action 100+. Investor relations of BASF is closely monitoring activities of the initiatives and engaging with the stakeholders. Being a member of the BASF Management Team for Climate Protection, which prepares the climate-related part of the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors, investor relations provides information on related developments and risks directly for the report.</p>



<p>Acute physical</p>	<p>Relevant, always included</p>	<p>Rationale for relevance: BASF operates more than 360 production sites in diverse environments in more than 90 countries all over the world (e.g. Ludwigshafen/Germany, Antwerp/Belgium, Geismar/USA, Guaratinguetá/Brazil, Kuantan/Malaysia, Nanjing/China). Given the global setup of the production base, acute physical risks from climate change cannot be excluded as intrinsic risk factor with potential significant impact on individual sites and therefore need to be assessed for relevance. +++ Risk example: BASF operates production sites in regions potentially vulnerable to increased frequency of cyclones due to climate change. Respective changes in physical climate parameters can lead to more extreme weather conditions, which represent an inherent risk for our production capacity. Such kind of risks from climate change for our sites in Europe, Asia, North America and South America are assessed by BASF-internal experts in close cooperation with renowned research institutions using own observations and public information. The information is shared with site managers to complement the standard procedures for long-term maintenance of the sites and also made available to the BASF Management Team for Climate Protection for consideration in the aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.</p>
<p>Chronic physical</p>	<p>Relevant, always included</p>	<p>Rationale for relevance: BASF operates more than 360 production sites in diverse environments in more than 90 countries all over the world (e.g. Ludwigshafen/Germany, Antwerp/Belgium, Geismar/USA, Guaratinguetá/Brazil, Kuantan/Malaysia, Nanjing/China). Given the global setup of the production base, chronic physical risks from climate change cannot be excluded as intrinsic risk factor with potential significant impact on individual sites and therefore need to be assessed for relevance. +++ Risk example: Most BASF sites require water for their production processes and cooling, and many sites use nearby waterways for logistics. Climate change is projected to have a long-term effect on regional precipitation patterns for many of the regions where our sites are located, including a reduction of the amount of precipitation in some regions (e.g. Gulf of Mexico, and the Mediterranean). Lower precipitation levels may ultimately limit availability of water at affected production sites and thus represent a risk that BASF must decrease production capacity and/or change mode of transport due to limited navigability of waterways. Such kind of risks from climate change for our sites in Europe, Asia, North America and South America are assessed by BASF-internal experts in close cooperation with renowned research institutions using own observations and public information. The information is shared with site managers to complement the standard procedures for long-term maintenance of the sites and also made available to the BASF Management Team for Climate Protection for consideration in the</p>



		aggregated opportunity/risk exposure report of the BASF Group delivered twice a year to the Board of Directors.
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## C2.3

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

Yes

## C2.3a

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

### Identifier

Risk 1

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

Direct operations

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

Emerging regulation

Carbon pricing mechanisms

### Primary potential financial impact

Increased direct costs

### Company-specific description

BASF's main regulatory risk derives from additional cost burdens from the EU emissions trading system (ETS) compared to global competitors which have no comparable additional costs. In fact, approx. 54% of our Scope 1 and Scope 2 emissions are covered by the EU ETS and have to be backed by the appropriate allowances. We expect a tightening of the EU 2030 climate target from -40% to -50-55% GHG emission reduction. The risk of additional costs for BASF results from a lower 2030 ETS cap, while existing Carbon Leakage protection instruments (e.g. free emission allowances) may come to their limits and new ones are not in place yet. This may result in a lack of free allowances even for the best performers, combined with increasing prices for the certificates which we will have to buy, and substantial administrative costs. Additional uncertainty comes from the hard to calculate effects of the Market Stability Reserve (MSR) on ETS prices in the light of the Corona crisis. Even though the efficiency of BASF's plants is above average, a lack of free allowances leads to a loss of competitiveness compared to non-European competitors.

In addition to the direct effects in the context of the ETS, we also face indirect effects through higher electricity prices for our power purchase because of increasing costs for emission allowances being passed on from the power sector, while compensation for these costs may decrease because the criteria for sectors to be eligible for indirect cost

compensation could be changed by the European Commission. The respective regulatory amendments, which are to become effective after 2020, are still work in progress with an uncertain outcome. National ETS approaches like the German BEHG (“Brennstoffemissionshandelsgesetz”) will slightly add to the cost burden by additional administrative cost and carbon costs mainly for transport and some non-ETS installations.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

High

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

Yes, an estimated range

**Potential financial impact figure (currency)**

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

100,000,000

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

200,000,000

**Explanation of financial impact figure**

Under the revised EU ETS Directive with a disproportionate burden between the ETS and non-ETS sector, free allocation of allowances may decrease in the order of 20-30%, translating into reduced free allocation of about 2.5 million allowances. At the same time ETS certificate prices may rise significantly during the 4th trading period. Calculating with an estimated new range of carbon prices of 35-65 €, this results in a risk of about €100-200 million per year (conservative estimation approach).

**Cost of response to risk**

1,500,000

**Description of response and explanation of cost calculation**

Description of response: We mitigate cost impacts by reducing GHG emissions intensity. We have set a global target of CO<sub>2</sub>-neutral growth until 2030 (i.e. growth with stable GHG emissions) and pursue two major approaches in support of our target: (1) improving energy/process efficiency. At the end of 2019, 47 sites in Europe were certified by energy management systems (DIN EN ISO 50001), representing 95% of our primary energy demand in Europe. Each year multiple reduction projects are assessed, kicked off and implemented (140 measures in EU implemented in 2019). (2) Increasing the share of renewable energy in our power supply. For example, 14 BASF sites in Europe were entirely or partially powered by emission-free electricity in 2019. Further, we actively engage with decision makers and governments at the regional, federal and

EU level on climate and energy-related issues.

Case study: Situation: We expect increasing ETS certificate prices leading to higher costs for electricity production in our own power plants. Task: Improve efficiency in our own power plants to reduce emissions and consequently cost burden from ETS. Action: In 2019, we started the modernization of our combined heat and power plant in Schwarzheide, Germany, with investments of €73 million. Result: After modernization, the plant will supply electricity with lowered GHG emissions per kWh (-10%).

Explanation of cost: Efficiency projects result in no net additional costs (savings justify initial investment according to BASF's profitability criteria; calculations include a carbon price). Likewise, we primarily pursue renewable energy purchase opportunities which maintain our competitiveness and thus currently have no significant cost impact. Regarding representing BASF's interests in our engagement with decision makers and governments, we estimate that ~10 FTEs (cost of ~€150,000 each p.a.) in our corporate energy & climate policy team as well as supporting units are dedicated to this task, resulting in a total cost of response of €1.5 million.

## Comment

### Identifier

Risk 2

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

Downstream

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

Market

Changing customer behavior

### Primary potential financial impact

Decreased revenues due to reduced demand for products and services

### Company-specific description

BASF supplies products to numerous customers in nearly every part of the world. The number of customers considering sustainability-related information in their supply relationships (e.g. sustainability criteria in supplier performance reviews, sustainability characteristics of purchased products) is constantly increasing. For example, the corporate sustainability team handled >200 sustainability-related customer requests like supplier performance reviews in 2019 (roughly doubling since 2015). Given BASF's significant corporate carbon footprint and its portfolio comprising products with a high GHG intensity (e.g. ammonia, nitric acid or high-value chemicals), company engagement and performance in climate protection is a typical area of consideration within sustainability. For example, 33 major global customers of BASF from the automotive, chemicals and a range of other sectors, in total representing about 5% of our sales, requested information on our climate protection activities through the CDP

Supply Chain Programme in 2019. Lack of corporate engagement and performance in this area (e.g. receiving a low score in supplier performance reviews, limited ability to address customer-specific questions on climate-related topics around purchased products) poses a risk to impact the customer relationship such that BASF products face lower demand or even get delisted completely by the customer.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**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)**

150,000,000

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

300,000,000

**Explanation of financial impact figure**

We estimate the impact of changing customer behaviour to be high (i.e. more than €100 million). For example, if the customers requesting information on our climate protection activities through the CDP Supply Chain Programme (33 customers representing about 5% of our sales in 2019) reduce demand by 5-10% due to a low CDP score this would result in loss of sales in the order of €150-300 million p.a. This range was selected as indicative figure for the high impact.

**Cost of response to risk**

4,500,000

**Description of response and explanation of cost calculation**

Description of response: In support of the customer relationship BASF exchanges relevant information with customers (e.g. via bilateral discussions, supplier performance reviews, CDP Supply Chain program) on its carbon footprint, climate protection strategy and measures – information which is also reported transparently through public media (e.g. Corporate Report, website). Further, customer-specific requests related to climate are addressed. On top of that, in 2019 we initiated a project to derive transparent emission data (PCFs - Product Carbon Footprints) for the entire portfolio of approximately 45,000 products based on a global level. We plan to make PCF data available for the entire portfolio by the end of 2021.

Case study: Situation: A customer of BASF aims at reducing the GHG emission of a

product that he offers to the construction market. The BASF material is responsible for more than 90% of the product's cradle-to-gate GHG emissions. Task: Investigate alternative low-carbon product solutions in close cooperation with the customer. Action: In a joint life cycle analysis BASF and the customer assessed the GHG emissions of a biomass-balance version of the BASF product in comparison to the conventionally produced product. In the biomass balance (BMB) product 100 percent of fossil raw materials are replaced by renewable raw materials - bio naphtha or biogas, in accordance with an externally certified balancing method. Result: The analysis shows that the BMB product can significantly reduce the life cycle GHG emissions of the final solution. The results of this analysis were published in the Environmental Product declaration program of the German Institut Bauen und Umwelt e.V. The customer acknowledged BASF's expertise, support, and ability to offer low carbon solutions, strengthening the supply relationship.

Explanation of cost: We estimate that ~25 FTE (cost of ~€150,000 each p.a.) in corporate units are dedicated to support the customer dialogue on sustainability, including climate change (e.g. the corporate sustainability team handled >200 sustainability-related customer requests like supplier performance reviews in 2019). Contributions by marketing managers in business units result in no specific additional costs as they are covered by their standard budgets. Regarding the PCF data project, we estimate that the resources of the core team members and the supporting functions sum up to a total of ~5 FTE (cost of ~€150,000 each p.a.).

## Comment

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### Identifier

Risk 3

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

Direct operations

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

Reputation

Increased stakeholder concern or negative stakeholder feedback

### Primary potential financial impact

Decreased access to capital

### Company-specific description

BASF has a significant corporate carbon footprint (e.g. global Scope 1+2+3 emissions rank #63 of the Global 250 according to an analysis of Thomson Reuters, in its latest publicly available version from 2017) and its portfolio comprises products with a high GHG emission intensity (e.g. ammonia, nitric acid or high-value chemicals). As a global industry leader, BASF is expected to act proactively on the challenges of climate change. BASF is in the company focus list of various investor-led initiatives aiming to engage with the world's largest corporate GHG emitters to curb emissions, e.g. Climate

Action 100+. If major investors (e.g. BlackRock, the largest single shareholder of BASF who is becoming increasingly outspoken about the risk of climate change for the financial market) perceive BASF business activities to be misaligned with the growing global momentum to act against climate change this will pose a reputational risk to the company. 7 % of BASF shares (64 million, value around €4,200 million at year-average stock price 2019) are held by shareholders who describe socially responsible investment (SRI) being at the core of their investment strategy. In case of a major reputational loss this group may divest a significant number of shares which will reduce BASF's market value. Moreover, there is potential risk of exclusion from thematic (climate) funds.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**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)**

100,000,000

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

200,000,000

**Explanation of financial impact figure**

7 % of BASF shares (64 million, value around €4,200 million at year-average stock price 2019) are held by shareholders who describe socially responsible investment (SRI) being at the core of their investment strategy. In case of a major reputational loss this group may divest a significant number of shares which will reduce BASF's market value. The effect on market valuation is estimated to be high (i.e. more than €100 million), given that divesting only about 2.5% of the group's shares would already affect a value above the threshold of high impact. The selected range is indicative of this high impact, which cannot be quantified more exactly though, since any estimation of financial effects due to a change in reputation is subject to extreme uncertainty.

**Cost of response to risk**

450,000

**Description of response and explanation of cost calculation**

Description of response: BASF engages in active dialogue with relevant stakeholders, including investors, and reports transparently on its climate protection strategy and measures via regular standardized activities (e.g. Corporate Report, CDP response,

website, investor dialogues) and individual formats (e.g. events, publications).

**Case study:** Situation: Role of business for climate protection is subject to public discussion, leading to increased scrutiny of investors regarding GHG-intensive companies like BASF. Task: Disseminate information about BASF positions, activities and performance in this area to demonstrate that BASF manages this topic properly. Action: In 2019, our integrated roadshow concept (ESG and mainstream) on IR level met high interest in London, Montreal, Toronto and Boston. Furthermore, we almost doubled our engagement with experts in dedicated ESG telephone conferences, roadshows, conferences and investor visits compared to 2018. BASF presented at ESG conferences and roadshows in Paris, Zurich, Frankfurt and Amsterdam. In total, we recorded more than 100 interactions with investors on sustainability topics. Result: BASF's sustainability efforts are well received by financial market participants. We achieve better understanding for BASF engagement at capital market participants, increasing likelihood that investors keep BASF shares in support of the climate protection strategy.

**Explanation of cost:** For the open dialogue with all stakeholders on climate change we have 3 FTE at a cost of ~€150,000 each p.a.

## Comment

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### Identifier

Risk 4

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

Direct operations

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

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

### Primary potential financial impact

Decreased revenues due to reduced production capacity

### Company-specific description

Production at BASF's largest site Ludwigshafen depends on the adjacent river Rhine in two ways: (a) withdrawal of water mainly for cooling purposes, (b) transportation of raw materials and final products via barges (about 40% of all raw materials that are transported to or from the location are transported over the river). Based on extreme weather / Rhine water level conditions experienced at the site over the last decades, like the drought and heatwave of 2003 and the flood in 2013, the robustness of site operations for such events was increased over the years by various measures (e.g. pump systems for low water level, adapted management plans, options to switch mode of transport, rebalance production across the global portfolio of assets). Additionally,

BASF had assessed physical risks from climate change for the site in 2015 and concluded that significant changes in the risk of extreme weather events will materialize beyond 2050 and that the existing adaptation measures are therefore still appropriate. However, in 2018, the site experienced an exceptional drought and heat, which caused an extremely long and intense phase of low river water levels and very high water-temperatures during the peak of the heatwave. As a consequence, high water temperature was limiting cooling capacity and low water levels were limiting transport by barge. The existing measures were insufficient to mitigate all impacts, which ultimately led to decreased production capacity and a negative earnings impact of around €250 million mainly due to missing transport capacities for raw materials.

The event raised the question whether global warming has already changed the likelihood of occurrence and/or intensity of extreme weather events at the site such that it has become vulnerable, even with the existing countermeasures designed to mitigate the impact of historically observed weather extremes at the site. The question is at the edge of current climate research and therefore results are subject to large uncertainties. For Ludwigshafen, extended analyses in cooperation with external partners indicated that an increased risk from more frequent and intense extreme weather events with the previously described impacts cannot be excluded.

**Time horizon**

Short-term

**Likelihood**

Very unlikely

**Magnitude of impact**

High

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

250,000,000

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

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

**Explanation of financial impact figure**

The figure represents the negative earnings impact due to limited production capacity (i.e. the delta between planned and realized production) at the Ludwigshafen site in 2018, which was triggered by extreme weather in the respective year (high water temperature limiting cooling capacity, low water level limiting transport) and is considered as an estimate for impact of similar future events (without any further adaptation).

**Cost of response to risk**



20,000,000

### Description of response and explanation of cost calculation

Description of response: In 2019, we included Climate Resilience in the central strategic goals of the Ludwigshafen site (Zukunftsbild Werk Ludwigshafen). By this, major projects are challenged if they contribute to climate resilience. Under this umbrella, we initiated several targeted measures to increase the resilience of the Ludwigshafen site against potentially more frequent and prolonged phases of very high water-temperature and very low water levels. Progress and status of these projects are reported bi-annually directly to site management, which is located below the board-level. In addition, BASF is a co-signatory to the Federal Ministry of Transport's 'Low Water Rhine' action plan presented in 2019. The navigability of the Rhine is to be improved in the coming years with various measures.

Case study: Situation: Low water level limits navigability of the river for standard shipping vessels and high-water temperature during heatwaves limits cooling capacity. Task: Work out measures to make the Ludwigshafen site more resilient against long-lasting low-water and high-temperature events of the river Rhine. Action: To master the logistical challenges, we have developed an early warning system for low water levels together with the Federal Institute of Hydrology, which enables more accurate long-term forecasts for our supply chains, we have chartered ships suitable for low water, and we have started to make loading/charging stations more flexible, which we will continue also in the next years. In addition, we are currently developing a BASF ship type with partners, which is designed for extreme low-water situations. Concerning high water temperatures, we have increased the cooling capacity for our production. We optimized existing re-cooling systems, expanded re-cooling systems, and in addition changed the control of our cooling water network. Result: Longer usability of waterway as mode of transport during low water levels and increasing flexibility to switch between different modes of transport. The measures already taken in 2019 enable us on the cooling water side to master a weather scenario like in 2018.

Explanation of cost: The figure represents the total costs of immediate measures from 2019 until 2021, initiated to increase the resilience of the Ludwigshafen site and can be attributed 50% each, to measures regarding logistics and expansion of cooling capacity.

### 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.**

**Identifier**

Opp1

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

Direct operations

**Opportunity type**

Resource efficiency

**Primary climate-related opportunity driver**

Use of more efficient production and distribution processes

**Primary potential financial impact**

Reduced indirect (operating) costs

**Company-specific description**

BASF's primary energy use amounted to about 59 million MWh in 2019, highlighting the relevance of energy for our operations (BASF is among the top 250 companies regarding fuel consumption reported to CDP). Consequently, energy saving as a measure to increase resource efficiency can make a key contribution to reducing our operating costs. At the same time, the growing awareness and readiness among policymakers to mitigate climate change, which are driven by the Paris Climate Agreement, are leading to new/extended incentives for energy efficiency (e.g. tax cuts, levy exemptions). One example are funding opportunities under the German legislation for combined heat and power plants ("Kraft-Wärme-Kopplungsgesetz"), like e.g. funding of energy efficiency increase by modernization of such plants, which BASF has already applied for successfully in 2018. Subsequently, in 2019 we started the modernization of our combined heat and power plant in Schwarzheide, Germany with investments of €73 million. After modernization, the plant will supply electricity with lowered GHG emissions per kWh (-10%). For BASF, besides our company-intrinsic strive for operational excellence, these incentives can strengthen the business case for energy efficiency measures, make them more economically viable and speed up implementation – leading to additional cost savings for BASF in the short- to medium-term.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-high

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

13,300,000

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

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

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

The financial impact represents the annual monetary savings resulting from almost 300 energy efficiency measures implemented globally in 2019 under the governance of our Energy Management Team. Operational excellence projects included a wide range of energy conservation measures resulting in savings of fuel, electricity, steam, cooling water etc., for example, chemical process modifications, process heat integration, advanced process control systems implementation, lighting and steam traps, incinerator fuel reductions, new combined heat and power plants, boiler efficiency upgrades, tower packing replacement, HVAC upgrades etc. Each project reported annual savings as “MWh saved”, which were converted to financial savings by multiplying with local cost per MWh, also provided within each project. The sum of all annual savings results in the given financial impact figure of €13.3 million.

### **Cost to realize opportunity**

17,800,000

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

Strategy: We implement energy management systems at all relevant sites and have set an energy efficiency target to this end: We want to have introduced certified energy management systems at all relevant production sites by 2020, covering 90% of our primary energy demand (status 2019: 85.1%). Further, we continuously run operational excellence programs triggering annual energy efficiency measures. In 2019 we increased our annual program budget from €250 million to €400 million, which emphasizes the importance for BASF.

Case study: Situation: BASF has set up an excellence program under the action area “Operations” within the corporate strategy. The program runs from 2019 to 2021 and includes efficiency measures in production, engineering, maintenance, logistics, procurement and administration. Task: Within the program all BASF sites and plants have to propose measures within a central project database where opportunities are tracked. Action: In 2019, 219 additional energy efficiency measures proposed were approved by the global Energy Management team, which also controlled implementation in the different plants all over the world – 288 measures were implemented, and another 112 entered implementation. Result: From the measures implemented in 2019, BASF will save around €13.5 million per year in energy cost, contributing about 160,000 t of annual CO<sub>2</sub>e savings. The database allows to track measures as best practice examples for other sites.

Explanation of cost: Costs of €17.8 million relate to the investment required in the reporting year to implement the energy efficiency measures proposed and approved within the operational excellence program. Due to the high number of individual measures, a more detailed breakdown seems not sensible.

**Comment****Identifier**

Opp2

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

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

BASF's product portfolio contains innovative solutions for thermal insulation of buildings. For example, we offer Neopor®, Styrodur® and Elastopor® for insulation up to a nearly zero energy home standard, as well as the flexible insulation material Slentex®. We are continuously working to improve the energy efficiency of our offerings as well as converting customers from HFC- to HFO-based PU systems especially in the North American region in line with climate control regulations. These materials can help saving energy and therefore emissions. An analysis shows that the volumes of Styropor®, Neopor® and Styrodur® sold in 2019 help our customers to save 62 million metric tons of CO<sub>2</sub> emissions over the entire lifecycles of these products when used to insulate existing buildings. We expect the global market of these thermal insulation products to grow due to tightening product efficiency regulations and standards as well as higher energy prices. For example, the recently revised European EPBD (Energy Performance of Buildings Directive) has requested Member States to strengthen renovation strategies and in the context of the EU Green Deal, the EU Commission will propose a renovation wave initiative in 2020 aiming to at least double the renovation rate in Europe. This will lead to an increasing demand for innovative BASF insulation products for the building and construction sector.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**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)

150,000,000

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

240,000,000

### Explanation of financial impact figure

Currently about 1% of buildings in Europe are renovated per year [1]. We assume that policy measures to increase energy efficiency in buildings (e.g. the European Green Deal) can drive global renovation rates into the order of 1-2% per year (for reference: GlobalABC, IEA and UNEP [2] propose a global target of 3% per year in 2030 to decarbonise buildings in line with the Paris Agreement). The increased renovation rate will lead to a respective growth of the market for insulation materials, and since our materials are primarily used for insulation of larger surfaces, we can assume growth rates above market average of about 5%. This growth translates into additional annual net sales of €150-240 million per year.

Citations:

[1] European Commission Roadmap: A Renovation Wave initiative for public and private buildings <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12376-Commission-Communication-Renovation-wave-initiative-for-the-building-sector>

[2] GlobalABC/IEA/UNEP (Global Alliance for Buildings and Construction, International Energy Agency, and the United Nations Environment Programme) (2020): GlobalABC Roadmap for Buildings and Construction: Towards a zero-emission, efficient and resilient buildings and construction sector, IEA, Paris.

### Cost to realize opportunity

100,000,000

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

Strategy: We expand production capacities and introduce new products into the market, like the Cavior® FTX 1 insulation material or biomass balance (BMB) versions of Styropor®, Neopor® and Styrodur®. Next to that, we engage in several associations and standardization bodies on standards for energy-efficient construction (e.g. CEFIC, PlasticsEurope, PU Europe, BDI Gebäude AG). Further, we promote the benefits of insulation materials in demonstration projects. For example, in 2019 we laid the foundation for a BASF Innovation Center in Turkey, which is a Gold Certificate candidate under the LEED Green Building rating system. Finally, we invest in R&D of new low carbon insulation solutions. Central sustainability tools (e.g. Eco-Efficiency Analysis) support this work.

Case study: Situation: Global demand for high performance, gray EPS insulation material grows strongly. Even though it is only a minor part of the life-cycle carbon footprint, emissions from production cannot be neglected. Task: Improve carbon footprint for production of our gray EPS insulation material Neopor®. Action: BASF

launched its graphitic expandable polystyrene (EPS) granulate Neopor® in a biomass-balance version, Neopor® BMB. In accordance with the balancing method certified by REDcert, 100 percent of fossil raw materials are replaced by renewable raw materials - bio naphtha or biogas. Result: The carbon footprint of Neopor® BMB improves by 90 percent compared to conventionally produced Neopor®.

Explanation of cost: In 2019 BASF invested about €100 million in research in the segment “Chemicals”, which includes styrenic foams. Regarding engagement in associations and standardization bodies, we estimate that a low single-digit number of FTEs (cost of about €150,000 per FTE and year) represent our interests, so the contribution to the overall estimate of costs is marginal and not visible in the total value.

## Comment

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### Identifier

Opp3

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

Downstream

### Opportunity type

Products and services

### Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

### Primary potential financial impact

Increased revenues resulting from increased demand for products and services

### Company-specific description

BASF is the world’s largest chemical supplier to the automotive industry. The global light vehicle production is projected to increase to more than 71 million units by 2020. BASF expects the share of chemicals in average vehicles to increase, because of the trend in the automotive industry towards energy efficiency and clean energy. It is driven by emissions performance regulations around the world, like e.g. the latest voted in Europe in 2019 with a reduction of 37.5% of CO2 emissions. BASF drives new technologies, e.g. we offer advanced cathode active materials for lithium-ion batteries, which play a key role in determining battery performance, energy density, service life and safety. At the same time, BASF is contributing to a circular value chain by providing efficient recycling technologies to regain valuable metals used in batteries for electric vehicles (EV). For example, in 2019 BASF announced to partner with Eramet and SUEZ in the “Recycling Li-ion batteries for electric Vehicle” (ReLieVe) project. The objective is to develop an innovative closed-loop process to recycle lithium-ion batteries from EV and to enable the production of new lithium-ion batteries in Europe. BASF will contribute with expertise in cathode material production to the project. BASF also provides solutions for battery cell frames, cooling, and thermal management. Coatings solution Chromacool®

with heat management function reduces energy consumption (of air conditioning) and thus helps to extend battery range of battery electric vehicles (BEVs). ChemCycling recycles plastic waste, which is currently landfilled or incinerated, into primary materials. A Life Cycle Assessment (LCA) study on ChemCycling concluded that chemical recycling (pyrolysis) of mixed plastic waste emits 50% less CO<sub>2</sub> than incineration of mixed plastic waste, and that production of chemically recycled plastics causes significantly lower CO<sub>2</sub> emissions than production of plastics from primary fossil resources (naphtha). A growing implementation of said technologies will likely increase the share of added value from chemical products within the automotive segment, leading to higher overall sales.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**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)**

700,000,000

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

1,000,000,000

**Explanation of financial impact figure**

The lithium-ion battery market is expected to grow at about 20-25% per year to 2030 (measured by GWh required) [1]. For 2030, we anticipate annual sales of around 25 million electric vehicles [1]. Depending on the mix of powertrains and technological progress, this corresponds to a 1,500-2,500 kt market [1] for cathode active materials, valued at €45-60 billion [2]. Our planned production in Schwarzheide, Germany, will enable supply of around 400,000 electric vehicles per year (start-up planned for 2022), representing a share of 1.6% of the total number of units in 2030, or a value of about €700-1,000 million (note that potential contributions from other plants have not been considered in this estimate).

Citations:

[1] Bloomberg NEF Long-Term Vehicle Outlook Report May 2020.

[2] WoodMac Global Long-Term Outlook Reports for Nickel, Cobalt, Lithium April 2020.

**Cost to realize opportunity**

800,000,000

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

Strategy: We expand production capacities and introduce new products in the areas of lightweight engineering concepts and battery materials. In 2017, BASF announced to invest in the triple digit-million Euro range to build largescale battery materials production plants in Europe to support the European electric vehicle value chain. The precursor cathode active materials plant in Harjavalta (FI) will utilize locally generated renewable energy (incl. hydro, wind, biomass-based power). The cathode active materials plant in Schwarzheide (DE) will rely on energy supply from a highly efficient combined heat and power plant. Until the battery materials plant is commissioned, the integration of renewable energies is also planned. Furthermore, its modular design and infrastructure allows for the rapid scale-up of manufacturing capacities enabling BASF to meet increasing customer demand for the European EV market. Start-up of both plants is planned in 2022. Moreover, we invest in R&D of low-carbon solutions for the automotive sector, e.g. high-energy density battery materials. By 2025, our innovations in battery materials aim to double the real driving range of midsize cars from 300 to 600 km on a single charge and reduce the charging time to 15 min. Further, we engage in partnerships fostering low-carbon mobility (e.g. Global Battery Alliance).

Case study: Situation: Automotive applications require specific technical properties and high functionality of materials, which are often not achievable with mechanical recycled content. Task: Meet the design challenges to make cars more efficient and safer in a circular economy. Action: In 2019, we collaborated with many customers to come up with individual solutions. One of the first pilot projects is with Jaguar Land Rover (JLR). JLR successfully developed a plastic front-end carrier prototype for its electric SUV, the I-Pace, out of a ChemCycling product. Result: High customer satisfaction makes BASF a preferred technology partner and drives sales in a circular economy while emissions decrease.

Explanation of cost: In 2019 BASF invested about €200 million in R&D of surface technologies, which include automotive catalysts and battery materials. The Capex budget 2020-2024 for surface technologies (to cover, inter alia, investments in new production capacities), amounts to around €3 billion, i.e. €600 million on average per year. Hence, total annual costs are estimated to be roughly in the order of about €800 million.

### Comment

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#### Identifier

Opp4

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

Downstream

#### Opportunity type

Products and services



**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Primary potential financial impact**

Increased revenues resulting from increased demand for products and services

**Company-specific description**

BASF is a global market leader in the production of biobased and biodegradable plastics. In the agriculture, consumer and packaging industry, these BASF products are used to design more sustainable solutions by promoting resource efficiency (which supports climate protection), healthier soils and moreover tackle the global problem of plastic pollution. Recent regulatory initiatives and new laws to tighten standards on single use plastic bags in several countries represent a significant market opportunity for these BASF products: (1) In France, fruit and vegetable plastic bags must be certified home-compostable and have a minimum biobased content of 40%. (2) In Italy, all lightweight and fruit and vegetable plastic bags must be certified compostable. In addition, fruit and vegetable plastic bags must have a minimum biobased content of 40%. Additionally, Italy plans to exempt plastics destined for composting from a forthcoming single use plastic tax in Italy. (3) Spanish legislation will ban all non-compostable light plastic bags from 2021 onwards. (4) In Austria, all fruit & vegetable bags need to be certified home-compostable and > 50% biobased. (5) The European Union has decided that separate organic waste collection becomes mandatory in EU Member states from 2023 onwards; China plans to make separate organic waste collection mandatory from 2025. (6) In some regions of India, all lightweight plastic bags shall be compostable. BASF can offer products to satisfy these law requirements and is therefore well positioned to become a lead supplier. These developments create growth opportunities for our product ecovio, as certified compostable ecovio bags make organic waste collection easier and more hygienic. Further, in the agricultural sector, opportunities emerge with regards to BASF products that support climate protection: (7) The European Commission has published a study to support preparation of the EU Commission Guidance on Extended Producer Responsibility Schemes (EPR). The study recommends an EPR fee for non-biodegradable mulch films. Biodegradable mulch films to be exempted. If adopted as EU policy this creates chances for soil biodegradable ecovio mulch film. (8) The EU Commission has published a Farm to Fork Strategy that sets the target of reducing use of plant protection products by 50% by 2030. This creates growth opportunities for soil-biodegradable mulch film which suppresses weeds.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

30,000,000

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

Market studies show that BASF currently has a market share of about 10% in the aforementioned markets. The figure entered above describes the assumed additional revenue of BASF if the overall market of the described products grows within said countries (1) - (8), while BASF's market share remains at 10% (using the lower estimates for the respective market sizes).

Underlying data: Market projections of several national and cross-national associations (e.g. The French Association for Plastic Packaging, The Italian Association for Biodegradable Plastics, Degradable Plastics Committee of the Chinese Standardization Office, The Agriculture Plastics Environment Europe) estimate an additional market potential of these bio-degradable plastics of €300 million in the next years.

**Cost to realize opportunity**

300,000

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

Strategy: BASF demonstrates the value of compostable bags to legislators and customers in pioneer projects in the countries, and also highlights the benefits of its products through several externally reviewed life cycle assessments (LCA) on the use of compostable shopping bags. Further, BASF actively lobbies for the benefits of the biodegradable and biobased products through associations (e.g. Bioplastics in Europe) and in direct contact with stakeholders (e.g. legislators).

Case study: Situation: China is in the course of adopting legislation which mandates that specific single use plastics (e.g. light bags, bowls and cups for takeaway food, carrier envelopes) become biodegradable by law. Task: Demonstrate that certified compostable ecovio can be handled in organic waste treatment infrastructure in China, show that suggested standards for compostable plastics work "in practice", and that BASF is a credible stakeholder for discussing solutions in this area. Action: We have identified Chinese partners and co-developed detailed plans with them to demonstrate processability of our materials in Chinese organic waste treatment plants in 2020. Planning of the projects was completed, and implementation started. Result: BASF is among the experts that are heard in the specification of the standards defining biodegradability in China. By this and field testing we ensure that we can provide the right products for the Chinese market. Demonstration projects are ongoing, and results will be available in 2020.

Explanation of cost: We estimate a total of €300,000 to cover BASF personnel and material costs as well as time of consultants and academics to support us in China to do

these projects in Chinese waste treatment plants: material costs of compostable ecovio to be tested (€30,000), costs for producing compostable ecovio products in specific applications and for distributing to households and restaurants (€50,000), personnel costs of BASF experts supporting the project implementation and communication (€150,000), personnel costs for consultancy of academics reviewing and summarizing the study results (€70,000). No significant additional costs are linked to our further lobbying actions as they are mainly covered by our standard budgets (e.g. personnel expenses in corporate communication, general marketing budgets).

## Comment

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### Identifier

Opp5

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

Direct operations

### Opportunity type

Markets

### Primary climate-related opportunity driver

Other, please specify

Reputation, Increased stakeholder interest

### Primary potential financial impact

Other, please specify

Increased capital availability

### Company-specific description

BASF has a significant corporate carbon footprint (e.g. global Scope 1+2+3 emissions rank #63 of the Global 250 according to an analysis of Thomson Reuters, in its latest publicly available version from 2017) and its portfolio comprises products with a high GHG intensity (e.g. ammonia, nitric acid or high-value chemicals). As a global industry leader, BASF is expected to act proactively on the challenges of climate change: BASF is in the company focus list of various investor-led initiatives aiming to engage with the world's largest corporate GHG emitters to curb emissions, e.g. Climate Action 100+. Recognizing its potential impact on climate and its role for a sustainable future, BASF has embedded sustainability into its company purpose and taken the task to make positive contributions in the area of resources, environment and climate. 7 % of BASF shares (64 million, value around €4,200 million at year-average stock price 2019) are held by shareholders who describe socially responsible investment (SRI) being at the core of their investment strategy. If major investors perceive BASF business activities to be contributing to or even leading the growing global momentum to act against climate change this will pose a reputational benefit for the company, ultimately resulting in an opportunity to attract financial capital and increase market valuation. Moreover, there is an opportunity for inclusion in thematic (climate) funds.

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**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)**

100,000,000

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

200,000,000

**Explanation of financial impact figure**

7 % of BASF shares (64 million, value around €4,200 million at year-average stock price 2019) are held by shareholders who describe socially responsible investment (SRI) being at the core of their investment strategy. In case of further improvement of our reputation this group may decide to increase its share in BASF, and we may be able to attract other investors of the same kind. The effect on market valuation is estimated to be high (i.e. more than €100 million), given that increasing the group's shares by only about 2.5% would already affect a value above the threshold of high impact. The selected range is indicative of this high impact, which cannot be quantified more exactly though, since any estimation of financial effects due to a change in reputation is subject to extreme uncertainty.

**Cost to realize opportunity**

450,000

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

Strategy: BASF engages in active dialogue with relevant stakeholders, including investors, and reports transparently on its climate protection strategy and measures via regular standardized activities (e.g. Corporate Report, CDP response, website, investor dialogues) and individual formats (e.g. events, publications).

Case study: Situation: SRI-oriented investors analyse BASF share for investment opportunities. Task: Disseminate information about BASF positions, activities and performance regarding sustainability, including climate change, to attract capital from respective investors. Action: In 2019, our integrated roadshow concept (ESG and mainstream) on IR level met high interest in London, Montreal, Toronto and Boston. Furthermore, we almost doubled our engagement with experts in dedicated ESG telephone conferences, roadshows, conferences and investor visits compared to 2018. BASF presented at ESG conferences and roadshows in Paris, Zurich, Frankfurt and

Amsterdam. In total, we recorded more than 100 interactions with investors on sustainability topics. Result: BASF’s sustainability efforts are well received by financial market participants. We achieve better understanding for BASF engagement at SRI-oriented investors, increasing the likelihood that this group includes BASF shares in its portfolio.

Explanation of cost: For the open dialogue with all stakeholders on climate change we have 3 FTE at a cost of about €150,000 each p.a.

**Comment**

## C3. Business Strategy

### C3.1

**(C3.1) Have climate-related risks and opportunities influenced your organization’s strategy and/or financial planning?**

Yes, and we have developed a low-carbon transition plan

#### C3.1a

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

Yes, qualitative and quantitative

#### C3.1b

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

Climate-related scenarios and models applied	Details
Other, please specify 3 custom scenarios, increasing ambition	Objective of analysis: Circular economy will become a key contributor to a low-carbon economy, transforming value chains and decoupling growth and resource consumption. Customer industries of BASF will be affected by this trend to a variable extent, and consequently the impact on BASF’s value generation will also vary. The aim of the scenario analysis was to evaluate the impact in more detail.  Methodology (scenario definition, inputs, assumptions + analytical methods): The level of impact was assessed in three scenarios, for which the level of international policy response and action on circular economy, driven by climate change, is the central differentiator: (a) Base = business as usual, no change of regulation, (b) Moderate = known or expected changes of regulation lead to higher circularity, (c) Progressive = assuming more stringent regulation will force a much higher level of circularity. The scenarios were applied to three major customer industries of BASF (automotive,

	<p>construction, consumer goods, representing about 50% of total sales). For each scenario, key drivers of change were identified and underpinned by a set of assumptions about direction and magnitude of change, based on extensive literature research. Examples for assumptions: (1) automotive: number of shared cars, 80-fold increase from the base scenario to the progressive scenario; (2) construction: renovation rate, doubling from the base scenario to the progressive scenario; (3) consumer goods: percentage of arable land where precision farming is applied, four-fold increase from the base scenario to the progressive scenario. The impact of each scenario on the sales of each strategic business unit (SBU) of BASF was subsequently derived allocating relevant scenario drivers to each SBU, assessing the direction and magnitude of impact for the relevant drivers on each SBU, and calculating the financial impact relative to the base scenario.</p> <p>Time horizon covered + relevance to BASF: Projections were made up to 2030. This timeframe is of specific strategic relevance to BASF to ensure that asset structure and business models support future success in view of complex, uncertain boundary conditions and dynamics resulting from changing ambition for climate protection.</p> <p>Areas of BASF covered: The analysis covered all strategic business units (SBUs) of the entire BASF Group.</p> <p>Summary of results: Total BASF sales show significant upside potential in the moderate as well as in the progressive scenario. Construction trends have the strongest impact on BASF sales in the moderate scenario, whereas automotive trends have the strongest impact on sales in the progressive scenario. Reporting of results: Results were shared internally with representatives from operating divisions, which manage the SBUs, and relevant corporate units in the context of regular group meetings dedicated to sustainability topics. Reporting was limited to internal stakeholders.</p> <p>Integration of results into business objectives / strategy: Results informed the next steps of the internal process for developing a BASF position and strategy regarding circular economy. The strategic approach, including the findings from the scenario analysis, was finally presented to and approved by the Board of Directors. The Board continues to monitor implementation of the strategic measures.</p> <p>Case study how results directly influenced business objectives / strategy: Situation: Findings of scenario analysis show significant potential impact of circular economy on BASF business. Task: Promotion of strategic pilot projects in this area. Action: In 2019 we invested €20 million in the start-up Quantafuel AS that specializes in the chemical recycling (pyrolysis) of mixed plastic waste. and we collaborated with the automotive manufacturer Jaguar Land Rover in the development of a plastic front-end carrier prototype for its electric SUV out of recycled material. Result: Strategic positioning for BASF in high potential business areas.</p>
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<p>Other, please specify</p> <p>Carbon pricing scenario for investments / existing assets</p>	<p>Objective of analysis: Capital expenditure projects face financial risks due to potential national or regional legislation fostering the implementation or strengthening of a carbon price on emissions. Likewise, existing installations subject to (future) carbon pricing also require information on projected costs of carbon for their financial planning. The objective of the analysis is to assess the impact of carbon pricing on investments and existing installations. Methodology (scenario definition, inputs, assumptions and analytical methods): A single scenario for carbon price development in the EU was developed based on extensive literature research of pricing assumptions, company-internal evaluation of regulatory drivers within the European Emissions Trading System, and consulting with external experts. The assumptions and scenario setup are reviewed annually by an internal expert group.</p> <p>Time horizon covered + relevance to BASF: Projections were made up to 2040. The long timeframe ensures that (a) the next phase(s) of the lifecycle of existing installations, and (b) the planning and installation period as well as the first years of plant operation of investment projects (which are specifically important in the assessment of profitability) are adequately covered.</p> <p>Areas of BASF covered: The scenario is applied to all existing installations and investment projects subject to (future) carbon regulation in the EU and case-by-case in other regions, depending on the likelihood of implementation of carbon pricing systems in these regions. Although based on EU assumptions, the scenario is applied globally based on the assumption that it represents a conservative global approach for the evaluation.</p> <p>Summary of results: The scenario shows an increasing carbon price up to 2040. The impact depends on the individual business case. Reporting of results: The scenario is available to all units in the operating divisions and at all regional and corporate levels involved in the complex multi-dimensional assessment process for capital expenditure projects. The process is coordinated by the Economic Evaluations group within our Corporate Development division. Further, the data are provided to the units responsible for the financial planning of existing installations.</p> <p>Integration of results into business objectives / strategy: The findings from the scenario analysis complement the base case evaluation of the investment project and are forwarded to the internal decision-making bodies for review and consideration. Regarding existing installations, the projections for the price of EU ETS certificates are combined with estimates for the future demand for purchase of certificates, leading to estimated future costs of compliance with the EU ETS, which are integrated into the financial planning for each installation.</p> <p>Example of how the results have directly influenced business objectives / strategy: The scenario data were taken over into the 2019 updates of the financial performance forecasts of our EU installations, which are the basis</p>
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	for operational and strategic steering of the individual assets (e.g. decisions on installation of greenhouse gas emissions abatement technology based on cost-benefit-analyses).
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### C3.1d

**(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.**

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<p>How the strategy has been influenced: The global transition to a low-carbon economy has started to impact BASF’s portfolio steering process by becoming factored into the strategic portfolio analyses conducted by the business units together with corporate strategy to understand whether products are (a) benefiting from the change (e.g. materials for low-carbon construction or transport); (b) at risk (e.g. catalysts for mobile combustion engines); (c) remaining unaffected (e.g. pigments) and to take appropriate management steps. Taking an aggregate perspective on sales, we conclude that management steps successfully led to tapping first opportunities for products benefiting from the change, following the growth of renewable energy (e.g. products for wind, solar power), more sustainable construction (e.g. additives for lower emissions from concrete) and transport (e.g. materials for electric vehicles). In 2019, about 10% of total BASF sales can be attributed to products and solutions that make a particular contribution to climate protection. On the other hand, sales of products potentially at risk have not been impacted so far since business as usual is still pre-dominant.</p> <p>Time horizons considered: The analyses and steering consider short-, medium- as well as long-term impacts on our business objectives.</p> <p>Case study (STAR-approach): Situation: The automotive industry is BASF’s biggest customer industry and in a massive transformation process towards lower-emission mobility solutions. Task: Develop a product portfolio to maintain and strengthen strategic partnerships with the customers. Action: For long-term profitable growth, we set a</p>



		<p>growth focus on electromobility, which is creating a new major market for battery materials (growing at a double-digit rate). Cathode materials account for as much as 70% of the material costs of a battery cell. BASF is already an established supplier. With our investments in Harjavalta (FI) and Schwarzheide (DE) we are the first company to lay the foundation for a European battery materials value chain. For these projects, we are receiving government funding as part of the Important Project of Common European Interest (IPCEI). Result: With the startup of production in Europe, BASF will be the only company producing battery materials in Asia, North America and Europe, which puts us in a unique position to best serve our customers.</p>
<p>Supply chain and/or value chain</p>	<p>Yes</p>	<p>How the strategy has been influenced: Purchase of energy, as part of our supply chain activities, accounts for about 20% of BASF's total Scope 1+2 emissions and thus constitutes a significant strategic lever for reducing BASF's emissions exposure in view of climate-related transition risks (e.g. higher costs through carbon regulation; reputation). To this end, we initiated measures to increase the share of renewable energy in the electricity purchased for our production sites (as part of our wider Carbon Management), in support of our climate protection target.</p> <p>In addition, as part of managing transition risks across the value chain, we have also initiated strategic measures to speed up the transition to a circular economy, building on the findings of our respective scenario analysis. We engage in the development of more "close the loop" solutions (i.e., turn waste into resources) via external partnerships and pilot projects.</p> <p>Further, we have started to increase the resilience of up-/downstream transport against climate-related physical risks at our largest production site in Ludwigshafen by initiating a range of adaptation measures (e.g. alternative transport options).</p> <p>Time horizons considered: The strategic levers bundled under Carbon Management cover short-, medium- as well as long-term activities. Measures focusing on circular economy and resilience are expected to be effective short- to medium-term.</p> <p>Case study (STAR-approach):                  Situation: Current/emerging regulation (e.g. the EU Green Deal) pushes the decoupling of growth from resource consumption. The chemical industry with its unique material</p>

		<p>and process knowledge is seen as a key stakeholder in the transformation towards circular economy solutions. Task: In response to the increasing demand for more circular solutions, BASF needs to develop and expand respective business models. Action: BASF established strategic partnerships (e.g. World Plastics Council) and bundled activities driving value chain solutions for chemical recycling within the ChemCycling project (e.g. investment into Quantafuel AS for pyrolysis of mixed plastic waste). Result: Successful implementation of BASF's circular economy approaches will put BASF in a position to offer new business solutions meeting the emerging stakeholder needs.</p>
<p>Investment in R&amp;D</p>	<p>Yes</p>	<p>How the strategy has been influenced: In order to contribute to the company's purpose "We create chemistry for a sustainable future", BASF has derived three major areas in which chemistry-based innovations will play a key role in the future: (1) resources, environment &amp; climate; (2) food &amp; nutrition; (3) quality of life. The focus area (1) highlights directly that climate-related risks and opportunities have impacted the area of R&amp;D investments, showing that BASF has focused and intensified this topic to come up with proper solutions. We invest about half of our annual R&amp;D expenditures (2019: €2.158 billion total R&amp;D expenses) on product and process innovations where the R&amp;D target is related to energy/resource efficiency and climate protection. The R&amp;D component is also firmly embedded in our Carbon Management to reach our climate protection target and reduce our GHG emissions over the long term.</p> <p>Time horizons considered: The strategic levers bundled under Carbon Management as well as our wider R&amp;D approaches cover short-, medium- as well as long-term activities.</p> <p>Case study (STAR-approach): Situation: The challenge of sustainable development drives BASF customer needs for innovative chemistry-based solutions with regard to resources, environment and climate. Task: Leverage our portfolio of technologies to develop innovative processes, technologies, and products to offer climate-related business solutions. Action: In the context of our Carbon Management R&amp;D program, we bundled R&amp;D work for breakthrough low-carbon production processes. The focus is on the production of basic chemicals, which are used in many products and account for around 70% of the chemical industry's GHG emissions. As part of this work, we are developing a climate-</p>

		<p>friendly production process for hydrogen (methane pyrolysis) together with partners from academia and industry in a joint project sponsored by the German Federal Ministry of Education and Research. Other examples include the development of an electrical heating concept for steam crackers or using CO<sub>2</sub> to produce sodium acrylate. Result: The climate-friendly production processes contribute to significant emission reductions along the value chains depending on the basic chemicals. They will thus help BASF in improving its corporate carbon footprint and our customers in advancing their sustainable solutions.</p>
<p>Operations</p>	<p>Yes</p>	<p>How the strategy has been influenced: BASF operates plants that are liable to Emission Trading Schemes, indicating that carbon pricing as a regulatory risk has already materialized to some extent and can be expected to become even more relevant in future (e.g. implementation of the Chinese national ETS). The perspective of such climate-related transition risks has contributed to leveraging climate action within our corporate strategy. We defined a climate protection target and set out various measures in our operations to mitigate transition risks through reducing emissions exposure, especially (1) improve process / energy efficiency (as part of our wider Carbon Management); (2) integrate a carbon price in the assessment of new capital expenditure projects.</p> <p>Further, we have started to increase the resilience of operations against climate-related physical risks at our largest production site in Ludwigshafen by initiating a range of adaptation measures (e.g. higher cooling capacity).</p> <p>Time horizons considered: The strategic levers bundled under Carbon Management cover short-, medium- as well as long-term activities. Investment projects have a medium- to long-term view. Measures focusing on resilience are expected to be effective short- to medium-term.</p> <p>Case study (STAR-approach): Situation: In order to achieve its climate protection target and mitigate risks from increasing carbon costs, BASF needs to promote emission reduction measures across global operations. Task: Leverage cost-effective emission reduction potentials in operations through systematic operational excellence (opex) programs. Action: Establishment of a corporate opex team promoting the collection, assessment, approval and implementation of global opex measures, supported by a globally harmonized IT infrastructure. A dedicated budget for</p>

	<p>opex measures of €400 million in 2019 supports the effort. Moreover, introduction of certified energy management systems (ISO 50001) at all relevant production sites in 2020. These production sites represent 90% of BASF’s primary energy demand. Result: Opex contributes robustly towards improving BASF’s emission performance. E.g., in the last five years we have reported between 100 and 300 measures per year that increase energy efficiency in processes (total saving approx. 690,000 t CO2e). Future contributions are expected to increase based on the larger budget.</p>
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### C3.1e

**(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.**

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation Acquisitions and divestments Access to capital Assets	<p>Revenues: Financial planning regarding revenues needs to consider future contributions from innovations as well as from existing products. Climate-related risks and opportunities are reflected in both aspects: R&amp;D activities at BASF are directed to contribute to the company’s purpose “We create chemistry for a sustainable future”, and one focus area of R&amp;D are “resources, environment and climate”. We invest about half of our annual R&amp;D expenditures (€2.158 billion total R&amp;D expenses in 2019) on product and process innovations where the R&amp;D target is related to energy/resource efficiency and climate protection. This underlines that we expect to generate a significant share of future revenues from solutions in this area. Moreover, our active portfolio steering towards solutions in line with our purpose and the societal needs during the transition to a low-carbon economy is also expected to contribute positively to our sales. In 2019, about 10% of total BASF sales can be attributed to products and solutions that make a particular contribution to climate protection and energy efficiency (Accelerators "Climate Change and Energy" within our portfolio steering approach "Sustainable Solution Steering"). We aim to achieve €22 billion in total Accelerator sales by 2025 (2019: €15 billion, +5% compared to 2018). Time horizon covered: Revenue streams are primarily assessed for the short- to medium-term timeframe.</p> <p>Direct / indirect costs: BASF plants in Europe, Korea and China are subject to carbon regulations (i.e. CO2 pricing mechanisms) that increase operating costs. Our financial planning integrates these variable costs in the forecasts of plant performance. We estimate a total burden in the range of €100-200 million per year (global aggregate view), i.e. a</p>

	<p>high financial impact considering BASF's system for classification of financial implications.</p> <p>Time horizon covered: Cost implications are assessed for short-, medium- and long-term time periods.</p> <p>Case study (STAR-approach): Situation: About 54% of our global Scope 1+2 emissions are covered by the EU ETS and have to be backed by the appropriate allowances. The risk of additional costs for these BASF installations results from a lack of free allowances even for the best performers and increasing prices for the certificates during the fourth trading period of the EU ETS. Task: Determine potential future cost burdens for BASF installations regulated under the EU ETS fourth trading period as input to financial planning for these assets. Action: A corporate team evaluates the impact of current and future regulation on the level of free allowances of the installations and estimates the demand for purchase of certificates, based on future production plans. In combination with projections for the price of EU ETS certificates (resulting from the respective internal scenario analysis), estimates for total cost burdens can be derived. Result: The estimated future costs of compliance with the EU ETS (fourth trading period) complement the financial planning for each installation.</p> <p>CAPEX / capital allocation / acquisitions: BASF has set up a structured process to evaluate investment projects (e.g. capital expenditures, acquisitions), including impacts on the environment (e.g. climate) and respective costs. The process considers a project base case (integrating different technology approaches, if applicable) as well as the option to assess alternative risk scenario cases. Climate-related aspects can be attributed to any case depending on strategic goals as well as the expected likelihood and magnitude of impacts. In this way, climate-related aspects directly become a complementary component of the evaluation and decision scheme for business cases of the investment projects. For example, business cases for capital expenditures and acquisitions in Europe will include potential costs of European carbon regulation. Different technology options / acquisition models (e.g. varying level of control) within the business case will show varying GHG emission levels and respective carbon costs, which directly impacts the assessment of economic viability for the various options. The process is valid for all major investment projects. The financial impact varies strongly, depending on the nature of the project (e.g. physical conditions at location of plant(s), level of emissions, regulatory context). The consideration of climate-related aspects can lead to significant additional costs in specific cases.</p> <p>Time horizon covered: Investment projects are typically relevant under medium- to long-term considerations.</p>
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		<p>Access to capital: BASF has identified risks and opportunities primarily in the areas of existing and emerging regulation, change of markets, and reputational impacts due to changing investor or customer perspectives. Some risks have a potentially substantive financial impact (e.g. reduced market valuation of more than €100 million in case of significant divestment of shares after a major reputational loss). However, we actively manage these risks (e.g. holding an open dialogue to prevent reputational damage) and we currently foresee no substantial impacts by the described risks and opportunities regarding investor valuation of BASF and our performance in relation to climate change on our access to capital. This is underlined by our good credit ratings, e.g. “A2/P-1/outlook stable” by Moody’s and “A/A-1/outlook stable” by Standard and Poor’s.</p> <p>Time horizon covered: The impact assessments have a focus on short-to medium-term time periods.</p> <p>Assets / liabilities: BASF has identified risks and opportunities primarily in the areas of existing and emerging regulation, change of markets, and reputational impacts due to changing investor or customer perspectives. None of the assessments of the different risks and opportunities have pointed to impacts triggering the need to factor them into financial planning related to our assets or our liabilities. Rated “A2/P-1/outlook stable” by Moody’s and “A/A-1/outlook stable” by Standard and Poor’s, BASF enjoys good credit ratings.</p> <p>Time horizon covered: The impact assessments have a focus on short-to medium-term time periods.</p>
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### C3.1f

**(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).**

## C4. Targets and performance

### C4.1

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

Absolute target

### C4.1a

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

**Target reference number**

Abs 1

**Year target was set**

2018

**Target coverage**

Company-wide

**Scope(s) (or Scope 3 category)**

Scope 1+2 (market-based)

**Base year**

2018

**Covered emissions in base year (metric tons CO<sub>2</sub>e)**

21,887,000

**Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)**

97

**Target year**

2030

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

0

**Covered emissions in target year (metric tons CO<sub>2</sub>e) [auto-calculated]**

21,887,000

**Covered emissions in reporting year (metric tons CO<sub>2</sub>e)**

20,079,000

**% of target achieved [auto-calculated]****Target status in reporting year**

Underway

**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

**Please explain (including target coverage)**

We want to achieve CO<sub>2</sub>-neutral growth until 2030. In other words, from 2019 to 2030 we aim to maintain total greenhouse gas emissions from our production sites and our energy purchases at the 2018 level (21.9 million metric tons of CO<sub>2</sub> equivalents) while increasing production. The target applies to our main business as a chemical company, accounting for 97% of total emissions in the base year. We excluded a small share of emissions related to the generation of steam and electricity for sale to third parties (3%

of total emissions in the base year), which are not part of our core business activities and partly even driven by external factors (e.g. supply regulations in the power sector).

## C4.2

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

Other climate-related target(s)

## C4.2b

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

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**Target reference number**

Oth 1

**Year target was set**

2015

**Target coverage**

Company-wide

**Target type: absolute or intensity**

Intensity

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

Energy consumption or efficiency

Other, please specify

Primary energy demand of sites covered by energy management systems in accordance with ISO 50001

**Target denominator (intensity targets only)**

Other, please specify

Total primary energy demand

**Base year**

2015

**Figure or percentage in base year**

39.5

**Target year**

2020

**Figure or percentage in target year**

90



**Figure or percentage in reporting year**

85.1

**% of target achieved [auto-calculated]**

90.297029703

**Target status in reporting year**

Underway

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

No

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

No, it's not part of an overarching initiative

**Please explain (including target coverage)**

By 2020, we want to have introduced certified energy management systems (DIN EN ISO 50001) at all relevant production sites. The selection of relevant sites is determined by the amount of primary energy used and local energy prices. Taken together, this represents 90% of BASF's primary energy demand. +++ Note that BASF has not officially defined a base year for this target. We focus on achieving a 90% coverage of our primary energy demand through certified energy management systems in 2020. In the CDP questionnaire, we set the start year as base year to allow for showing a base year KPI and calculating the level of progress.

**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	85	
To be implemented*	364	689,000
Implementation commenced*	217	120,000
Implemented*	474	261,000
Not to be implemented	100	

## C4.3b

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

---

### Initiative category & Initiative type

Energy efficiency in production processes  
Process optimization

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

158,000

### Scope(s)

Scope 1  
Scope 2 (location-based)  
Scope 2 (market-based)

### Voluntary/Mandatory

Voluntary

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

13,300,000

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

17,800,000

### Payback period

1-3 years

### Estimated lifetime of the initiative

Ongoing

### Comment

In 2019, our production sites have implemented 288 measures worldwide that result in savings of fuel, electricity, steam, cooling water etc. Projects included a wide range of energy conservation measures, e.g. chemical process modifications, further process heat integration, advanced process control systems implementation, fuel switches to lower carbon footprint, boiler efficiency upgrades, optimization in steam systems, energy reduction in wastewater treatment plants operations. For example, at the Ludwigshafen site, Germany, we saved considerable amounts of steam and therefore related CO<sub>2</sub> emissions with predictive, model-based process control systems at several production plants (ca. 5,500 t CO<sub>2</sub>). At our North Geismar site in US, we reduced considerable amounts of natural gas used for process heating through a modified process set up reducing water vapor load to a thermal treatment system (ca. 2,100 t CO<sub>2</sub>). Electricity consumptions savings were realized at our Shanghai-Caojing production sites in context with optimized operations of chillers and nitrogen compressors (ca. 2,000 t CO<sub>2</sub>). Monetary savings reported here stem from reduced energy consumption and relate only to those measures implemented in 2019. Since many projects benefit from a

combination of different activities highlighted by CDP (e.g. heat recovery, cooling technology) and belong to the same overarching internal program, we decided to represent them jointly under "Process optimization".

**Initiative category & Initiative type**

Low-carbon energy consumption

Other, please specify

Green energy procurement based on mix of wind and hydro power

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

19,000

**Scope(s)**

Scope 2 (market-based)

**Voluntary/Mandatory**

Voluntary

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

0

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

0

**Payback period**

No payback

**Estimated lifetime of the initiative**

Ongoing

**Comment**

The CO<sub>2</sub> savings resulted from an agreement for green electricity supply for the BASF group companies in UK as well as purchase of green energy certificates for two BASF sites (Hannibal/US, Shanghai-Pudong/China).

**Initiative category & Initiative type**

Other, please specify

Other, please specify

Material consumption reduction in terms of a reduction of raw material demand by increasing material efficiency of processes

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

84,000

**Scope(s)**

Scope 3

**Voluntary/Mandatory**

Voluntary

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

28,500,000

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

16,400,000

**Payback period**

<1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

In 2019, we have initiated and implemented 185 projects that lead to a reduction of raw material demand for our operations. The lower demand helps to avoid emissions resulting from the production of these raw materials, i.e. reduces our corporate carbon footprint in Scope 3 (category 1). For example, we optimized considerably the raw material excess of a reactant needed to complete the reaction by improved mass balancing at a plant cluster of our Schwarzheide site. In our Ludwigshafen site we recovered a component from a waste stream by rectification and used it as raw material to produce a new aroma chemical. In our Ulsan site in Korea, the usage of an existing check tank as storage tank enabled us to reduce the numbers and frequency of changeovers and the related loss of product/raw materials. In Shanghai we installed Advanced Process Control (APC) in one of our big, continuous plants. This allowed us to run the process closer to the limits and to reduce the energy and raw material excess consumption.

**C4.3c**

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

Method	Comment
Dedicated budget for low-carbon product R&D	We invest about half of our annual R&D expenditures (€2.158 billion total R&D expenses in 2019) on product and process innovations where the R&D target is related to energy/resource efficiency and climate protection. For example, in a research project on an alternative production method for sodium acrylate, we are investigating the use of CO2 as a chemical feedstock.
Partnering with governments on technology development	BASF is involved in several government sponsored R&D initiatives on new technology development. For example, we are developing an innovative, climate-friendly production process for hydrogen (methane pyrolysis) together with partners from academia and industry in a joint project sponsored by the German Federal Ministry of Education and Research.

Financial optimization calculations	We use WRIS, an economic analysis and information system tool, as the standard tool for the valuation of capital expenditure projects, research and development projects, and for production cost calculations. The project valuation is carried out based on the discounted cash flow methodology. In a sensitivity analysis, the effects of varying assumptions on the project value can be checked. A price for carbon is included in the calculations.
Internal price on carbon	Carbon pricing plays a role in internal assessments on capital investments and operational costs of our production facilities, the rationale being that costs originating from respective pricing schemes have an impact on the return on investment and cost-benefit ratio of operations. The price of carbon considered depends on various factors driven by the specific assessment, e.g. geography and timeframe of an investment. Sometimes, several pricing scenarios are used to evaluate uncertainties in future regulatory environments.
Internal incentives/recognition programs	Employees with core responsibilities concerning energy and climate protection sign individual target agreements relating to emission reduction activities. The BASF compensation system links their bonus to the achievement of these individual targets. Every employee can engage in the employee suggestion scheme and bring forward ideas on emission reductions and will be rewarded financially, if the idea is implemented.
Employee engagement	To enhance the awareness of employees and to realize emission reductions that are mainly based on behavioral changes, employee engagement programs are conducted, e.g. through brochures on how to increase the energy efficiency at the office, specific employee events or a specific employee suggestion scheme targeted at climate protection.
Compliance with regulatory requirements/standards	BASF complies with the regulatory requirements resulting from emission trading systems, e.g. in the EU, China, South Korea. Moreover, compliance with air quality regulations can have an impact on emission of GHGs. Our plants comply with these regulatory requirements. Additionally, regulations in many countries require a certain standard for the energy efficiency of new buildings. This is the minimum standard that is met, if a new building is planned by BASF.
Other	Setting of corporate goals: By setting ambitious corporate goals a process is initiated that ensures that measures relying on respective investments are implemented to reach these goals.

## 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

BASF products are involved in many climate protection technologies. Therewith we enable energy efficiency and climate protection in a variety of sectors, such as in the construction industry, in the automotive industry, and in industrial processes. Our climate protection products include but are not limited to the following product examples.

+++ Building and Living: Chemical insulation materials based on expanded polystyrene such as Neopor® and Styropor® or extruded polystyrene such as Styrodur® have excellent thermal insulation properties. An analysis shows that the volumes of Styropor®, Neopor® and Styrodur® sold in 2019 help our customers to save 62 million metric tons of CO<sub>2</sub> emissions over the entire lifecycles of these products when used to insulate existing buildings.

+++ Mobility: BASF's innovative integrated process technology for OEM coating reduces the number of applied layers through integrating the primer functionality into the basecoat layer, thereby leading to shorter coating processes. This results in measurable energy and resource savings and in a reduction of CO<sub>2</sub>e as well as VOC emissions.

+++ Industry: BASF catalysts decompose nitrous oxide from production of nitric acid and adipic acid. The catalyst transforms the highly potent greenhouse gas nitrous oxide almost completely into the components of air, nitrogen and oxygen.

+++ Energy Generation: Wind and solar power help to mitigate greenhouse gas emissions. BASF products contribute to making technologies for generating energy from wind and sun more efficient, such as epoxy systems and other materials to produce rotor blades, grouting materials for the construction of the foundation of wind turbines or sodium nitrate as thermal energy storage media for all concentrated solar power technologies.

+++ Agriculture: The ammonium stabilizer DMPP is the main component in BASF's Vizura® fertilizer additive, which helps to increase plant uptake efficiency. This reduces the use of fertilizers or liquid manure and cuts nitrous oxide emissions by 50% on average.

### 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

Addressing the Avoided Emissions Challenge- Chemicals sector

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

10

### Comment

Our calculations of avoided GHG emissions are based on the chemical industry standard of the International Council of Chemical Associations (ICCA) and the World Business Council for Sustainable Development (WBCSD), published in 2013 and revised in 2017. Avoided emissions are the difference in life cycle greenhouse gas emissions from two alternative solutions for achieving the same user benefit. For example, our analysis compares the energy consumption of renovated buildings with that of unrenovated buildings over a period of 50 years taking into account the production and disposal of the insulation materials used for renovation.

## 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, 2018

**Base year end**

December 31, 2018

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

18,593,000

**Comment**

#### Scope 2 (location-based)

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

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

3,747,000

**Comment**

#### Scope 2 (market-based)

---

**Base year start**

January 1, 2018

**Base year end**

December 31, 2018

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

4,067,000

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

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 CO<sub>2</sub>e?****Reporting year****Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)**

17,323,000

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment**

As part of the implementation of BASF's strategy, we have made changes to how greenhouse gas emissions and energy are reported from 2019 onward. For ease of comparison, the 2018 figures have been adjusted according to the new method and target. Details on changes: (a) The emissions of BASF SE subsidiaries that are fully consolidated in the Group financial statements in which BASF holds an interest of less than 100% are included in full in emissions reporting (previously: emissions included on a pro rata basis). The emissions of proportionally consolidated joint operations continue to be disclosed pro rata according to our interest. / (b) We report on emissions and energy for BASF operations including the businesses acquired from Bayer in 2018 and excluding the deconsolidated oil and gas business. The businesses acquired from Bayer are accounted for from January 1, 2018. / (c) We use the market-based approach (previously: location-based approach) to report on greenhouse gas emissions from purchased energy (Scope 2) for the purpose of our climate protection target. Both approaches continue to be presented in the overview of greenhouse gas emissions in accordance with the Greenhouse Gas Protocol.



## Past year 1

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### Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)

18,593,000

### Start date

January 1, 2018

### End date

December 31, 2018

### Comment

As part of the implementation of BASF's strategy, we have made changes to how greenhouse gas emissions and energy are reported from 2019 onward. For ease of comparison, the 2018 figures have been adjusted according to the new method and target. Details on changes: (a) The emissions of BASF SE subsidiaries that are fully consolidated in the Group financial statements in which BASF holds an interest of less than 100% are included in full in emissions reporting (previously: emissions included on a pro rata basis). The emissions of proportionally consolidated joint operations continue to be disclosed pro rata according to our interest. / (b) We report on emissions and energy for BASF operations including the businesses acquired from Bayer in 2018 and excluding the deconsolidated oil and gas business. The businesses acquired from Bayer are accounted for from January 1, 2018. / (c) We use the market-based approach (previously: location-based approach) to report on greenhouse gas emissions from purchased energy (Scope 2) for the purpose of our climate protection target. Both approaches continue to be presented in the overview of greenhouse gas emissions in accordance with the Greenhouse Gas Protocol.

## 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 CO<sub>2</sub>e?

#### Reporting year

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**Scope 2, location-based**

3,552,000

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

3,519,000

**Start date**

January 1, 2019

**End date**

December 31, 2019

**Comment**

As part of the implementation of BASF's strategy, we have made changes to how greenhouse gas emissions and energy are reported from 2019 onward. For ease of comparison, the 2018 figures have been adjusted according to the new method and target. Details on changes: (a) The emissions of BASF SE subsidiaries that are fully consolidated in the Group financial statements in which BASF holds an interest of less than 100% are included in full in emissions reporting (previously: emissions included on a pro rata basis). The emissions of proportionally consolidated joint operations continue to be disclosed pro rata according to our interest. / (b) We report on emissions and energy for BASF operations including the businesses acquired from Bayer in 2018 and excluding the deconsolidated oil and gas business. The businesses acquired from Bayer are accounted for from January 1, 2018. / (c) We use the market-based approach (previously: location-based approach) to report on greenhouse gas emissions from purchased energy (Scope 2) for the purpose of our climate protection target. Both approaches continue to be presented in the overview of greenhouse gas emissions in accordance with the Greenhouse Gas Protocol.

**Past year 1****Scope 2, location-based**

3,747,000

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

4,067,000

**Start date**

January 1, 2018

**End date**

December 31, 2018

**Comment**

As part of the implementation of BASF's strategy, we have made changes to how greenhouse gas emissions and energy are reported from 2019 onward. For ease of comparison, the 2018 figures have been adjusted according to the new method and target. Details on changes: (a) The emissions of BASF SE subsidiaries that are fully consolidated in the Group financial statements in which BASF holds an interest of less than 100% are included in full in emissions reporting (previously: emissions included on

a pro rata basis). The emissions of proportionally consolidated joint operations continue to be disclosed pro rata according to our interest. / (b) We report on emissions and energy for BASF operations including the businesses acquired from Bayer in 2018 and excluding the deconsolidated oil and gas business. The businesses acquired from Bayer are accounted for from January 1, 2018. / (c) We use the market-based approach (previously: location-based approach) to report on greenhouse gas emissions from purchased energy (Scope 2) for the purpose of our climate protection target. Both approaches continue to be presented in the overview of greenhouse gas emissions in accordance with the Greenhouse Gas Protocol.

## 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

GHG emissions from mobile combustion

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

Emissions are not relevant

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

No emissions from this source

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

No emissions from this source

#### Explain why this source is excluded

We do not report CO<sub>2</sub> emissions from mobile combustion since their contribution to BASF's total GHG emissions is not significant (less than 0.1 % of BASF's total GHG emissions).

---

#### Source

CO<sub>2</sub> emissions from administrative sites/offices (e.g. sales offices)

#### 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

BASF reports GHG emissions only for its production facilities. GHG emission data from other facilities such as sales offices are not collected since their contribution to BASF's total GHG emissions was extrapolated to be less than 1%, which we consider to be insignificant. We periodically reassess the contribution from our administrative sites. GHG emissions from assets leased by BASF are accounted for as Scope 3 emissions.

## C6.5

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

#### Purchased goods and services

---

##### Evaluation status

Relevant, calculated

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

50,231,000

##### Emissions calculation methodology

(i) Activity data: Quantity and monetary purchasing volume of the goods and services purchased in the reporting year were obtained from BASF internal business data management systems. (ii) Emissions factors: Cradle-to-gate emissions factors were obtained from commercially and publicly available data sources such as GaBi (thinkstep), ecoinvent and PlasticsEurope as well as from BASF's own LCA database, which is based mainly on primary data. Supply chain emission factors for technical goods and services were obtained from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: We analyzed the GHG emissions of our procured raw materials and precursor manufacturing at BASF's suppliers' facilities (including merchandise) by calculating the cradle-to-gate emissions, including all direct GHG emissions from raw material extraction, precursor manufacturing and transport, as well as indirect emissions from energy use. To do so, we determined the quantity of each single product purchased, and then applied emission factors for about 80 percent of the purchased products (by weight). If country-specific emission factors were available, a weighted product carbon footprint was calculated to reflect the percentage of the regional distribution of the purchased material. We multiplied the CO<sub>2</sub>e emissions per kilogram of each product by the respective quantity of the product purchased to determine cradle-to-gate emissions. Finally, the resulting Scope 3 emissions were extrapolated to 100% of the total purchasing volume to account for all procured raw materials and precursors. For calculating the emissions from packaging, we first determined the material compositions of the different packaging groups such as HDPE

or steel drums. Then, we calculated GHG emissions by multiplying the number of purchased items of packaging by their respective cradle-to-gate emission factors. The GHG emissions from technical goods and services were assessed based on the monetary purchasing volume in the reporting year by multiplying the amount of spending by the GHG conversion factors from the Defra 2012 Guidelines.

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

0

**Please explain**

**Capital goods**

---

**Evaluation status**

Relevant, calculated

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

1,916,000

**Emissions calculation methodology**

(i) Activity data: Monetary purchasing volumes of capital goods purchased in the reporting year were obtained from BASF internal business data management systems. (ii) Emissions factors: Supply chain emission factors for spending on capital goods were obtained from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13 (Indirect emissions from supply chain). (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: The GHG emissions that are associated with BASF's capital goods purchased in the reporting year were estimated based on the following approach: All sub-segments of BASF's global Technical Procurement related to the sourcing of capital equipment such as turn-key projects, machinery and fabricated equipment were analyzed based on their monetary purchasing volume in the reporting year. Each sub-segment was assigned a corresponding SIC code because the DEFRA conversion factors for greenhouse gas emissions are based on the standard classification system (SIC 2003). The amount of spending was then multiplied by the respective GHG conversion factor and subsequently added up to the total GHG emissions from capital goods.

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

0

**Please explain**

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

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**Evaluation status**

Relevant, calculated

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

3,062,000

**Emissions calculation methodology**

(i) Activity data: The quantities of fuel and energy, i.e., electricity and steam purchased in the reporting year were obtained from BASF internal business data management systems. (ii) Emissions factors: The cradle-to-gate emissions factors were obtained from the GaBi database. The grid-related loss factor was taken from the German Federal Statistical Office. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: The GHG emissions from the extraction, production and transportation of fossil fuels used for power and steam generation in our own (power) plants were determined by multiplying the amount of purchased fuels by cradle-to-gate CO<sub>2</sub>e emission factors. The GHG emissions from the extraction, production and transportation of fuels consumed in the generation of electricity and steam purchased by BASF in the reporting year were calculated as follows: The amount of primary energy was determined based on the amount of purchased electricity and steam and the respective fuel efficiencies (91.5% for steam generation; 37% for electricity generation). The share of the different fuel types of the total amount of primary energy was then calculated based on the fuel shares of electricity generation (IEA, Key World Energy Statistics, 2019). The fuel shares were then multiplied by the respective CO<sub>2</sub>e emission factors to result in the overall CO<sub>2</sub>e emissions. Generation of electricity, steam, heating and cooling that is consumed in a T&D system: GHG emissions associated with losses of purchased electricity and steam were estimated based on our location-based Scope 2 emissions in the reporting year and a grid-related loss factor of 6.4 percent (world average). Losses associated with our own T&D system due to our own generation of electricity and steam are already accounted for in our Scope 1 emissions which are based on fuel input. Generation of electricity and steam that is purchased by the reporting company and sold to end users is not applicable to BASF.

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

0

**Please explain****Upstream transportation and distribution****Evaluation status**

Relevant, calculated

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

1,890,000

**Emissions calculation methodology**

(i) Activity data: Quantities and types of goods procured in the reporting year were obtained from BASF internal business data management systems. The current modal split of chemical transport in Europe was derived from the McKinnon Report. (ii)

Emissions factors: The CO<sub>2</sub> emission factors used were taken from the McKinnon Report: "Measuring and Managing CO<sub>2</sub> Emissions from the Transport of Chemicals in Europe". For trucks in Asia, a higher CO<sub>2</sub> emission factor of 90 g CO<sub>2</sub> per t\*km was assumed. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: For calculation of GHG emissions associated with transportation of all procured products to BASF sites three different categories of procured products were defined: (i) raw materials, naphtha and industrial gases (bulk delivery), (ii) natural gas and industrial gases (pipeline) and (iii) technical & capital goods and packaging. (i) GHG emissions associated with transportation of raw materials, naphtha and industrial gases (bulk delivery) were calculated by multiplying the quantities of products procured by a transportation distance and by an emissions factor for the mode of transport. For all procured products in Europe, modal split included road, sea vessel, barge, rail and air. In all other regions, solely truck transport was assumed. Transportation distance in each region was estimated by logistics experts. (ii) Emissions from transportation of natural gas and industrial gases were calculated by multiplying the quantity of the product purchased by an emission factor for pipeline and a transportation distance. Distance for the transportation of industrial gases was assumed to be 0.5 km since most of the gases are produced on-site. Distance for the transportation of natural gas was assumed to be 1,000 km. (iii) GHG emissions associated with transportation of BASF's technical & capital goods purchased in the reporting year were estimated based on monetary purchasing volume assuming that technical goods are 100% material and made from carbon steel whereas capital goods have a material content of 50% and are made from 60% stainless steel and 40% carbon steel. Weight of purchased packaging was calculated based on material composition. Only truck transportation and an average transportation distance of 500 km (1,000 km in USA) were assumed.

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

0

**Please explain**

**Waste generated in operations**

---

**Evaluation status**

Relevant, calculated

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

1,387,000

**Emissions calculation methodology**

(i) Activity data: The quantities of solid waste and wastewater generated during production at all BASF production sites were obtained from BASF's in-house Reporting EHS Application database. The data collection method differentiates between on-site and off-site disposal as well as between different disposal methods (waste incineration with and without energy recovery, landfill, wastewater treatment and others). (ii) Emissions factors: The emissions factors were obtained from the GaBi database. (iii)

GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: The GHG emissions from on-site waste incineration and on-site physical recovery are accounted for in our Scope 1 emissions. The off-site physical recovery (recycling) of waste is assigned zero emissions in line with the cut-off approach of life cycle assessment. The GHG emissions from off-site waste incineration with energy recovery were calculated by multiplying the amount of waste in this category by a suitable emission factor. The GHG emissions from off-site waste incineration without energy recovery as well as from landfill disposal were calculated based on a carbon balance. It was assumed that all carbon contained in the waste is eventually converted to CO<sub>2</sub> during incineration or landfilling. From a survey of a variety of different chemical products, the average carbon content of a chemical product was determined. Multiplying the amount of waste with this factor yields the waste's total carbon content which is then converted to the amount of emitted CO<sub>2</sub>. The GHG emissions of BASF operated wastewater plants are accounted for in our Scope 1 or Scope 2 emissions, respectively. The CO<sub>2</sub>e emissions from non-BASF operated wastewater treatment plants were calculated as follows based on a TOC (Total Organic Carbon) material balance. It is assumed that 30% of the influent organic carbon load is insoluble and inert, as well as the non-biodegradable TOC in the effluent. It is also assumed that 25% of the remaining biotreatable TOC is converted into biosludge during biotreatment. The residual TOC, which is about 50% of the total influent TOC, is converted into CO<sub>2</sub>. The CO<sub>2</sub> emissions were calculated from the residual TOC with a conversion factor of CO<sub>2</sub>/TOC=3.67.

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

0

**Please explain**

**Business travel**

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**Evaluation status**

Not relevant, calculated

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

136,000

**Emissions calculation methodology**

(i) Activity data: Miles and kilometers per means of transportation, travelled by BASF employees in the reporting year were collected by external partners such as travel agencies and provided to BASF's Travel Management. (ii) Emissions factors: CO<sub>2</sub>e emissions factors for short-haul, medium-haul and long-haul flights were taken from DEFRA's GHG Conversion Factors for Company Reporting (2019). CO<sub>2</sub>e emissions factors for travel with train per country were taken from: SNCF, 2014-2015 for France; UBA, 2017 for Germany; Thalys Network, 2017 for Belgium; Ferrovie dello stato italiane, 2017 for Italy; ÖBB, 2016 for Austria; DEFRA, 2019 for UK; EPA, 2018 for the US; Via Rail, 2019 for Canada; the average of India GHG Program, 2015 and Japan's Eco-Mo Foundation, 2018 for Asia Pacific; and the average of the European emission factors for



Spain. CO<sub>2</sub>e emissions factors for business travel by rental car were taken from Climate Action Tracker (2019). (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: The GHG emissions associated with the transportation of all BASF Group employees for business-related activities were calculated as follows: a) GHG emissions from business travel by air: Miles, which are collected through external partners such as travel agencies and monitored by BASF's Travel Management, were converted to CO<sub>2</sub> equivalents using conversion factors for the average passenger in short-haul, medium-haul and long-haul flights. b) GHG emissions from business travel by train: Rail miles that are collected through external partners such as travel agencies and monitored by our Travel Management were converted into CO<sub>2</sub>e emissions using country-specific and/or railway-specific CO<sub>2</sub>e conversion factor for travel by train; for rail travel in Germany the external partner Deutsche Bahn directly reports the resulting GHG emissions (c) GHG emissions from business travel by car: For most trips the external partners (i.e. car rental companies) provided a summary of kilometers driven and the resulting GHG emissions for the reporting year. One provider supplied data solely on kilometers driven. These were converted into GHG emissions by multiplying with the average car travel emission factor.

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

5

### **Please explain**

#### **Employee commuting**

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##### **Evaluation status**

Not relevant, calculated

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

223,000

##### **Emissions calculation methodology**

(i) Activity data: Number of employees per region as well as distance and mode of transportation for a selected group of employees in Germany, who participated in a poll in 2017. (ii) Emissions factors: The CO<sub>2</sub>e emissions factors used for car, motorbike, and public transportation were taken from DEFRA's GHG Conversion Factors for Company Reporting (2019) for employee commuting in Europe and Asia and from EPA's mission Factors for Greenhouse Gas Inventories (2018) for North and South America. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: CO<sub>2</sub>e emissions from employee commuting in Europe were calculated based on the results of a representative poll conducted among BASF SE employees in 2017. Employees were asked about the distance travelled between their homes and workplaces and their means of transportation. GHG emissions were calculated by multiplying the travelled distance (220 days per year, back and forth) with the respective CO<sub>2</sub>e emissions factor accounting for the different means of transportation. The resulting GHG emissions were

subsequently extrapolated to all BASF Group employees in Europe. For North America, the calculations were based on Bureau of Transportation Statistics on principal means of transportation to work. It was assumed that employees travel 236 days per year and 30 kilometers one-way. For Asia and South America, it was assumed that all employees travel a distance of 30 km by car (one-way) and 230 or 222 days per year, respectively. The corresponding emissions were calculated by multiplying the distance with the number of employees, number of working days and an average emission factor for cars per km.

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

0

**Please explain**

**Upstream leased assets**

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**Evaluation status**

Not relevant, calculated

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

211,000

**Emissions calculation methodology**

(i) Activity data: Leased cars: Vehicle miles as defined in the leasing contracts for BASF SE employees in the reporting year. Leased office and storage space: Data for the reporting year was obtained from BASF internal business data management systems. Leased equipment: Monetary purchasing volume for leased equipment in the reporting year was derived from BASF internal business data management systems. (ii) Emissions factors: CO<sub>2</sub> emissions factors for leased cars were provided by the car manufacturers. They differentiate between fuel type (diesel/gasoline) as well as cubic capacity. For electric cars the electricity consumption of the models was taken from the manufacturer's specification. Energy consumption (electricity and heat energy) per square meter of office space and warehouses in Europe was taken from a study of BMWi, 2015. For North and South America, it was taken from the Commercial Buildings Energy Consumption Survey (EIA, 2012). For Asia, it was taken from a study by Ding et al., 2017. Region-specific CO<sub>2</sub> emissions factors per MWh were obtained from IEA, 2019. CO<sub>2</sub>e emissions factors per MWh of heat from natural gas and light fuel oil were obtained from GaBi database. Emission factors for leased equipment were taken from the 2012 Guidelines to DEFRA/DECC's GHG Conversion Factors for Company Reporting, Annex 13 (Indirect emissions from supply chain). (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: GHG emissions from leased assets were calculated for three different categories. 1) GHG emissions from cars leased by BASF SE were calculated by multiplying the vehicle miles travelled, which were derived from the respective leasing contracts, by the relevant CO<sub>2</sub> emissions factors. Since only the leasing contracts of BASF SE were evaluated, the resulting GHG emissions were subsequently extrapolated based on the number of employees to account for the entire

BASF Group. 2) The GHG emissions from leased offices and storage space were assessed based on leased space and the annual energy consumption per square meter of office and storage space, respectively. 3) The GHG emissions from leased equipment such as hardware (i.e. computers or printers) were assessed based on the monetary purchasing volume in the reporting year and the corresponding GHG conversion factors.

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

0

**Please explain**

**Downstream transportation and distribution**

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**Evaluation status**

Relevant, calculated

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

1,701,000

**Emissions calculation methodology**

(i) Activity data: Quantities and types of products sold in the reporting year as well as their means of transportation were obtained from BASF internal business data management systems. (ii) Emissions factors: The CO<sub>2</sub> emissions factors used (except for pipeline transport) are specific factors calculated for BASF's outbound transport activities; for pipeline transport the CO<sub>2</sub> emissions factor was taken from the McKinnon Report "Measuring and Managing CO<sub>2</sub> Emissions from the Transport of Chemicals in Europe". (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: For the calculation of the GHG emissions associated with the transport of BASF products sold in the reporting year, the respective shipments from BASF sites to BASF customers were evaluated considering regional differences. The transport distances from each Verbund site and in the different regions Europe, North America, South America and Asia were determined by internal experts. The GHG emissions associated with the transport of BASF's sold products were calculated by multiplying product quantity by the relevant transport distance and by the respective CO<sub>2</sub> emissions factor.

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

0

**Please explain**

**Processing of sold products**

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**Evaluation status**

Not relevant, explanation provided

### Please explain

BASF does not calculate and report GHG emissions from processing of sold products, as these emissions were identified as not being relevant to BASF. This is the result of a thorough analysis and balancing of the different relevance criteria for Scope 3 emissions sources and the five accounting and reporting principles of the GHG Protocol standards by WRI and WBCSD. BASF produces a large variety of intermediate goods. This application diversity cannot be tracked reasonably, and reliable figures on a yearly basis are virtually impossible to obtain. These circumstances strongly compromise the reporting principles completeness, consistency and accuracy (and feasibility), thereby not serving our business goal of reducing GHG emissions along the value chain. In addition, the WBCSD Chemical Sector Standard “Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain” emphasizes that “chemical companies are not required to report Scope 3, category 10 emissions, since reliable figures are difficult to obtain, due to the diverse application and customer structure”.

### Use of sold products

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#### Evaluation status

Relevant, calculated

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

9,421,000

#### Emissions calculation methodology

(i) Activity data: Quantities and types of products sold in the reporting year were obtained from BASF internal business data management systems. (ii) Emissions factors: not applicable. (iii) GWP values: GWPs were taken from the 5th Assessment Report, IPCC, 2013. In the case of some fluorinated hydrocarbons, GWPs are based on manufacturers’ information. (iv) Methodology & assumptions: For calculation of the GHG emissions associated with the use of BASF products we only considered the direct use-phase emissions of sold products over their expected lifetime, i.e. the GHGs and products that contain or form GHGs that are emitted during use. 1) GHG emissions from products sold in the reporting year that form greenhouse gases: Nitrogenous fertilizers release nitrous oxide to the atmosphere because of microbial action in the soil. Associated GHG emissions were calculated based on amount of N-containing fertilizers sold in the reporting year, nitrogen content and on the fact that about 1% (in presence of a nitrification inhibitor only 0.5%) of nitrogen contained in the fertilizer is converted into N<sub>2</sub>O-N. CO<sub>2</sub> from the use of urea (as fertilizer and solution for diesel engines) and from the use of carbonates (as leavening agent) was calculated based on sold product quantity and contained CO<sub>2</sub> amount. 2) GHG emissions from products sold in the reporting year that contain greenhouse gases such as dry ice, CO<sub>2</sub> as gas for the beverage industry and HFCs as foaming agents to produce polyurethane foams: GHG emissions from dry ice and CO<sub>2</sub> liquid sold to the beverage industry were considered based on the sold quantity. GHG emissions from HFCs were calculated based on the procured HFC-quantities and loss rate of HFCs in the polyurethane foams during their use phase (100% over the entire life cycle).

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

0

**Please explain**

**End of life treatment of sold products**

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**Evaluation status**

Relevant, calculated

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

25,848,000

**Emissions calculation methodology**

(i) Activity data: Quantity of products (raw materials, pre-products and packaging) purchased in the reporting year and percentage of BASF's sales in Europe and in other regions were obtained from BASF internal business data management systems. The ratio of the different waste disposal methods (incineration, landfill, recycling) in each country/region was derived from data on municipal waste treatment provided by Eurostat (2018), OECD Statistics (2012, 2015) and the Chinese National Bureau of Statistics. (ii) Emissions factors: not applicable. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology & assumptions: GHG emissions from the disposal of all BASF products (except products that are already disposed of during their use phase and accounted for in the respective category) manufactured in the reporting year were calculated presuming that all BASF products at the end of their lives are either disposed of by landfilling or incineration, or recycled. It was assumed that the products would be used and disposed of in the countries to which BASF sold them. The amount of GHG emissions was calculated separately for each region and end-of-life method. Recycling was assigned zero emissions in line with the cut-off approach of life cycle assessment. The emissions from landfilling and incineration were calculated based on a carbon balance. It was assumed that all carbon contained in the products is eventually converted to CO<sub>2</sub> after disposal. For this calculation the same range of chemicals as in Category 1 was considered since their amounts and C-contents are known. Incineration with energy recovery was considered proportionately in Europe, North America and Asia. In accordance with the Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, total emissions from incineration with energy recovery were allocated to the waste treatment and the energy generation with a zero emission factor by using an economic allocation approach based on proportions of total costs of waste treatment and total revenues from sale of generated steam.

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

0

**Please explain**

## Downstream leased assets

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### Evaluation status

Not relevant, calculated

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

100,000

### Emissions calculation methodology

BASF owns only a few downstream leased assets. It is estimated by BASF experts that the GHG emissions of this category account for about 5% of the category Upstream Leased Assets, which corresponds to <0.1 million tons of CO<sub>2</sub>e.

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

0

### Please explain

## Franchises

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### Evaluation status

Not relevant, explanation provided

### Please explain

Not relevant as BASF does not own or operate franchises.

## Investments

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### Evaluation status

Relevant, calculated

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

3,550,000

### Emissions calculation methodology

(i) Activity data: Scope 1 and Scope 2 emissions of BASF's equity-accounted joint ventures and associated companies were obtained from the respective companies upon inquiry. (ii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iii) Methodology & assumptions: GHG emissions from equity-accounted joint ventures and equity-accounted associated companies are not included in BASF's Scope 1 or Scope 2 emissions. However, the GHG emissions from these companies are evaluated on a regular basis by inquiring these data from the respective companies, but only from non-consolidated companies of which BASF holds a minimum interest of 20%.

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

100

**Please explain**

**Other (upstream)**

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**Evaluation status**

**Please explain**

**Other (downstream)**

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**Evaluation status**

**Please explain**

## C6.7

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

Yes

## C6.7a

**(C6.7a) Provide the emissions from biogenic carbon relevant to your organization in metric tons CO<sub>2</sub>.**

	CO <sub>2</sub> emissions from biogenic carbon (metric tons CO <sub>2</sub> )	Comment
Row 1	4,000	

## C6.10

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

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**Intensity figure**

0.000337

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

20,842,000

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

61,869,000,000

**Scope 2 figure used**

Market-based

**% change from previous year**

6.9

**Direction of change**

Decreased

**Reason for change**

BASF's GHG emissions per unit total revenue decreased by 6.9% in 2019 compared with 2018. The absolute Scope 1 and Scope 2 emissions decreased by 8.0% in 2019 compared with 2018, while revenues decreased by 1.3% (decrease by €0.8 billion), resulting in an overall strong decrease of the indicator value. The decline in revenues was attributable to lower volumes and prices. The Chemicals and Materials segments in particular recorded lower sales volumes. Sales development was dampened by lower prices, especially in the Materials and Chemicals segments. Offsetting effects came from full-year contributions of businesses and assets acquired in August 2018, and positive currency effects. The decrease of GHG emissions in 2019 is the net effect of lower emissions due to our emission reduction measures (accounting for -0.8% of Scope 1+2 emissions), uptake of additional renewable energy (-0.1% of Scope 1+2 emissions), lower output (-4.7%), changes in methodology (-1.1%), divestments (-0.4%) and changes in standard operating conditions (-1.0%), which significantly overcompensated marginally increasing emissions due to acquisitions (+0.1% of Scope 1+2 emissions). Emission reduction measures comprise a wide range of activities with major contributions from measures to increase the energy efficiency of processes. Examples: (1) We implemented 288 individual energy efficiency measures in different plants all over the world. These measures resulted in savings of fuel, electricity, steam, cooling water and ultimately GHG emissions of 158,000 t CO<sub>2</sub>e. For example, we completed an energy saving project at one plant at our North Geismar site (2,100 t CO<sub>2</sub> reduction; process modification, reducing water vapor load to a thermal treatment system). (2) We implemented proposals for energy savings and carbon emission reductions collected through our employee suggestion schemes, resulting in a reduction of 12,000 t CO<sub>2</sub>e. +++ Note 1: Compared to the figures given in the BASF Report 2019, 2019 sales were adjusted to include discontinued construction chemicals business for alignment with GHG emissions reporting in 2019. / Note 2: The intensity value for 2018 was 0.000362 (GHG emissions: 22.660 million t CO<sub>2</sub>e; revenue: €62.675 billion), restated in line with changes made to our GHG emissions reporting from 2019 onward (e.g. switch from location-based to market-based approach for Scope 2).

**Intensity figure**

180.5



**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

20,842,000

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

115,496

**Scope 2 figure used**

Market-based

**% change from previous year**

5.9

**Direction of change**

Decreased

**Reason for change**

BASF decreased its GHG emissions per FTE employee in 2019 compared with 2018 by 5.9%. The number of BASF full time equivalent employees decreased by 2.2% while absolute Scope 1 and Scope 2 emissions decreased by 8.0%, resulting in a strong decrease of the indicator value. The lower headcount mainly resulted from the sale of BASF's paper and water chemicals business. The decrease of GHG emissions in 2019 is the net effect lower emissions due to our emission reduction measures (accounting for -0.8% of Scope 1+2 emissions), uptake of additional renewable energy (-0.1% of Scope 1+2 emissions), lower output (-4.7%), changes in methodology (-1.1%), divestments (-0.4%) and changes in standard operating conditions (-1.0%), which significantly overcompensated marginally increasing emissions due to acquisitions (+0.1% of Scope 1+2 emissions). Example for reduction measure: We completed an energy saving project at one plant at our North Geismar site (2,100 t CO<sub>2</sub> reduction; process modification, reducing water vapor load to a thermal treatment system). +++ Note: The intensity value for 2018 was 191.1 (GHG emissions: 22.660 million t CO<sub>2</sub>e; FTE employees: 118,109), restated in line with changes made to our GHG emissions reporting from 2019 onward (e.g. switch from location-based to market-based approach for Scope 2).

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**Intensity figure**

0.574

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

20,079,000

**Metric denominator**

Other, please specify

Metric ton of sales product

**Metric denominator: Unit total**

34,990,000

**Scope 2 figure used**

Market-based

**% change from previous year**

0.5

**Direction of change**

Decreased

**Reason for change**

Note: This intensity figure refers to GHG emissions and volume of sales products for BASF without emissions related to the generation of steam and electricity for sale to third parties, matching to the scope relevant for our corporate climate protection target. The metric numerator in 2019 was 20.079 million t CO<sub>2</sub>e, therefore we arrive at an intensity of 0.574 through  $(20,079,000/34,990,000) = 0.574$ . The value for 2018 was 0.577 (GHG emissions: 21.887 million t CO<sub>2</sub>e; sales products: 37.900 million t), restated in line with changes made to our GHG emissions reporting from 2019 onward (e.g. switch from location-based to market-based approach for Scope 2). +++ BASF decreased its GHG emissions per metric ton of sales products in 2019 compared with 2018 by 0.5%. The volume of sales products from the businesses within the reporting boundary decreased by 7.7%. The relevant Scope 1 and Scope 2 emissions (BASF without emissions related to the generation of steam and electricity for sale to third parties) decreased by 8.3% in 2019. The decrease of GHG emissions in 2019 is the net effect of lower emissions due to our emission reduction measures (accounting for -0.8% of Scope 1+2 emissions), uptake of additional renewable energy (-0.1% of Scope 1+2 emissions), lower output (-4.8%), changes in methodology (-1.1%), divestments (-0.5%) and changes in standard operating conditions (-1.1%), which significantly overcompensated marginally increasing emissions due to acquisitions (+0.1% of Scope 1+2 emissions). Example for reduction measure: At our North Geismar site we completed an energy saving project at one plant (2,100 t CO<sub>2</sub> reduction; process modification reducing water vapor load to a thermal treatment system).

## C7. Emissions breakdowns

### C7.1

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

Yes

### C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO <sub>2</sub> e)	GWP Reference
CO <sub>2</sub>	16,618,000	IPCC Fourth Assessment Report (AR4 - 100 year)
CH <sub>4</sub>	25,000	IPCC Fourth Assessment Report (AR4 - 100 year)
N <sub>2</sub> O	598,000	IPCC Fourth Assessment Report (AR4 - 100 year)
Other, please specify Sum HFCs	82,000	IPCC Fourth Assessment Report (AR4 - 100 year)

## 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)
Belgium	3,014,000
Brazil	152,000
China	448,000
France	56,000
Germany	8,164,000
India	24,000
Italy	51,000
Japan	11,000
Republic of Korea	359,000
Spain	48,000
United States of America	4,212,000
Other, please specify Rest of world	784,000

## C7.3

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

By facility

### C7.3b

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

Facility	Scope 1 emissions (metric tons CO <sub>2</sub> e)	Latitude	Longitude
Ludwigshafen, Germany	7,455,000	49.49594	8.431191

Antwerp, Belgium	3,014,000	51.32405	4.285598
Kuantan, Malaysia	501,000	3.967425	103.4237
Freeport, USA	893,000	29.00441	-95.3933
Geismar, USA	918,000	30.21022	-91.0345
Rest of world	4,542,000		

## 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
Chemicals production activities	16,560,000	

## 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 for in Scope 2 market-based approach (MWh)
Belgium	194,000	288,000	932,000	0
Brazil	31,000	31,000	315,000	0
China	815,000	814,000	1,753,000	1,000
France	14,000	12,000	133,000	0
Germany	481,000	394,000	1,816,000	9,000
India	47,000	47,000	65,000	0
Italy	10,000	11,000	30,000	0
Japan	79,000	79,000	178,000	0
Republic of Korea	267,000	267,000	674,000	0
Spain	30,000	30,000	119,000	0
United States of America	998,000	978,000	2,914,000	34,000
Other, please specify Rest of world	586,000	568,000	1,542,000	47,000

## C7.6

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

By facility

### C7.6b

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Ludwigshafen, Germany	8,000	8,000
Antwerp, Belgium	194,000	288,000
Kuantan, Malaysia	240,000	240,000
Freeport, USA	117,000	117,000
Geismar, USA	77,000	77,000
Rest of world	2,916,000	2,789,000

## 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
Chemicals production activities	3,552,000	3,519,000	

## C-CH7.8

**(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.**

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
High Value Chemicals	14	Activity data: Quantities of high value chemicals (HVCs) purchased in the reporting year were obtained from BASF internal business data management systems. Note that we

(Steam cracking)		<p>are not able to separate HVCs from steam cracking from other HVC sources and therefore report the share of total HVCs-related emissions here. (ii) Emissions factors: Cradle-to-gate emissions factors were obtained from commercially and publicly available data sources such as GaBi (thinkstep), ecoinvent and PlasticsEurope as well as from BASF's own LCA database, which is based mainly on primary data. (iii) GWP values: GWP values referring to the time horizon of 100 years were taken from IPCC, AR5, 2013. (iv) Methodology and assumptions: We analyzed the GHG emissions of the procured HVCs and precursor manufacturing at BASF's suppliers' facilities (including merchandise) by calculating the cradle-to-gate emissions, including all direct GHG emissions from raw material extraction, precursor manufacturing and transport, as well as indirect emissions from energy use. To do so, we determined the quantity of each single product purchased, and then applied emission factors. We multiplied the CO<sub>2</sub>e emissions per kilogram of each product by the respective quantity of the product purchased to determine cradle-to-gate emissions.</p>
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## C-CH7.8a

### (C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO <sub>2</sub> )		BASF is selling carbon dioxide, e.g. to the beverage industry. Sales figures are considered confidential business information.
Methane (CH <sub>4</sub> )	0	Sales of natural gas (with the main component being methane) through discontinued oil and gas business fall outside the reporting boundary.
Nitrous oxide (N <sub>2</sub> O)	0	BASF is not selling this product.
Hydrofluorocarbons (HFC)	0	BASF is not selling this product.
Perfluorocarbons (PFC)	0	BASF is not selling this product.
Sulphur hexafluoride (SF <sub>6</sub> )	0	BASF is not selling this product.
Nitrogen trifluoride (NF <sub>3</sub> )	0	BASF is not selling this product.

## 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 CO <sub>2</sub> e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	19,000	Decreased	0.1	BASF's Scope 1 and Scope 2 emissions decreased by 19,000 metric tons (t) of CO <sub>2</sub> e in 2019 compared to 2018 due to additional purchase of renewable energy in 2019. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 0.1% through $(19,000/22,660,000)*100 = 0.1\%$ . The additional purchase was driven by new agreements for green electricity supply for BASF group companies in UK as well as purchase of green energy certificates for one site in the US as well as one site in China.
Other emissions reduction activities	170,000	Decreased	0.8	BASF's Scope 1 and Scope 2 emissions decreased by 170,000 metric tons (t) of CO <sub>2</sub> e in 2019 compared to 2018 due to emissions reduction activities implemented in 2019. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 0.8% through $(170,000/22,660,000)*100 = 0.8\%$ . Major drivers for the emission reduction have been measures to increase the energy efficiency of processes.
Divestment	100,000	Decreased	0.4	The emissions from our operations decreased by 0.4% (corresponding to 100,000 metric tons of CO <sub>2</sub> e) in 2019 compared to 2018 due to the divestment of our paper and water chemicals business to

				Solenis, which affected production sites in several countries (e.g. UK and South Africa). Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 0.4% through $(100,000/22,660,000)*100 = 0.4\%$ .
Acquisitions	12,000	Increased	0.1	The emissions from our operations increased by 0.1% (corresponding to 12,000 metric tons of CO <sub>2</sub> e) in 2019 compared to 2018 due to the acquisition of one site from Toda. On March 7, 2018, we closed the agreement to form BASF Toda America LLC (BTA), Iselin, New Jersey, for battery materials. BTA is a cooperative venture between BASF and Toda; BASF holds a majority share in and control over BTA. With the acquisition of the Battle Creek site in Michigan and the site contributed by BASF in Elyria, Ohio, the new company took over production of high energy cathode active materials for e-mobility applications. The new site started reporting emissions in 2019, which led to the increase compared to 2018. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 0.1% through $(12,000/22,660,000)*100 = 0.1\%$ .
Mergers	0	No change	0	Category not relevant in actual year-on-year comparison.
Change in output	1,060,000	Decreased	4.7	In 2019 the volume of production from the operations within the reporting boundary decreased in comparison to 2018. If no measures to reduce emissions had been introduced, i.e. assuming that the GHG intensity of our various businesses in 2018 had continued to apply in 2019, the lower production would have resulted in a decrease in Scope 1 and Scope 2 GHG emissions of 4.7% (corresponding to 1,060,000 metric tons of CO <sub>2</sub> e) in 2019 in comparison to 2018. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at



				4.7% through $(1,060,000/22,660,000)*100 = 4.7\%$ .
Change in methodology	245,000	Decreased	1.1	In 2019 we applied new balancing rules in the energy supply and demand management across several sites, which led to a decrease of 1.1% (corresponding to 245,000 metric tons of CO <sub>2</sub> e) of our Scope 1 and Scope 2 emissions in comparison to 2018. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 1.1% through $(245,000/22,660,000)*100 = 1.1\%$ .
Change in boundary	0	No change	0	Category not relevant in actual year-on-year comparison.
Change in physical operating conditions	0	No change	0	Category not relevant in actual year-on-year comparison.
Unidentified	0	No change	0	Category not relevant in actual year-on-year comparison.
Other	236,000	Decreased	1	BASF is accounting GHG emissions from more than 300 production sites globally. Changes in local operating conditions of these sites (e.g. technical variation of process parameters, dynamic production planning and control, maintenance work during operations, environmental conditions) affect the GHG emissions of these sites. However, the individual factors of influence usually cannot be quantified separately due to the complexity of the sites, hence only their cumulative effect is subsumed under "Other". In 2019, changes in local operating conditions resulted in a net decrease of emissions of 1.0% (corresponding to 236,000 metric tons of CO <sub>2</sub> e) compared to 2018. Our total Scope 1 and Scope 2 emissions in 2018 was 22,660,000 t CO <sub>2</sub> e, therefore we arrived at 1.0% through $(236,000/22,660,000)*100 = 1.0\%$ .

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

### C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	15,000	48,679,000	48,694,000

Consumption of purchased or acquired electricity		91,000	5,324,000	5,415,000
Consumption of purchased or acquired steam		0	5,056,000	5,056,000
Consumption of self-generated non-fuel renewable energy		1,080		1,080
Total energy consumption		107,080	59,059,000	59,166,080

## C-CH8.2a

**(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.**

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	48,694,000
Consumption of purchased or acquired electricity		5,415,000
Consumption of purchased or acquired steam		5,056,000
Consumption of self-generated non-fuel renewable energy		1,080
Total energy consumption		59,166,080

## C8.2b

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
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)**

Anthracite Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

1,092,000

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

0

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

276,000

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

816,000

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

0

**Emission factor**

335

**Unit**

kg CO<sub>2</sub>e per MWh

**Emissions factor source**

Standard factors according Monitoring-Bericht RWI 1999, used by BASF internal guidelines

**Comment**

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

98,000

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

5,000

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

46,000

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

47,000

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

0

**Emission factor**

266

**Unit**

kg CO<sub>2</sub>e per MWh

**Emissions factor source**

Standard factors according Monitoring-Bericht RWI 1999, used by BASF internal guidelines

**Comment**

**Fuels (excluding feedstocks)**

Distillate Oil

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

19,000

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

0

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

2,000

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

17,000

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

0

**Emission factor**

281

**Unit**

kg CO<sub>2</sub>e per MWh

**Emissions factor source**

Standard factors according Monitoring-Bericht RWI 1999, used by BASF internal guidelines

**Comment**

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

41,326,000

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

0

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

11,318,000

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

3,557,000

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

26,451,000

**Emission factor**

201

**Unit**

kg CO<sub>2</sub>e per MWh

**Emissions factor source**

Standard factors according Monitoring-Bericht RWI 1999, used by BASF internal guidelines

**Comment**

**Fuels (excluding feedstocks)**

Other, please specify  
Residual fuels from own production

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

6,143,000

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

0

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

0

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

6,143,000

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

0

**Emission factor**

228

**Unit**

kg CO2e per MWh

**Emissions factor source**

Based on individually determined CO2 factors for each residue stream on site level, here averaged factor determined by each stream on each site with its CO2 emitted and MWh content

**Comment**

## C8.2d

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	10,054,000	9,388,000	1,080	1,080
Heat	11,642,000	11,642,000	0	0
Steam	38,021,000	35,211,000	16,000	16,000
Cooling	0	0	0	0

## C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	10,054,000	9,388,000
Heat	11,642,000	11,642,000
Steam	38,021,000	35,211,000
Cooling	0	0

## C8.2e

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

---

### Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

### Low-carbon technology type

Wind

### Country/region of consumption of low-carbon electricity, heat, steam or cooling

United States of America

### MWh consumed accounted for at a zero emission factor

10,000

### Comment

---

### Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

### Low-carbon technology type

Wind

### Country/region of consumption of low-carbon electricity, heat, steam or cooling

China

### MWh consumed accounted for at a zero emission factor

1,000

### Comment



---

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Wind

**Country/region of consumption of low-carbon electricity, heat, steam or cooling**

United States of America

**MWh consumed accounted for at a zero emission factor**

25,000

**Comment**

---

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Other, please specify  
Mix hydro/wind

**Country/region of consumption of low-carbon electricity, heat, steam or cooling**

Canada

**MWh consumed accounted for at a zero emission factor**

9,000

**Comment**

---

**Sourcing method**

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

**Low-carbon technology type**

Other, please specify  
Renewable electricity mix of different technology types

**Country/region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed accounted for at a zero emission factor**

46,000

**Comment**

### C-CH8.3

**(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?**

Yes

### C-CH8.3a

**(C-CH8.3a) Disclose details on your organization's consumption of fuels as feedstocks for chemical production activities.**

**Fuels used as feedstocks**

Other, please specify

Total fuel feedstock. This excludes non-fuel chemical feedstocks

**Total consumption**

10,300,000

**Total consumption unit**

metric tons

**Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit**

3

**Heating value of feedstock, MWh per consumption unit**

12.6

**Heating value**

LHV

**Comment**

The breakdown of our feedstock mix is considered confidential business information. Therefore, we present the sum of fuel feedstocks that are listed by name in the selection menu of the feedstocks column as well as a weighted average emission factor and heating value. Note that all carbon feedstocks are not combusted to result in CO2 emissions but used as raw materials as C-source for other higher-value chemicals. The oxidation level in the final product will be most likely +IV.

## C-CH8.3b

**(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.**

	Percentage of total chemical feedstock (%)
Oil	64
Natural Gas	10
Coal	1
Biomass	5
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	20
Unknown source or unable to disaggregate	0

## C9. Additional metrics

### C9.1

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

### C-CH9.3a

**(C-CH9.3a) Provide details on your organization’s chemical products.**

**Output product**

High Value Chemicals (Steam cracking)

**Production (metric tons)**

**Capacity (metric tons)**

3,480,000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Capacity refers to ethylene production and considers 100% capacity of the operations. BASF's share might be lower.

---

**Output product**

Ammonia

**Production (metric tons)**

**Capacity (metric tons)**

1,765,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Capacity considers 100% capacity of the operations. BASF's share might be lower.

---

**Output product**

Aromatics extraction

**Production (metric tons)**

**Capacity (metric tons)**

910,000

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Capacity refers to benzene production and considers 100% capacity of the operations. BASF's share might be lower.

**Output product**

Butadiene (C4 sep.)

**Production (metric tons)**

**Capacity (metric tons)**

680,000

**Direct emissions intensity (metric tons CO2e per metric ton of product)**

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

**Steam/ heat recovered (MWh per metric ton of product)**

**Comment**

Capacity considers 100% capacity of the operations. BASF's share might be lower.

**C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6**

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

**C-CH9.6a**

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development	Average % of total R&D	R&D investment	Comment
-----------------	----------------------	------------------------	----------------	---------

	in the reporting year	investment over the last 3 years	figure in the reporting year (optional)	
Other, please specify Product and process innovations where the R&D target is related to energy/resource efficiency and climate protection	Applied research and development	41 - 60%		R&D activities at BASF are directed to contribute to the company's purpose "We create chemistry for a sustainable future", expressing our understanding of the need to address the demands of a growing world population while the planet's resources (including the atmosphere's capacity to take up GHGs) are finite. In this context, BASF has derived three major areas in which chemistry-based innovations will play a key role in the future: resources, environment and climate; food and nutrition; and quality of life. R&D investment in the focus area "resources, environment and climate" has been stable at about 50% of the total R&D spend over the past years and targets product and process innovations related to energy/resource efficiency and climate protection.

## 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 emissions, and attach the relevant statements.**

---

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/ section reference**

1-9

**Relevant standard**

ISAE3000

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

100

---

**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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/ section reference**

1-9

**Relevant standard**

ISAE 3410

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

100

## C10.1b

**(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.**

---

**Scope 2 approach**

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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/ section reference**

1-9

**Relevant standard**

ISAE3000

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

100

---

**Scope 2 approach**

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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf



**Page/ section reference**

1-9

**Relevant standard**

ISAE 3410

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

100

---

**Scope 2 approach**

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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/ section reference**

1-9

**Relevant standard**

ISAE3000

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

100

---

**Scope 2 approach**

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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/ section reference**

1-9

**Relevant standard**

ISAE 3410

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

100

## C10.1c

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

---

**Scope 3 category**

Scope 3 (upstream & downstream)

**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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/section reference**

1-9

**Relevant standard**

ISAE3000

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

100

---

**Scope 3 category**

Scope 3 (upstream & downstream)

**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**

 BASF19\_CDP-Letter\_Bericht und AABs.pdf

**Page/section reference**

1-9

**Relevant standard**

ISAE 3410

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

100

**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?**

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Progress against emissions reduction target	ISAE3000, ISAE3410	Data point is given within our integrated annual report. All sustainability-related performance information according to GRI Standards (“Comprehensive” application option) in the “BASF Report 2019”, published under <a href="https://report.basf.com/2019/en/">https://report.basf.com/2019/en/</a> , were subject of the assurance engagement. +++ Reference to CDP question number: C4.1a +++ Type of verification and frequency: limited assurance, annual process
C6. Emissions data	Year on year emissions intensity figure	ISAE3000, ISAE3410	Data point is given within our integrated annual report. All sustainability-related performance information according to GRI Standards (“Comprehensive” application option) in the “BASF Report 2019”, published under

			https://report.basf.com/2019/en/, were subject of the assurance engagement. +++ Reference to CDP question number: C6.10 +++ Type of verification and frequency: limited assurance, annual process
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	ISAE3000, ISAE3410	Data point is given within our integrated annual report. All sustainability-related performance information according to GRI Standards (“Comprehensive” application option) in the “BASF Report 2019”, published under https://report.basf.com/2019/en/, were subject of the assurance engagement. +++ Reference to CDP question number: C7.9 +++ Type of verification and frequency: limited assurance, annual process
C8. Energy	Energy consumption	ISAE3000, ISAE3410	Data point is given within our integrated annual report. All sustainability-related performance information according to GRI Standards (“Comprehensive” application option) in the “BASF Report 2019”, published under https://report.basf.com/2019/en/, were subject of the assurance engagement. +++ Reference to CDP question number: C8.2a +++ Type of verification and frequency: limited assurance, annual process

## 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.**

- Denmark carbon tax
- EU ETS
- Korea ETS
- Shanghai pilot ETS
- Switzerland carbon tax
- Switzerland ETS

### C11.1b

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

**EU ETS**

---

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

54

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

0

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**Allowances allocated**

11,239,233

**Allowances purchased**

162,574

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

12,123,716

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

0

**Details of ownership**

Facilities we own and operate

**Comment**

Some parts of our operations receive energy from internal distribution grids fed by own energy generation as well as imported energy, i.e. the exact source of energy cannot be attributed correctly. Therefore, we are not able to separate Scope 1 and Scope 2 for our emissions relevant under the ETS and report all emissions under Scope 1. Further, note that following the rules of the EU ETS, verified emissions include emissions from a carbon capture and utilization step within the ammonia value chain. Such emissions are not relevant under Scope 1 according to the GHG Protocol standard and were excluded for calculation of the share of Scope 1 emissions covered by the ETS.

**Korea ETS**

---

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

2.4

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

6.2

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**Allowances allocated**

634,191

**Allowances purchased**

0

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

413,131

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

218,810

**Details of ownership**

Facilities we own and operate

**Comment**

**Shanghai pilot ETS**

---

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

1.7

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

18

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**Allowances allocated**

952,952

**Allowances purchased**

18,250

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

302,432

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

633,467

**Details of ownership**

Facilities we own and operate

**Comment**

**Switzerland ETS**

---

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

0.2

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

0

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**Allowances allocated**

29,685

**Allowances purchased**

2,396

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

36,732

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

0

**Details of ownership**

Facilities we own and operate

**Comment**

## C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

**Denmark carbon tax**

---

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**% of total Scope 1 emissions covered by tax**

0.02

**Total cost of tax paid**

47,500

**Comment**

**Switzerland carbon tax**

---

**Period start date**

January 1, 2019

**Period end date**

December 31, 2019

**% of total Scope 1 emissions covered by tax**

0.2

**Total cost of tax paid**

17,500

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

Our strategic approach to comply with the mentioned schemes consists of several components:

- We strive to constantly reduce our GHG emissions in the most cost-efficient way in order to avoid exceeding the allocated allowances and having to purchase allowances. The realization of CDM projects and the trading of emission allowances are used as additional measures to reduce our exposure.
- We continuously monitor the status of our relevant GHG emissions in relation to the compliance status and factor the costs of exceeded allowances into our financial planning process.
- We assess the further development of the cap and trade schemes and resulting potential financial risk for BASF via our Enterprise Risk Management.

Example for application of the strategy: Within our site in Ludwigshafen, we managed to reduce absolute GHG emissions of one plant covered by the EU ETS scheme in 2019 by about 1,600 tons in total compared to 2018, due to installation of a fuel gas heat value analyzer control system. The lower demand of the plant for respective EU ETS allowances equals to a financial saving of about €40,000 on plant level, assuming an average certificate price of €25 per ton CO<sub>2</sub> in 2019. This also gives us an indication of efficiency improvements achievable at other locations to mitigate compliance costs, should they become subject to a cap and trade scheme.

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

Yes



## C11.2a

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

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### **Credit origination or credit purchase**

Credit purchase

### **Project type**

Other, please specify  
Waste Energy Recovery

### **Project identification**

CN3400 Gas-Steam Combined Cycle Power Plant (CCPP) Project of Laiwu Iron & Steel Group Corp.

### **Verified to which standard**

CDM (Clean Development Mechanism)

### **Number of credits (metric tonnes CO<sub>2</sub>e)**

153,849

### **Number of credits (metric tonnes CO<sub>2</sub>e): Risk adjusted volume**

153,849

### **Credits cancelled**

Yes

### **Purpose, e.g. compliance**

Compliance

---

### **Credit origination or credit purchase**

Credit purchase

### **Project type**

Other, please specify  
Consolidated methodology for waste gas and/or heat for power generation

### **Project identification**

CN1657 Laiwu Iron & Steel Group Laigang Inc. 25MW Waste Gas Power Generation Project

### **Verified to which standard**

CDM (Clean Development Mechanism)

### **Number of credits (metric tonnes CO<sub>2</sub>e)**

8,626

**Number of credits (metric tonnes CO<sub>2</sub>e): Risk adjusted volume**

8,626

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Compliance

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

Stress test investments

**GHG Scope**

Scope 1

Scope 2

**Application**

Investment projects (capital expenditure, acquisitions)

**Actual price(s) used (Currency /metric ton)****Variance of price(s) used**

Differentiated, evolutionary pricing driven by the specific assessment, e.g. geography and timeframe of an investment.

**Type of internal carbon price**

Shadow price

**Impact & implication**

Carbon pricing is considered in internal assessments of capital investment projects. BASF has set up a structured process to evaluate investment projects (e.g. capital expenditures, acquisitions), including impacts on the environment (e.g. climate) and respective costs. The process considers a project base case as well as the option to assess alternative scenarios. Carbon pricing can be attributed to any case depending on strategic goals as well as the expected likelihood and magnitude of impact. In this way, it directly affects the evaluation of economic viability of the capital expenditure business case. The focus of carbon pricing is on direct emissions (Scope 1), but since we are part of an energy-intensive industry and purchase of energy is significant, related cost effects

on energy supply side (Scope 2) may be taken into account where relevant. The price of carbon considered depends on various factors driven by the specific assessment, e.g. geography and timeframe of an investment. Sometimes, several pricing scenarios may be used to evaluate uncertainties in future regulatory environments. The internal price is combined of two components: (a) a basic price driven by existing and upcoming regulation, which is determined via scenario analysis by global procurement under consideration of input from several internal stakeholders, (e.g. technical and governmental affairs experts assessing latest regulatory trends), (b) a strategic premium to foster internal climate action, determined by the economic evaluations group.

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

Navigate GHG regulations

### **GHG Scope**

Scope 1

Scope 2

### **Application**

Production facilities

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

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

Differentiated, evolutionary pricing driven by geography and timeframe of the analysis.

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

Shadow price

### **Impact & implication**

Carbon pricing plays a role in internal assessments of operational costs of our production facilities, the rationale being that costs originating from respective pricing schemes have an impact on the cost-benefit ratio of operations. The focus is on emissions from our own sites (Scope 1), but since we are part of an energy-intensive industry and purchase of energy is significant, related cost effects on energy supply side (Scope 2) may be taken into account case-by-case. The price of carbon considered depends on geography and timeframe of the analysis. Sometimes, several pricing scenarios are used to evaluate uncertainties in future regulatory environments. The internal price is determined via scenario analysis by global procurement under consideration of input from several internal stakeholders, e.g. technical and governmental affairs experts assessing latest regulatory trends.

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

Other, please specify

Value-to-society assessment

**GHG Scope**

- Scope 1
- Scope 2
- Scope 3

**Application**

External direct and indirect suppliers, BASF own operations, customer industries

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

70

**Variance of price(s) used**

Evolutionary pricing using a base value for 2015 (70 EUR) and assuming an increase of 3% per year.

**Type of internal carbon price**

Shadow price

**Impact & implication**

The monetary valuation of GHG emissions through carbon pricing is one component of BASF's Value-to-Society approach, a new method developed by BASF with external experts to perform the first monetary assessment of the economic, ecological, and social impacts of its business activities along the value chain. The purpose of BASF's Value-to-Society approach is to assess our 'real' contribution to a sustainable future as comprehensively as possible. We quantify and value the financial and non-financial external effects of our business activities in society in a common unit – in Euro. The results reflect our 'real' value contribution, our benefits and costs to society. We assess our relevant impacts along our entire supply chain, our own operations, and our customer industries. The impacts of our products in their consumer use phase and end-of-life are covered case-by-case. The carbon price within Value-to-Society has been derived based on a meta-analysis of recent social cost of carbon estimates. The costs of GHG emissions to society through climate change are independent of the location of the source of the emission, therefore a single social cost of carbon is applied for all locations globally. The climate impact of an additional tons of CO<sub>2</sub>e is expected to rise over time. Therefore, it is assumed that the real social cost of carbon increases every year by 3%, as recommended by the IPCC. Value-to-Society assessments improve the understanding of the relevance of specific economic, social and environmental impacts and their interdependencies along the different levels of our value chain. This transparency supports the integrated character of our actions, contributing to BASF's long-term success. The results enable us to monitor progress over time in a comprehensive way in monetary terms from a macro-perspective, demonstrate our value contribution, and take better informed decisions regarding the relevance of various business impacts by adding a macro-societal, integrated financial and non-financial perspective.

## 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.

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##### Type of engagement

Information collection (understanding supplier behavior)

##### Details of engagement

Collect climate change and carbon information at least annually from suppliers

##### % of suppliers by number

8

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

48

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

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

Description of engagement: BASF is a founding member of the Together for Sustainability (TfS) initiative of leading chemical companies for the global standardization of supplier evaluations and auditing. With the help of TfS, we promote sustainability in the supply chain. The initiative aims to develop and implement a global program for the responsible supply of goods and services, and to improve suppliers' social and environmental standards, which include climate change and carbon information. The evaluation process is based on third-party online assessments and/or on-site audits and is simplified for both suppliers and TfS member companies by a globally uniform questionnaire. The supplier assessments provide us with valuable information on their sustainability performance, including GHG emissions, energy and emission reduction projects and relevant international certifications.

Rationale for coverage: As a global company with operations and suppliers in many important regions/markets, we aim for a holistic approach by engaging with our suppliers to develop more sustainable practices, in their own operations as well as in the interactions with their supply chain. Since our supplier base currently comprises more than 75,000 tier 1 suppliers, including raw material suppliers, providers of technical goods and services and logistics operations, focusing our third-party evaluations on the

most relevant is crucial. We define relevant suppliers as those showing an elevated sustainability risk potential as identified by our risk matrices (including both country and industry-specific risks) and our purchasers' assessments with focus on responsible supply of goods and services as well as environmental and social standards. We also use further sources of information to identify relevant suppliers, such as evaluations from TfS. By 2025, we aim to have conducted sustainability evaluations for 90% of the BASF's Group relevant spend and we will develop action plans together with our suppliers where improvement is necessary. In 2019, already 81% of the relevant spend had been evaluated, and 52% of the re-evaluated suppliers had improved their sustainability performance upon re-evaluation. However, we have set ourselves the goal to increase this amount to 80% by 2025. The global targets are embedded in the personal goals of persons responsible for procurement.

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

The score in our third-party online assessments provides a direct supplier performance indicator. It can be positively influenced by reporting on energy use and greenhouse gas (GHG) emissions, on energy and emission reduction projects, and by indicating that the supplier reports to CDP or holds international certifications. This enables BASF to foster supplier awareness and to promote adequate emissions management. In 2019, 45% of assessed suppliers reported on energy use and GHG emissions and/or were CDP respondents. In addition, some of the assessed suppliers were holding an ISO 50001 certification.

As a measure of success, we analyse the relevant spend we cover with evaluations (status 2019: 81%) and track the percentage of evaluated suppliers that improve their sustainability performance upon re-evaluation (status 2019: 52%).

In addition, climate change is an explicit component of BASF's sourcing strategies, because of its potential to drive sustainability: When elaborating a procurement strategy, buyers are required to consider potential threats and opportunities related to climate change.

Examples of positive outcomes with individual suppliers:

1. In South America, the decorative paint segment receives some raw materials packaged in metallic gallons, which are stored at specific warehouses and sent to the production area using tractors and carts convoys for internal movements. For years, the gallons were delivered by BASF's suppliers without using the total load capacity of their trucks due to a height restriction of the site for incoming material. A local project completed beginning of 2020 enabled reducing the number of truck deliveries needed by increasing the number of layers in each load. This has led to a reduction of approximately 250 deliveries per year (resulting in a reduction of more than 13 tons of CO<sub>2</sub> per year) for the same number of metallic gallons.
2. The BASF production site in Lagos is 300 km away from Buenos Aires area, where the site gets most of their raw materials from. Since 2020, the purchases are centralized in their Tortuguitas site (near Buenos Aires) and the materials are gathered and transported together to the Lagos site. This has saved more than a truck transportation per month, with consequent reduction of CO<sub>2</sub> emissions.

**Comment**

Spend calculated according to International Financial Reporting Standards (IFRS).

**C12.1b**

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

**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

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

0

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

Scope of engagement: We integrate sustainability-related information on BASF and its products, including climate-related information, in day-to-day business with our customers by actively promoting such information as well as responding to respective customer requests. In line with our strategic principle “We innovate to make our customers more successful”, we engage with customers in close partnerships to align our business optimally with our customers’ needs and contribute to their success with innovative and sustainable solutions. We maintain a wide range of sustainability tools to support the interaction with our customers. This includes standard Product Carbon Footprint assessments as well as more comprehensive lifecycle assessments like Eco-Efficiency Analysis, SEEBALANCE® and AgBalance™. The exact modus of interaction (e.g. one-to-one meetings, workshops, joint projects, seminars) and intensity of exchange is customer-dependent. In 2019 we participated for instance in a supplier dialogue with an automotive OEM, to present measures and product examples which could help reducing their carbon footprint with regard to electromobility (temperature management, electric powertrain, batteries and charging infrastructure). Part of our engagement also includes responding to customer information requests like the CDP Supply Chain Programme (40 requests for this year’s participation) or supplier performance reviews.

Rationale for coverage/size of engagement: Since customers are among our most important stakeholders our proactive information sharing and engagement essentially cover our entire customer base. These customers stem from all different kinds of sectors / industries, like e.g. transportation, construction, and consumer goods industries.

Note regarding % Scope 3 emissions: Value of zero is given, because in line with

current reporting standards BASF does not calculate and report GHG emissions from processing of sold products, which would be one relevant Scope 3 category in this context.

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

Impact of engagement: BASF strengthens the relationship to the customer by demonstrating credibility and know-how on climate-related topics as well as offering innovative solutions in this area. The buy-in of customers to BASF's solutions contributes to avoiding emissions along the value chain and e.g. also helps them pursuing and reaching their climate targets.

Measures of success: (1) We have segmented our portfolio regarding the contribution of our more than 50,000 specific product applications to sustainability (including reduction of GHG emissions and improving energy efficiency), using the externally validated Sustainable Solution Steering method. Products with a substantial sustainability contribution in the value chain are classified as Accelerators, and we measure the success of these Accelerators by their sales volume. We aim to achieve €22 billion in Accelerator sales by 2025 (2019: €15 billion). (2) The products that help to reduce GHG emissions or increase energy efficiency in this context are dubbed Accelerators "Climate Change and Energy" and reflect our wide portfolio of climate protection products. We also measure the contribution of these products to avoiding GHG emissions. Examples of such Accelerator solutions are our expandable polystyrene granulates (EPS) Styropor® and Neopor®. Both products are used to insulate buildings and help to save heating energy and reduce carbon emissions. Another polystyrene-based climate protection product is Styrodur®, an extruded rigid foam panel, which likewise offers optimum insulation performance and a wide range of potential applications, especially under high pressure. An analysis shows that the volumes of Styropor®, Neopor® and Styrodur® sold in 2019 help our customers to save 62 million metric tons of CO<sub>2</sub> emissions over the entire lifecycles of these products when used to insulate existing buildings. (3) Finally, we use feedback from our customers through the CDP Supply Chain Programme and their supplier performance reviews to measure the impact of our activities.

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#### **Type of engagement**

Collaboration & innovation

#### **Details of engagement**

Run a campaign to encourage innovation to reduce climate change impacts

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

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

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



BASF approaches customers by offering our innovative biomass balance approach, which allows to replace fossil resources in our Production Verbund by renewable resources with sustainability certification and allocate the respective sustainability benefit to the customer product. Since the approach is no established standard solution and requires good cooperation between BASF and the customer to enable the customer to highlight the benefits and value proposition in this market, this activity is considered rather a joint innovative step in the customer market than simple promotion of existing solutions. The approach is best suited for customers that have an advanced position regarding understanding and working with sustainability approaches and that operate in markets susceptible to the respective value proposition. BASF has started to promote the method at customers with a respective profile and is extending the offer to a wider customer base in a stepwise approach.

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

Impact of engagement: The fuel switch triggered by BASF’s biomass balance (BMB) approach results in lower GHG emissions along the value chain. For example, in 2019 we calculated together with the German expandable polystyrene granulates (EPS) insulation material manufacturer Bachtl in a lifecycle analysis that the use of renewable raw materials reduces carbon emissions from the production of Neopor® BMB insulation boards by 66% compared with conventionally produced Neopor® boards (based on one cubic meter of insulation board). The BMB approach supports customers in offering innovative solutions in their markets, obtaining a competitive edge and thus becoming more successful. BASF is able to live up to its strategic principles of innovating to make customers more successful and driving sustainable solutions. We can demonstrate our engagement and positive contribution, offering a reputational benefit and the opportunity to strengthen and expand customer relationships.

Measures of success: The number of products and level of sales linked to the biomass balance approach serve as key performance indicators to measure success.

**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
Cap and trade	Support with minor exceptions	Implementation of the EU emissions trading scheme (ETS) has been a focus of our lobbying activities in the EU. We promote	We support the ETS as an EU-wide harmonized and market-based instrument, but free allocation and/or financial

		<p>the EU ETS as key element for the energy and industry sector in a new 2030 EU Energy and Climate framework. However, proper carbon leakage protection both for direct and indirect emissions has to be assured. To that end, we analyzed data and shared the results of our analyses with the EU Commission and national authorities. We openly explain our positions at public meetings and discussions, in conversations with individual political decision makers and other stakeholders, in stakeholder consultations (e.g. the Public Consultation on State Aid/ EU ETS Indirect Cost Compensation), and on our website.</p>	<p>compensation to prevent carbon leakage beyond 2020 are an essential part to safeguard industrial competitiveness as long as no comparable global system exists.</p> <p>In order to reduce GHG emissions, we will electrify our processes for the production of base chemicals using new technologies (e.g. e-cracker), tripling our renewable electricity needs. As a consequence, our cost base will shift from direct to indirect costs. Sectors with high electricity consumption therefore will need to be supported with indirect electricity price compensation to remain competitive.</p> <p>The EU guidelines on certain State Aid measures in the context of the EU ETS (currently under revision for the period 2021-2030) need to ensure indirect compensation applies to key sectors (e.g. NACE 20.14/other organic chemicals and NACE 20.11/industrial gases). We provided data showing that a qualitative assessment is necessary to capture the whole picture of petrochemicals and refineries, where pure calculations based on reporting for statistics, which are in place for other reasons, may be misleading.</p>
<p>Other, please specify Funding, Industry Support</p>	<p>Support</p>	<p>In its long-term strategy the EU Commission describes measures, actions and necessities how to further reduce greenhouse gas emissions in the EU with a view to the targets of the Paris Agreement. With our Carbon Management R&amp;D Programme, we develop</p>	<p>We support the legislation on the ETS innovation fund. We support the general framework set up by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) for additional funding for the transition of the Energy Intensive Industry. However, an</p>

	<p>technologies and processes that are capable to substantially reducing GHG emissions. The competitiveness of such new technologies is closely linked to the political framework.</p> <p>The EU ETS with carbon leakage protection by free allocation and indirect cost compensation shall remain the central pillar of EU climate policy. However, cost compensation for industry at risk of carbon leakage will reach some limits by a reduced ETS cap and Linear Reduction Factor, so that CO<sub>2</sub> avoidance costs will become substantial in industrial production. Therefore, alternative instruments which look at carbon cost internalization should be explored as part of the policy toolbox. Support is necessary as long as there is no comparable carbon pricing globally.</p> <p>We support the EU Commission to build up an appropriate framework for the EU ETS innovation fund by providing our experts knowledge.</p> <p>Together with other stakeholders, we looked at and evaluated different political instruments which may help to provide the investment security needed for industry to build pilot plants and further develop and implement new carbon free technologies.</p> <p>We contributed to stakeholder consultations (e.g. inception impact assessment on carbon border adjustment mechanisms - CBAMs) and discussed new ideas with think tanks, authorities and parties in Berlin and Brussels. Further, we gave input to respective studies and political</p>	<p>adequate financial volume will be needed.</p> <p>We do not consider that CBAMs are an appropriate measure. CBAMs risk increasing basic material prices in the EU. The challenges related to maintaining the global economic order, protection of exports, administrative complexities and disruption to global free trade must be very carefully assessed. The practical implications designing CBAMs without creating excessive administrative burdens and global countermeasures are unsurmountable</p> <p>We support development of new political instruments, like Contracts for Difference, which, depending on the climate targets/financing volume needed, may need to be combined with new instruments of carbon cost internalization to finance them.</p>
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		papers, e.g. from Agora Energiewende, Stiftung 2°, DIW.	
Other, please specify Development of hydrogen economy	Support	<p>Hydrogen could emerge as a new energy vector, as indicated by broad application possibilities in all sectors, storage and transport capability, and various options for CO2-free production. This would present an opportunity to significantly reduce society's carbon footprint. BASF is both a large producer and consumer of hydrogen, an important raw material of the chemical industry. In the future, hydrogen could also become a major building block of chemical products with a low carbon footprint and could help to decarbonize the chemical industry's energy consumption. As part of our Carbon Management, BASF is developing an own technology for low carbon hydrogen production: Methane Pyrolysis. We shared our knowledge on hydrogen in conferences, for studies (e.g. IEA Hydrogen report), public hearings (e.g. Landtag Rheinland-Pfalz) and stakeholder consultations.</p>	<p>The European Union needs a Hydrogen Strategy, which creates legal and investment certainty, to pave the way for a successful deployment of climate-friendly hydrogen. Several types of incentives could be envisaged to support alternative ways of producing (see proposals under industry support/funding). Strong research and innovation support are needed to encourage progress on technologies which are still at low Technology Readiness Levels (TRLs) and improve or upscale existing technologies by increasing their performance and lowering their costs. A technology-neutral approach needs to be taken, based on a solid and credible certification framework, including clear and comprehensive definitions for different types of hydrogen that can contribute to the greenhouse gas abatement objective. Infrastructure should be carefully planned to safeguard gas quality requirements, allow safe and efficient transport and build on the potential of hydrogen as a storage solution.</p>

### 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**

ICCA (International council of chemical associations)

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

Consistent

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

Raise awareness for the specific ways in which the chemical industry can support GHG emissions mitigation and adaptation to climate change and to advocate for effective climate policies to get a business environment in which the chemical industry can realize this potential best.

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

i. Support new studies on energy savings by products of the chemical industry and promotion of relevant ICCA studies, to which BASF contributed; ii. Support of ICCA positioning and communication, e.g. a policy paper supporting effective climate policies; iii. Contribution to guidelines and best-practice examples: Life-cycle analysis, carbon accounting and reporting

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**Trade association**

Cefic (European chemical industry council)

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

Consistent

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

Raise awareness for the specific ways in which the chemical industry can support GHG emissions mitigation and adaptation to climate change and to advocate for realization of a business environment in which the chemical industry can realize this potential best.

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

Membership and active input in relevant working groups/board

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**Trade association**

ACC (American chemistry council)

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

Consistent

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

Raise awareness for the specific ways in which the chemical industry can support GHG emissions mitigation and adaptation to climate change, contribute to energy efficiency and to advocate for realization of a business environment in which the chemical industry can realize this potential best.

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

Membership and input in relevant working groups

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**Trade association**

ERT (European Round Table of Industrialists)

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

Consistent

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

Raise awareness for ways in which European industry in general can support GHG emission mitigation and to advocate for framework conditions in Europe that allow industry to mitigate in the most cost-efficient way.

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

Membership and input in relevant working groups

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**Trade association**

VCI (Verband der chemischen Industrie, German chemical industry association)

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

Consistent

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

Raise awareness for the specific ways in which the chemical industry can support GHG emissions mitigation and adaptation to climate change and to advocate for realization of a business environment in which the chemical industry can realize this potential best.

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

i. Membership and input in relevant working groups/board; ii. Active participation in the VCI stakeholder dialogue on decarbonization; iii. Active contribution to the VCI Study Roadmap 2050

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**Trade association**

WBCSD (World business council for sustainable development)

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

Consistent

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

Advocate for realization of a business environment in which business can support GHG emissions mitigation and adaptation to climate change e.g. through fostering of carbon accounting and through the introduction of global carbon pricing mechanisms.

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

- i. Membership and input in relevant working groups; ii. Support promotion of relevant WBCSD documents

**Trade association**

BE (Business Europe) and BDI (Federation of German Industries)

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

Consistent

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

Advocate for realization of a business environment in which industry can support GHG emissions mitigation and adaptation to climate change through its various technological solutions.

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

- i. Membership and input in relevant working groups; ii. Contribution to BDI Klimapfade (Climate Path) study

**Trade association**

ABIQUIM (Associação Brasileira da Indústria Química)

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

Consistent

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

ABIQUIM supports the Paris Agreement. The chemical industry is a partner in the transition to a low-carbon economy, so that the current rhythm of production and consumption does not compromise the preservation of the environment and the maintenance of the quality of life for future generations.

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

Membership and input in relevant working groups

**Trade association**

NAM (National Association of Manufacturers)

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

Consistent

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

NAM believes the federal government has a clear role in setting climate policy. This begins by reengaging on the international stage to achieve a binding, fair global climate treaty. The goal of such an agreement must be to address the climate threat in a manner that prevents carbon leakage by ensuring that no country gains a competitive advantage by failing to take action to reduce carbon emissions.

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

Membership and input in relevant working groups

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#### Trade association

European Union Chamber of Commerce in China

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

Consistent

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

The European Chamber supports China to achieve the energy transition and meet the objectives set out in the 2015 Paris Climate Conference of the Parties (COP21) and reiterated in COP24 (Katowice).

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

Input in relevant working groups; BASF presidency

## 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.

Our other engagement activities cover various areas.

#### 1. Engagement in working groups, for example:

- Business 20 (active contribution to recommendations on energy, climate and resource efficiency for state and government leaders)
- Member of the Alliance of CEO Climate Leaders (encourage companies to step up their commitment to meeting the targets of the Paris climate accord; co-signatory of an open letter calling for a pledge to increase efforts to reduce emissions, improved analysis and reporting of climate-related financial risks as well as a global carbon pricing mechanism)
- Member of the initiative "Collaborative Innovation for Low-Carbon Emitting Technologies in the Chemical Industry (LCET)", which runs within the frame of the Mission Possible Platform (convened by the World Economic Forum in partnership with the Energy Transitions Commission) launched in 2019. BASF hosted the kick-off workshop of the LCET in July 2019 in Ludwigshafen.
- Chair of ISO committee that handles holistic environmental management issues (ISO 14000 series)
- Member of Technical Advisory Group of the Science-based Targets Initiative
- Member of the econsense (Forum for Sustainable Development of German Business) project group "Environmental and Climate Issues"
- Participation in VCI stakeholder dialogue "Decarbonisation"



- Member of the economic council of the Green Party Germany
- Member of the If.E - Innovationsforum Energiewende
- Member of the European Corporate Reporting Lab's Project Task Force Climate-Related Reporting at EFRAG (European Financial Reporting Advisory Group)
- Member of the TCFD Chemicals Preparer Forum
- Member of the TCFD Advisory Group on Scenario Analysis

### **2. Contribution to consultations and external studies, for example:**

- Response to the Consultation on EU 2050 Climate target
- Response to the European Commission 2030 Climate Target Plan Inception Roadmap
- ETS Innovation Fund: support of setting up the fund by a dedicated BASF expert
- Input to VCI study "Roadmap Chemie 2050"
- Interviews and data sharing with scientific and political organizations about future options for GHG reduction in the chemical industry (e.g. IEA, Fraunhofer, DECHEMA, Agora, Stiftung 2°)

### **3. Publications, conferences, and other public relations work, for example:**

- Information on technological successes of our Carbon Management within our BASF Research Press Conference (Jan 2019) and further public information (press releases, interviews, articles)
- Assessment of industry associations compared with BASF positions on energy and climate policy
- BASF Townhall meeting on Climate Protection with CEO Martin Brudermüller and Board Member Saori Dubourg
- Participation in panel discussions at COP 25
- Participation and presentations at conferences (e.g. BDEW Fachtagung Wasserstoff, WWF-Tagung "Klimaneutraler Industriestandort Deutschland", Agora Energiewende Tagung "Transformation der Industrie")
- Public support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
- Information materials and newsletters for politicians, journalists and public (e.g. sustainability news)
- Showcasing of climate protection products in exhibition in BASF's visitor center in Ludwigshafen

## **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?**

The Board of Directors decides on BASF's climate change strategies, taking thorough analysis by experts and practitioners at the working level into account. The head of the Corporate Development unit reports to the Board of Directors and has the key position to ensure consistency of actions resulting from the decisions.

In our advocacy work, we act in compliance with our Global Code of Conduct, its core values and the rules and principles set out in our Policy on Government Relations and Advocacy [1]. As associations act on behalf of their members, we ask them to apply the same principles.

We assure global alignment of our advocacy work and our activities in associations via established governance processes and internal networks that include all world regions. Direct climate policy-related corporate activities are mainly stipulated and performed by Energy and Climate Policy (Corporate Communications and Government Relations unit) and Sustainability Strategy (Corporate Development unit) organizations in BASF. Representatives have regular meetings (about monthly) with relevant BASF colleagues (e.g. experts in energy procurement, greenhouse gas reporting, BASF's energy efficiency unit, sustainability responsables in business divisions). The corporate groups are connected to a network of BASF representatives with analogous functions globally, through email and web conference to receive regular updates. Taking into account developments in climate protection technologies and policies, we jointly agree on BASF's positions and publish our common view on the company website. Our positions serve as a yardstick against which we and others measure our own and our industry group's activities.

We regularly review the positions and activities on climate and energy policies of our major associations and publish our findings in the internet [2]. If an association's position on an issue that is core to BASF's membership fundamentally deviates from BASF's position or our principles and values, BASF increases its engagement in that association to improve alignment or to demand that the association stops advocating against our interests or our values and principles. If no agreement can be found, an overarching assessment of the association's performance, positions, views and membership value regarding all issues relevant for BASF is performed. Based on this, a decision is taken on the future of our membership in this association.

Citations:

[1] Policy on Government Relations and Advocacy: <https://www.basf.com/global/en/who-we-are/sustainability/management-goals-and-dialog/stakeholder-dialog/political-communication-and-advocacy.html>

[2] Industry Associations Review: <https://www.basf.com/global/en/who-we-are/sustainability/we-produce-safely-and-efficiently/energy-and-climate-protection/energy-and-climate-policies.html>

## 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).**

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### Publication

In mainstream reports, incorporating the TCFD recommendations

### Status

Complete

### Attach the document

 BASF\_Report\_2019.pdf

**Page/Section reference**

p. 24-28 (“Our Strategy”); p. 36-41 (“Integration of Sustainability”); p. 102-104 (“Supplier Management”); p. 116-120 (“Energy and climate protection”); p. 121-122 (“Climate protection with carbon management”); p. 139-147 (“Opportunities and Risks”)

**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets  
Other metrics  
Other, please specify  
Value chain engagement

**Comment**

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**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

 BASF\_website\_energy-climate-section-overview-202008.pdf

**Page/Section reference**

Entire document

**Content elements**

Governance  
Strategy  
Emissions figures  
Emission targets  
Other metrics  
Other, please specify  
Value chain engagement

**Comment**

This is the overview page of our website section on Energy and Climate Protection, which features nine sub-sections in total.

## C15. 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.**

### C15.1

**(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	<b>Job title</b>	<b>Corresponding job category</b>
Row 1	Member of the Board of Executive Directors, BASF SE	Director on board