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Management's Report

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We are making our value chains, processes, products and business models more circular with our circular economy program.

For more information, see page 30

Overview

The Management's Report comprises the chapter of the same name on pages 16 to 166, as well as the disclosures required by takeover law, the Compensation Report and the Declaration of Corporate Governance, which are presented in the Corporate Governance chapter. The Nonfinancial Statement (NFS) is integrated into the Management's Report.

Nonfinancial Statement (NFS) in accordance with sections 315b and 315c of the German Commercial Code (HGB)

The NFS disclosures can be found in the relevant sections of the Management's Report and have been prepared in accordance with the appropriate frameworks: the Global Reporting Initiative Standards ("Comprehensive" application option) and the reporting requirements of the U.N. Global Compact.

The table on the following page shows the sections and subsections in which the individual disclosures can be found. In addition to a description of the business model, the NFS includes disclosures on the following matters, to the extent that they are required to understand the development and performance of the business, the Group's position and the impact of business development on the following matters:
- Environmental matters
- Employee-related matters
- Social matters
- Respect for human rights
- Anti-corruption and bribery matters

Within the scope of the annual audit, KPMG checked pursuant to section 317(2) sentence 4 HGB that the NFS was presented in accordance with the statutory requirements. KPMG also conducted a limited assurance of the NFS. An assurance statement of the limited assurance can be found online at basf.com/nfs-audit-2020. The assurance was conducted in accordance with ISAE 3000 (Assurance Engagements other than Audits or Reviews of Historical Financial Information) and ISAE 3410 (Assurance Engagements on Greenhouse Gas Statements), the relevant international assurance standards for sustainability reporting.

Compensation Report and disclosures in accordance with section 315a HGB[1]

The Compensation Report including the description of the principles of the compensation system in accordance with section 315a(2) HGB can be found in the Corporate Governance chapter from page 183 onward, and the disclosures in accordance with section 315a(1) HGB (takeover-related disclosures) from page 174 onward. They form part of the Management's Report, which is audited as part of the annual audit.

Consolidated Declaration of Corporate Governance in accordance with section 315d HGB in connection with section 289f HGB[1]

The Consolidated Declaration of Corporate Governance in accordance with section 315d HGB in connection with section 289f HGB can be found in the Corporate Governance chapter from page 167 onward and is a component of the Management's Report. It comprises the Corporate Governance Report including the description of the diversity concept for the composition of the Board of Executive Directors and the Supervisory Board (excluding the disclosures required by takeover law in accordance with section 315a(1) HGB), compliance reporting and the Declaration of Conformity pursuant to section 161 of the German Stock Corporation Act. Pursuant to section 317(2) sentence 6 HGB, the auditor checked that the disclosures according to section 315d HGB were made.

Recommendations of the Task Force on Climate-related Financial Disclosures

BASF supports the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Disclosures recommended by the TCFD are presented in a number of places throughout this report. The table on page 19 shows the sections and subsections in which the relevant information can be found. The table is divided into four key areas in line with the TCFD recommendations: governance, strategy, risk management, and metrics and targets.

Further information

The following symbols indicate further information:

You can find more information in this report.

You can find more information online. The content of these links are voluntary disclosures that were not audited by the auditor.

The content of this section is not part of the statutory audit but has undergone a separate audit with limited assurance by our auditor.

The content of this section is voluntary, unaudited information, which was critically read by the auditor.

1 In the version applicable to the Financial Statements and Management's Report for the 2020 fiscal year pursuant to Article 83 of the Introductory Act on the German Commercial Code (EGHGB)

Nonfinancial Statement (NFS) disclosures in the relevant chapters of the integrated report

NFS disclosure	Topics	Concepts and results
Business model	The BASF Group	Pages 20–23
Environmental matters	Process safety	Page 32 (targets) Pages 121 and 123–124 (targets, measures, results)
	Biodiversity	Page 142–143 (targets, measures, results)
	Energy and climate protection	Page 32 (targets) Pages 121 and 130–136 (targets, measures, results)
	Emergency response and corporate security	Pages 121 and 125 (targets, measures, results)
	Supplier management	Page 32 (targets) Page 113–115 (targets, measures, results)
	Emissions to air	Pages 121 and 137 (targets, measures, results)
	Product stewardship	Pages 121 and 126–128 (targets, measures, results)
	Steering of product portfolio	Page 32 (targets) Page 45–46 (targets, measures, results)
	Transportation and storage	Pages 121 and 129 (targets, measures, results)
	Management of waste and contaminated sites	Pages 121 and 137–138 (targets, measures, results)
	Water	Page 32 (targets) Pages 121 and 139–141 (targets, measures, results)
Employee-related matters	Occupational safety	Page 32 (targets) Pages 121 and 122–123 (targets, measures, results)
	Dialog with employee representatives	Page 150 (targets, measures, results)
	Inclusion of diversity	Page 32 (targets) Page 146–147 (targets, measures, results)
	What we expect from our leaders	Page 145–146 (targets, measures, results)
	Health protection	Pages 121 and 124 (targets, measures, results)
	International labor and social standards	Page 150–151 (targets, measures, results)
	Learning and development	Page 148 (targets, measures, results)
	Supplier management	Page 32 (targets) Page 113–115 (targets, measures, results)
	Employee engagement	Page 32 (targets) Page 145 (targets, measures, results)
	Competition for talent	Page 147–148 (targets, measures, results)
	Compensation and benefits	Page 149 (targets, measures, results)
Social matters	Social commitment	Page 47–49 (targets, measures, results)
Respect for human rights	International labor and social standards	Page 150–151 (targets, measures, results)
	Supplier management	Page 32 (targets) Page 113–115 (targets, measures, results)
	Responsibility for human rights	Page 111–112 (targets, measures, results)
Anti-corruption and bribery matters	Compliance	Page 177–179 (targets, measures, results)
	Supplier management	Page 32 (targets) Page 113–115 (targets, measures, results)

Recommendations of the Task Force on Climate-related Financial Disclosures in the relevant chapters of the integrated report

Topic	Recommended disclosures	Section/explanation	Page
Governance Disclose the organization's governance around climate-related risks and opportunities.	Describe the board's[a] oversight of climate-related risks and opportunities.	Corporate Governance Report – Direction and management by the Board of Executive Directors Report of the Supervisory Board – Supervisory Board meetings	Pages 168–169 Pages 204–205
	Describe management's[b] role in assessing and managing climate-related risks and opportunities.	Integration of Sustainability – Our organizational and management structures	Pages 42–43
Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.[c]	Opportunities and Risks – Short-term opportunities and risks Opportunities and Risks – Long-term opportunities and risks	Pages 161–163 Pages 164–166
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Carbon management as a climate protection tool Integration of Sustainability – Steering of product portfolio based on sustainability performance Opportunities and Risks – Short-term opportunities and risks Opportunities and Risks – Long-term opportunities and risks	Pages 135–136 Pages 45–46 Pages 161–163 Pages 164–166
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	In 2020, we enhanced and refined our long-term strategic scenarios and worked on their quantitative implementation in order to include these in our strategic steering going forward.	
Risk management Disclose how the organization identifies, assesses, and manages climate-related risks.	Describe the organization's processes for identifying and assessing climate-related risks.[d]	Opportunities and Risks – Risk management process	Pages 159–160
	Describe the organization's processes for managing climate-related risks.	Opportunities and Risks – Risk management process Opportunities and Risks – Long-term opportunities and risks	Pages 159–160 Pages 164–166
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Opportunities and Risks – Risk management process	Pages 159–160
Metrics and targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Energy and climate protection – Global goals and measures Water – Global goal and measures Integration of Sustainability – Steering of product portfolio based on sustainability performance	Pages 131–133 Pages 139–140 Pages 45–46
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Energy and climate protection – Strategy Energy and climate protection – Global goals and measures	Pages 130–131 Pages 131–133
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Energy and climate protection – Strategy Water – Strategy Integration of Sustainability – Steering of product portfolio based on sustainability performance	Pages 130–131 Page 139 Pages 45–46

a Refers to the Supervisory Board
b Refers to the Board of Executive Directors and senior executives
c We report comprehensively on climate-related opportunities and risks in reporting to CDP on data relevant to climate protection.
d Climate-related risks are identified, assessed and managed as part of the general risk management process.

The BASF Group

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 110,000 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. Our portfolio is divided into the Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions segments.

Organization of the BASF Group

We have 11 divisions grouped into six segments:
- **Chemicals:** Petrochemicals, Intermediates
- **Materials:** Performance Materials, Monomers
- **Industrial Solutions:** Dispersions & Pigments, Performance Chemicals
- **Surface Technologies:** Catalysts, Coatings
- **Nutrition & Care:** Care Chemicals, Nutrition & Health
- **Agricultural Solutions:** Agricultural Solutions

We take a differentiated approach to steering our businesses according to market-specific requirements and the competitive environment. We provide a high level of transparency around the results of our segments and show the importance of the Verbund and value chains to our business success. BASF aims to differentiate its businesses from their competitors and establish a high-performance organization to enable BASF to be successful in an increasingly competitive market environment.

In line with BASF's corporate strategy, the operating divisions, service units, the regions and a Corporate Center have formed the cornerstones of the BASF organization since January 1, 2020. We have streamlined our administration, sharpened the roles of services and regions, and simplified procedures and processes. These organizational changes have created the conditions for greater customer proximity, increased competitiveness and profitable growth.

Our divisions bear operational responsibility here and are organized according to sectors or products. They manage our 52 global and regional business units and develop strategies for the 75 strategic business units.

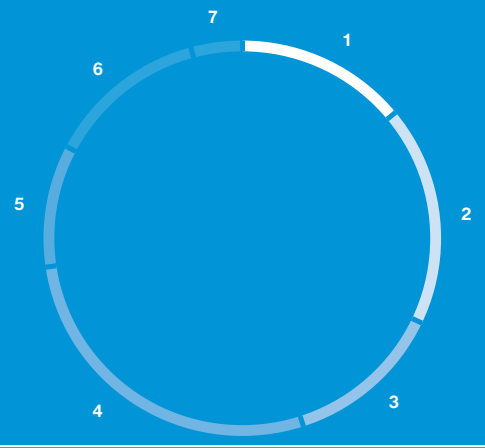
The regional and country units represent BASF locally and support the growth of business units with local proximity to customers. For financial reporting purposes, we organize the regional divisions into four regions: Europe; North America; Asia Pacific; South America / Africa / Middle East.

Together with the development units in our operating divisions, the three global research divisions – Process Research & Chemical Engi-

Structure of BASF

Percentage of total sales in 2020

1	**Chemicals**	– Petrochemicals – Intermediates	14%
2	**Materials**	– Performance Materials – Monomers	18%
3	**Industrial Solutions**	– Dispersions & Pigments – Performance Chemicals	13%
4	**Surface Technologies**	– Catalysts – Coatings	28%
5	**Nutrition & Care**	– Care Chemicals – Nutrition & Health	10%
6	**Agricultural Solutions**	– Agricultural Solutions	13%
7	**Other**		4%



Smart Verbund concept
production, technology, market, digitalization

In around 90 countries
we contribute to our customers' success

Broad portfolio
6 segments, 11 operating divisions, 75 strategic business units

Organizational development
for greater customer proximity, increased competitiveness and profitable growth

neering, Advanced Materials & Systems Research and Bioscience Research – safeguard our innovative capacity and competitiveness.

Five service units provide competitive services for the operating divisions and sites: Global Engineering Services; Global Digital Services; Global Procurement; European Site & Verbund Management; Global Business Services (finance; human resources; environmental protection, health and safety; intellectual property; communications; procurement, supply chain and inhouse consulting services).

Following the bundling of services and resources and the implementation of a wide-ranging digitalization strategy, the number of employees in the Global Business Services unit worldwide will decline by up to 2,000 (from 8,000 currently) by the end of 2022. From 2023 onward, the division expects to achieve annual cost savings of over €200 million.

The Corporate Center units support the Board of Executive Directors in steering the company as a whole. These include central tasks from the following areas: strategy; finance; law, compliance and tax; environmental protection, health and safety; human resources; communications; investor relations and internal audit.

The ongoing Excellence Program is expected to contribute €2 billion to EBITDA annually from the end of 2021 onward compared with baseline 2018, including from the reduction of around 6,000 positions worldwide until the end of 2021. This decrease results from the organizational simplification and from efficiency gains in administration, the service units and the operating divisions. In addition, central, functional and regional structures are being streamlined in connection with portfolio changes.

For more information on the products and services offered by the segments, see from pages 72, 78, 83, 89, 94 and 100 onward

For more information on the segment structure, see the Notes to the Consolidated Financial Statements from page 241 onward

For more information on portfolio changes, see page 50 onward

To increase reporting transparency, the figures for investments accounted for using the equity method were restated in the first quarter of 2020. Some investments are not an integral part of the BASF Group. These include, in particular, the shares in Wintershall Dea GmbH, Kassel/Hamburg, Germany, and Solenis UK International Ltd., London, United Kingdom. Since the first quarter of 2020, these have been classified as purely financial investments and reported separately from the shareholdings that are integral to the main business activities of the BASF Group. One material equity-accounted interest that has been classified as integral is BASF-YPC Company Ltd., Nanjing, China. Income from non-integral companies accounted for using the equity method is no longer presented in the BASF Group's EBIT and EBIT before special items, but under net income from shareholdings. Due to its increased significance, this will be presented as a separate subtotal within income before income taxes and is no longer part of the financial result. Integral and non-integral investments accounted for using the equity method are also presented separately in the balance sheet. The statement of income for 2019 has been restated accordingly.

On September 30, 2020, BASF completed the divestiture of its construction chemicals business to an affiliate of Lone Star, a global private equity firm, as agreed in December 2019.[1] The purchase price on a cash and debt-free basis was €3.17 billion. The Construction Chemicals division was previously reported under the Surface Technologies segment. The divested construction chemicals business had around 7,500 employees and operated production sites and sales offices in more than 60 countries. It generated sales of around €2.6 billion in 2019. The disposal gain and the income after taxes of the construction chemicals business until closing are presented in the income after taxes of BASF Group as a separate item ("Income after taxes from discontinued operations").

For more information on this divestiture, see the Notes to the Consolidated Financial Statements from page 237 onward

1 The construction chemicals business was transferred in two steps, on September 30, 2020, and on November 30, 2020.

Sites and Verbund

BASF has companies in around 90 countries. We operate six Verbund sites and 241 additional production sites worldwide. Our Verbund site in Ludwigshafen, Germany, is the world's largest chemical complex owned by a single company that was developed as an integrated network. This was where the Verbund principle was originally established and continuously optimized. We then implemented it at additional sites. In 2020, we started construction of the first plants at the planned integrated Verbund site in Zhanjiang, China.

The Verbund system is one of BASF's great strengths. We add value by using our resources efficiently. The Production Verbund intelligently links production units and their energy supply so that, for example, the waste heat of one plant provides energy to others. Furthermore, one facility's by-products can serve as feedstocks elsewhere. This not only saves us raw materials and energy, it also avoids emissions, lowers logistics costs and leverages synergies.

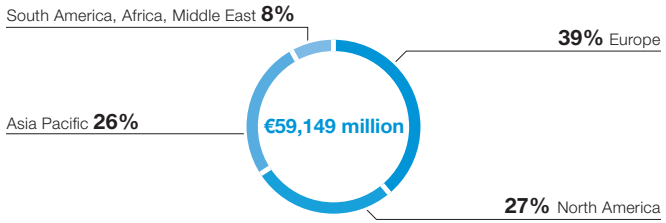
We also make use of the Verbund principle for more than production, applying it for technologies, the market and digitalization as well. Expert knowledge is pooled in our global research divisions.

For more information on the Verbund concept, see basf.com/en/verbund

BASF sites

BASF sales by region 2020

Location of customer



Procurement and sales markets

- **Around 90,000 customers; broad customer portfolio**
- **More than 70,000 suppliers**

BASF supplies products and services to around 90,000 customers[1] from various sectors in almost every country in the world. Our customer portfolio ranges from major global customers and small and medium-sized enterprises to end consumers.

We work with over 70,000 Tier 1 suppliers[2] from different sectors worldwide. They supply us with important raw materials, chemicals, investment goods and consumables, and perform a range of services. Important raw materials (based on volume) include naphtha, liquid gas, natural gas, benzene and caustic soda.

For more information on customers, see page 27 onward; for more information on suppliers, see page 113 onward

BASF sales by industry 2020

Direct customers

>20%	Chemicals and plastics | Transportation
10%–20%	Agriculture | Consumer goods
<10%	Construction | Electronics | Energy and resources | Health and nutrition

Business and competitive environment

BASF's global presence means that it operates in the context of local, regional and global developments and a wide range of conditions. These include:

- Global economic environment
- Legal and political requirements (such as European Union regulations)
- International trade agreements
- Industry standards
- Environmental agreements (such as the E.U. Emissions Trading System)
- Social aspects (such as the U.N. Universal Declaration of Human Rights)

BASF holds one of the top three market positions in around 70% of the business areas in which it is active. Our most important global competitors include Arkema, Bayer, Clariant, Corteva, Covestro, Dow, Dupont, DSM, Evonik, Huntsman, Lanxess, SABIC, Sinopec, Solvay, Sumitomo Chemical, Syngenta, Wanhua and many hundreds of local and regional competitors. We expect competitors from Asia and the Middle East in particular to gain increasing significance in the years ahead.

Corporate legal structure

As the publicly traded parent company of the BASF Group, BASF SE takes a central position: Directly or indirectly, it holds the shares in the companies belonging to the BASF Group, and is also one of the largest operating companies. The majority of Group companies cover a broad spectrum of our business. In the BASF Group Consolidated Financial Statements, 273 companies including BASF SE are fully consolidated. We consolidate nine joint operations on a proportional basis, and account for 25 companies using the equity method.

For more information, see the Notes to the Consolidated Financial Statements from page 233 onward

1 The number of customers refers to all external companies (sold-to parties) that had contracts with the BASF Group in the business year concerned under which sales were generated.
2 BASF considers all direct suppliers of the BASF Group in the business year concerned as Tier 1 suppliers. These are suppliers that provide us with raw materials, investment goods, consumables and services. Suppliers can be natural persons, companies or legal persons under public law.

How We Create Value

The overview provides examples of how we create value for our shareholders, our company, the environment and society. It is modeled on the framework of the International Integrated Reporting Council (IIRC).[1]

INPUTS

We use a wide range of resources to implement our customer-focused strategy.

Financial

Our aim is to ensure solvency, limit financial risks and optimize the cost of capital.

€80.3 billion
Total assets

42.8%
Equity ratio

Innovation

We develop innovative solutions for and with our customers to expand our leading position.

~10,000
R&D employees

€2.1 billion
R&D expenses

Operations

Safety, quality, and reliability are key to excellence in our production and plant operations.

€2.9 billion
Capex

55.0 million MWh
Electricity and steam demand

Environment

We use natural resources to manufacture products and solutions with high value added for our customers.

1.2 MMT
Renewable raw materials purchased

1,728 million m³
Total water usage

Employees

Everything we do is based on the expertise, knowledge, motivation and conduct of our employees.

110,302
Employees around the world

€10.6 billion
Personnel expenses

Partnerships

Trust-based relationships are crucial to our license to operate and our reputation

>250
Cooperations with research institutes

>70,000
Tier 1 suppliers

BUSINESS MODEL

Our corporate purpose:
We create chemistry for a sustainable future

Strategy
Innovation
Sustainability
Operations
Digitalization
Portfolio
People

In focus:
our customers
~90,000 customers from almost all sectors and countries

Segments
Chemicals
Materials
Industrial Solutions
Surface Technologies
Nutrition & Care
Agricultural Solutions

Our core values:
creative, open, responsible, entrepreneurial

Innovative products and solutions
help to use resources more efficiently and overcome global challenges

Comprehensive product portfolio with high synergies
from basic chemicals to high value-added specialty products

Efficient production
thanks to integrated value chains and our Verbund system

Eleven divisions organized into six segments
aligned with value chains, customer needs and market requirements

Global, customer-focused presence
with around 250 production sites worldwide, including six Verbund sites

Differentiated business strategies
from cost leadership to custom system solutions

Effective corporate governance
ensures responsible conduct along the value chain

1 The content of the graphic on pages 24 and 25 been audited within the scope of the relevant sections of the Management's Report in which they appear.

OUTPUTS

We focus on material sustainability topics and evaluate the opportunities and risks of our actions.

Financial

€59.1 billion
Sales

€3.6 billion
EBIT before special items

Innovation

~950
New patents worldwide

€16.7 billion
Sales from Accelerator products

Operations

~45,000
Sales products

6.2 MMT CO_2
avoided by the Verbund and combined heat and power generation

Environment

43.4%
Share of our waste recycled or thermally recovered

80.7%
Cooling water recirculated

Employees

24.3%
Women in leadership positions

82%
Engagement index according to 2020 employee survey

Partnerships

678
Suppliers screened through Together for Sustainability

61
Internal audits on our compliance standards

OUTCOMES

We want to increase our positive contributions, reduce negative impacts and carefully assess conflicting goals[1]

Economic

+

We make positive contributions by

- Driving forward growth, progress and value creation
- Strengthening our customers' competitiveness and innovative strength with products and technologies
- Accelerating the digital transformation of the industry
- Offering our investors an attractive dividend yield

–

Potential negative impacts

- Weaker contributions to growth and value creation due to reduced demand from our customer industries as a result of the coronavirus pandemic
- A weaker share performance on the capital market

We limit negative impacts through

- The disciplined implementation of our corporate strategy
- Active portfolio management
- The acceleration of our Excellence Program
- Systematic cost management
- Reducing the cost of capital

Environmental

We make positive contributions by operating our plants efficiently and creating products that

- Help to use natural resources more efficiently
- Enable climate-smart mobility
- Improve the capabilities of renewable energy
- Reduce emissions and resource consumption

Negative impacts

- The emission of CO_2 and other gases that damage the climate
- The consumption of raw materials and the creation of non-recyclable waste in our production
- The potential misuse of our products

We limit negative impacts through

- Our carbon management
- Our Circular Economy Program
- Sustainable water and energy management
- Our Responsible Care management
- Product stewardship and training

Social

We make positive contributions because we

- Offer products that improve people's quality of life
- Provide attractive jobs, train young people and promote lifelong learning, health and diversity
- Pay taxes and competitive wages and salaries
- Help to solve challenges (for example, COVID-19)

Potential negative impacts

- The risk of our suppliers violating labor, environmental and social standards in the production of raw materials
- Lower demand for employees in some areas as a result of digitalization and efficiency gains

We limit negative impacts through

- Our sustainability-oriented supply chain management
- Projects to improve sustainability in the supply chain
- Our compliance program and our Code of Conduct
- Our training programs for employees

IMPACT

We achieve long-term business success by creating value for our shareholders, our company, the environment and society (see page 43).

1 The outcomes category shows examples of positive contributions as well as negative impacts and the measures we take to mitigate them.

Our Strategy

Corporate Strategy

At BASF, we are passionate about chemistry and our customers. We want to be the world's leading chemical company for our customers, grow profitably and create value for society. Thanks to our expertise, our innovative and entrepreneurial spirit, and the power of our Verbund integration, we make a decisive contribution to changing the world for the better. This is our goal. This is what drives us and what we do best: We create chemistry for a sustainable future.

The world is facing major challenges. Climate change is advancing, the world's population is growing and so is its need for food. More and more people live in cities and the demand for individual mobility is rising. At the same time, natural resources are limited. More than ever before, we need solutions that make sustainable growth possible. Chemistry plays a key role here. It can help to overcome global challenges in almost all areas of life. By combining our expertise with our customers' competence, we can together develop sustainable and profitable solutions.

Our corporate purpose

We create chemistry for a sustainable future

Our innovations, products and technologies help to use natural resources more efficiently, produce enough food for everyone, reduce emissions, enable climate-smart mobility, improve the capabilities of renewable energy, and make buildings more energy efficient, among other things. Our purpose reflects what we do and why we do it: We create chemistry for a sustainable future.

Global trends provide opportunities for growth in the chemical industry

Population growth:
Driven by the emerging markets
+25%
2020 to 2050

Digitalization:
Rapid growth in volume of data
456
zettabytes in 2030

China the largest market:
Share of global chemical market
~50%
by 2030

Climate change:
Required reduction of global greenhouse gas emissions to achieve the 2°C goal
–70%
by 2050
(baseline 1990)

Circular economy:
Non-recycled plastic waste worldwide
~200
million metric tons per year

Electromobility:
Growing demand for battery materials until 2030
~25%
per year

Sources: U.N., IEA, Conversio, UBS Foresight, BASF

We want to continue to grow profitably and make a positive contribution to society and the environment. We see disruptive changes in the chemical industry – like the advance of digitalization, the development of circular economy models or the transformation to climate-neutral production – as an opportunity. We have set ourselves ambitious targets along the entire value chain (see page 32). Our customers and their needs are at the core of our strategy. We want to maintain our leading position in an increasingly competitive environment. To achieve this, we are accelerating our innovation processes and deepening cooperation with our customers. We are systematically aligning our portfolio with growth areas and integrating sustainability into our value chains even more strongly. Our Verbund structure is the basis for efficient, safe and reliable production both now and in the future. We leverage digital technologies to continuously improve processes and customer relationships, for example. We create a working environment that best enables our employees to contribute to BASF's success.

For more information on our strategic action areas, see page 28 onward
For more information on our strategy, see basf.com/strategy

Customer focus

Our customers are our number one priority. BASF supplies products and services to around 90,000 customers[1] from various sectors in almost every country in the world (see page 23). Our customer portfolio ranges from major global customers and small and medium-sized enterprises to end consumers. Our comprehensive product portfolio means that we are active in many value chains and value creation networks. We use various business strategies, which we adapt to the needs of individual industries and markets. These range from cost leadership in basic chemicals to tailored, customer-specific system solutions.

Innovations and tailored solutions

in close partnership with our customers

We want to be our customers' most attractive partner for all challenges that can be solved with chemistry. This is why we continue to drive forward our focus on customers and their needs. We are refining our organizational structure so that our operating divisions can flexibly address specific market requirements and differentiate themselves from the competition (see page 20). In addition, we are simplifying and digitalizing our processes to make the way we work more effective, more efficient and more agile.

We are continuously increasing transparency for our customers and improving our customer service with a range of measures. For instance, we have used the Net Promoter System® since 2019. We are constantly improving our problem-solving skills, product quality and delivery reliability based on customer feedback. In 2020, we also started the global rollout of Salesforce, a new, integrated IT-based customer relationship management system. The user-friendly application helps sales employees deliver even better customer support and simplifies their work.

Above and beyond this, we want to intensify cooperation with our customers and leverage growth potential together with them. For instance, we have created interdisciplinary teams in our business units to even better and more quickly address the needs of our most important customers. Cooperation and innovation are also the focus at our Creation Centers in Ludwigshafen, Germany; Mumbai, India; Shanghai, China; and Yokohama, Japan. These creative centers bring together our comprehensive materials, design, and – in particular – our digital development expertise in high-performance plastics using the latest visualization and collaboration technologies. This enables us to transform our customers' ideas into tailored products and applications even more quickly – everything in one place, from initial inspiration to solution.

Customer awards

We again received awards from a number of satisfied customers in 2020. In North America, for example, BASF was recognized by General Motors (GM) in June as a 2019 Supplier of the Year for the fifteenth time since 2002. The award is presented to suppliers who exceed GM's expectations around quality, execution, innovation and total enterprise cost. GM also honored us with the Overdrive Award for our sustainable construction solutions. BASF products help GM to meet key sustainability targets – such as a smaller carbon footprint and water and energy savings – at two of its plants.

In Europe, the global surface treatments business in our Coatings division, which operates under the Chemetall brand, received the Airbus Supply Chain & Quality Improvement award in February for the sixth time. It acknowledges Chemetall's performance, strong continuous improvement and customer-oriented approach in line with Airbus' targets and expectations.

Ultrasim®: Shorter development times thanks to virtual simulation

Technical progress requires innovative materials. This is why engineering plastics are being used in more and more sectors and applications. They are often significantly lighter than conventional materials, are usually easier to process and offer advantages such as heat and impact resistance or mechanical strength. As a leading manufacturer, BASF not only offers a comprehensive portfolio of high-performance plastics, but also has extensive expertise in computer-aided engineering (CAE). Ultrasim, our virtual simulation tool, covers the entire process chain – from the selection of suitable materials and the development of virtual prototypes to the optimal production process for the component. Our customers find out quickly, precisely and reliably how our materials behave in specific applications. This reduces development times and saves costs for complex tests.

For more information on Ultrasim, see basf.com/en/ultrasim

1 The number of customers refers to all external companies (sold-to parties) that had contracts with the BASF Group in the business year concerned under which sales were generated.

In Asia Pacific, we received an award from Godrej Interio, India's leading home and commercial furniture brand, in the category "Best Overall Performance" in July. BASF has supplied Godrej with Elastoflex and Ultramid products since 2008. The award particularly recognizes delivery reliability and innovation. In September, this was followed by the CIIF New Materials Award, presented by the organizers of the China International Industry Fair in Shanghai. The award recognizes BASF for its modification of the intermediate PolyTHF, which is used to produce elastic spandex textile fibers. The next generation offers our customers easier processing and products with improved stretch characteristics.

In Brazil, we received several awards in 2020. BASF's Coatings division markets a broad portfolio of decorative paints here under the Suvinil brand. The national association of construction material traders (Associação Nacional dos Comerciantes de Material de Construção) selected Suvinil as the most popular brand for wall, ceiling and exterior paints with the Anamaco award in the wholesale category. The award was based on a survey of more than 1,600 traders conducted by the industry association. The market research institute Instituto Melhores Empresas em Satisfação do Cliente (MESC) also confirmed that Suvinil customers are satisfied customers. According to a poll of over 250 companies and 41,000 customers conducted by the institute, Suvinil is one of the brands with the highest customer satisfaction ratings in the construction and decorative materials segment.

Quality management

Our customers' satisfaction is the basis for our success, which is why quality management is of vital significance for BASF. We strive to continually improve processes and products. This is also reflected in our Global Quality Policy. The majority of our production sites and business units are certified according to ISO 90011. In addition, we also meet industry and customer-specific quality requirements such as IATF 16949 certification for the automotive industry.

Our strategic action areas

Innovation is the bedrock of our success. BASF is an innovation leader in the chemical industry, with around 10,000 employees in research and development and R&D spending of around €2.1 billion (see page 35). We continue to build on these strengths by bringing research and development closer together and making our customers' demands a greater part of our innovation process. We involve them at an earlier stage and are expanding our partnerships with customers and external partners. Our balanced innovation pipeline lays the foundation for future growth: We are working intensively on pioneering product, process and business model innovations, for example in chemical recycling, battery technologies, the low-carbon production of basic chemicals and the digitalization of agriculture. At the same time, we are driving forward incremental product improvements in all business units that offer our customers sustainability and/or cost advantages, such as in lightweight construction for the automotive industry and energy-efficient building materials.

A key driver here is **sustainability**. We want to create value for the environment, society and business with our products, solutions and technologies. We pledged our commitment to sustainability in 1994 and since then, have systematically aligned our actions with the principles of sustainability. We want to further cement our position as a thought leader in sustainability, which is why we are increasing the relevance of sustainability in our steering processes and business models (see page 42). This establishes us as a key partner supporting our customers, opens up new growth areas and secures the long-term success of our company. Our approach covers the entire value chain – from responsible procurement (see page 113) and safety and resource efficiency in production (see page 121) to sustainable solutions for our customers (see page 35). We have already almost halved our carbon emissions since 1990 while simultaneously doubling sales product volumes. We want to achieve CO_2-neutral growth until 2030 with our ambitious carbon management (see page 135). In addition, we have set ourselves the target of significantly increasing sales of products that make a substantial sustainability contribution in the value chain (Accelerator products) to €22 billion by 2025 (see page 45). A particular focus is the circular economy. For instance, we want to increase the use of recycled raw materials in production, close materials cycles with innovations and develop new, circular business models (see page 30).

Our core business is the **production** and processing of chemicals. Our strength here lies – both now and in the future – in the Verbund and its integrated value chains. The Verbund offers us many technological, market, production-related and digital advantages. Our comprehensive product portfolio, which ranges from basic chemicals to custom system solutions, enables us to meet the increasingly diverse needs of our customers with a differentiated offering. This is complemented by our global presence and our many decades of experience, which have allowed us to develop an in-depth understanding of the needs and landscape of local markets. At the same time, value chains in integrated Verbund structures can be steered efficiently to conserve resources and optimize CO_2. Thanks to our Verbund structures, we were able to avoid 6.2 million metric tons of CO_2 globally in 2020 (see page 133). We want to invest around €22.9 billion worldwide between now and 2025 to expand capacities based on market demand and to increase the availability, efficiency and flexibility of our plants. Our aim here is to be close to our customers and to grow with them.

Digitalization is an integral part of our business. We want to significantly improve the availability and quality of our process data. To achieve this, we will digitalize processes at more than 420 plants worldwide by 2022. We will systematically analyze this data to further automate processes and in this way, increase efficiency, for example with predictive maintenance. In addition, combining internal and external data provides many new opportunities to manage our

businesses more efficiently, improve processes and create value added for our customers. We are already using artificial intelligence to collate data from various sources, for example to accelerate innovation processes, optimize our supply chains and logistics concepts, and to simulate product applications for our customers. The combination of products, services and digital offerings also gives rise to new business models and advantages for our customers, such as in agriculture or 3D printing. We want to leverage this growth potential and seize the opportunities offered by digitalization to the benefit of our customers. To do so, we are making digital technologies and practices an even more integral part of our processes, extensively promoting digital skills among our employees, and cooperating with external partners on specific topics.

The acquisitions and divestitures made in the past few years have oriented our **portfolio** toward innovation-driven growth areas. The acquisition of the integrated polyamide business from Solvay and the purchase of various businesses from Bayer further strengthened our position in engineering plastics and in the agricultural sector. We completed the divestiture of our construction chemicals business to Lone Star in 2020 as planned and aim to close the sale of our pigments business to DIC in the first half of 2021 (see page 50). The Asian market will play a key role in our future growth. With a share of more than 40%, China is already the world's largest chemical market and drives the growth of global chemical production. We expect this share to increase to around 50% by 2030. Our strong innovation, production and sales base in China enables us to respond to the needs of our customers in a differentiated way. To further strengthen our position in this dynamic growth market, we plan to build an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong. Construction of the first plants started in 2020. We are also systematically expanding our battery materials business to serve the fast-growing e-mobility market. We steer our six segments along the value chain. This creates a high level of transparency around our business activities. Our operating divisions drive forward our industry and customer orientation with differentiated strategies.

Our **employees** are key to BASF's success. That is why we believe that it is important to have a working environment that fosters employees' individual talents and enables them and their teams to perform at their best. We are pursuing three action areas to make our high-performance organization even more so: empowerment, differentiation and simplification. We are giving our employees more individual freedom. At the same time, we encourage and promote a leadership culture that empowers our employees to respond to customer needs quickly and efficiently with a solution orientation. We are simplifying our processes and continually refining our organizational structure. Significant parts of the functional services that were previously performed centrally by a total of around 20,000 employees have been integrated into our 11 operating divisions. This and greater entrepreneurial freedom enable our business units to take a differentiated, flexible approach to market requirements with tailored business models. The aim is to increase both customer satisfaction and the profitability of our business. We value diversity in people, opinions and experience as being crucial to creativity and innovation. We embrace bold ideas, help our employees to implement them and learn from setbacks. This is why we foster a feedback culture based on honesty, respect and mutual trust.

The BASF brand

We want BASF to be seen as a leading brand in the chemical industry. Our corporate purpose – We create chemistry for a sustainable future – and our values (see page 31) together form the basis of BASF's brand value proposition. This is connectedness, which embodies one of BASF's core strengths: our Verbund concept. The BASF Verbund is what makes innovative solutions for a sustainable future possible. We want to communicate this worldwide and make it tangible. The claim "We create chemistry," as stated in the BASF logo, helps us embed our solution-oriented strategy and our expertise in the public perception. Wherever our stakeholders encounter our brand, we want to convince them that BASF stands for innovation and sustainability. This builds trust with our customers, contributes to our reputation and to our company value. We regularly measure our brand and communication success. This gives us relevant and meaningful insights into how the BASF brand is perceived among target groups. This enables us to further refine the brand profile and develop strategies and measures to continually improve our brand status.

「Circular economy」

The circular economy model has gained importance in politics, industry and society in recent years. It describes the transition from a linear "take-make-dispose" model to a system of closed loops. We want to actively drive this transition forward and make our value chains, processes, products and business models more circular. By 2030, we want to double our sales of solutions for the circular economy to €17 billion. Sales of circular solutions include products based on renewable or recycled raw materials, that close new material cycles or increase products' resource efficiency or service life. In addition, we aim to process 250,000 metric tons of recycled and waste-based raw materials in our production plants annually from 2025, replacing fossil raw materials.

The core elements of a circular economy include reusing resources, avoiding waste and optimizing product features with respect to the entire product life cycle. BASF's Circular Economy Program focuses on three action areas: increasing the use of recycled and renewable feedstocks, innovative material cycles and new business models for the circular economy, including digital and service-based models.

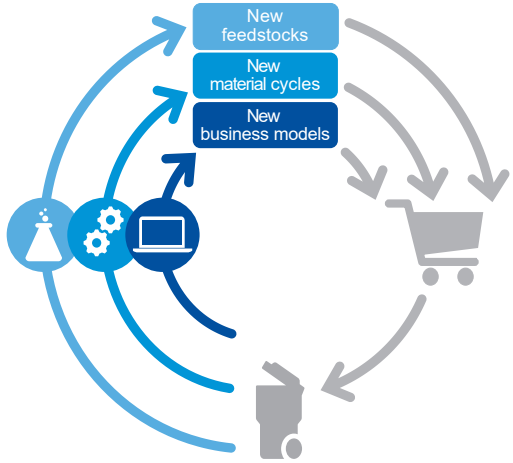
Core elements of the circular economy at BASF

We are driving forward the use of recycled raw materials with projects such as ChemCycling™, in which we use the pyrolysis oil extracted by our technology partners from mixed plastic waste or used tires to produce new products. The project is currently in the scale-up phase. We already have many years' experience in the industrial recycling of mobile emissions catalysts, where we recover precious metals and use them to produce new mobile and process emissions catalysts. We are working on other innovative material cycles in over 20 initiatives. These include our chemical recycling process for used polyurethane foam mattresses and the development of plastic additives to improve the quality of mechanically recycled plastics. In addition to these projects, we established a Group-wide co-funding program for circular economy projects. It supports our employees in developing new business models for the circular economy – from the initial idea to market launch. The program aims to create additional products and solutions that close loops, establish new loops or extend the life of a product.

Using plastics responsibly

Our circular feedstock target is part of our commitment to the Ellen MacArthur Foundation's New Plastics Economy initiative. This explores the design, use and reuse of plastics in the transition toward a circular economy. BASF has been a member of the non-profit organization since 2017 and is working on various cooperative projects together with other members. In 2020, we were in continual contact with the Ellen MacArthur Foundation on topics such as our target on the use of recycled raw materials or the mass balance approach. We support the responsible use of plastics and are a co-founder and active member of the Alliance to End Plastic Waste (AEPW) to help effectively reduce plastic pollution around the world.

Core elements of the circular economy at BASF



For more information on the ChemCycling™ project, see page 73
For more information on recycled feedstocks, see page 118
For more information on the Alliance to End Plastic Waste, see page 138
For more information on the circular economy at BASF, see basf.com/circular-economy

Our values and global standards

How we act is critical to the successful implementation of our strategy and how our stakeholders perceive us. This is what our four core values represent: creative, open, responsible, entrepreneurial. They guide our actions and define how we want to work together – as a team, with our customers and our partners.

Our values and standards

are binding for all employees and provide the framework for our actions

Creative: We make great products and solutions for our customers. This is why we embrace bold ideas and give them space to grow. We act with optimism and inspire one another.

Open: We value diversity, in people, opinions and experience. This is why we foster feedback based on honesty, respect and mutual trust. We learn from setbacks.

Responsible: We value the health and safety of people above all else. We make sustainability part of every decision. We are committed to strict compliance and environmental standards.

Entrepreneurial: We focus on our customers, as individuals and as a company. We seize opportunities and think ahead. We take ownership and embrace personal accountability.

Our standards fulfill and in some cases, exceed existing laws and regulations and take internationally recognized principles into account. We respect and promote:

- The 10 principles of the U.N. Global Compact
- The Universal Declaration of Human Rights and the two U.N. Human Rights Covenants
- The core labor standards of the ILO and the Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy (MNE Declaration)
- The OECD Guidelines for Multinational Enterprises
- The Responsible Care® Global Charter
- The German Corporate Governance Code

We stipulate rules for our employees with standards that apply throughout the Group. We set ourselves ambitious goals with voluntary commitments and monitor our performance in terms of environmental protection, health and safety using our Responsible Care Management System. We mainly approach our adherence to international labor and social standards using three elements: the Compliance Program including our Code of Conduct and compliance hotlines, close dialog with our stakeholders, and the global management process to respect international labor norms. Our business partners are expected to comply with prevailing laws and regulations and to align their actions with internationally recognized principles. We have established appropriate monitoring systems to ensure this.

For more information on responsible conduct along the value chain, see page 110 onward
For more information on corporate governance and compliance, see page 167 onward

Our targets

Business success tomorrow means creating value for the environment, society and business. That is why we have set ourselves ambitious global targets along our entire value chain and the three dimensions of sustainability. We report transparently on our target achievement so that our customers, investors, employees and other stakeholders can track our progress.

We want to grow faster than the market, further increase our profitability, achieve a return on capital employed (ROCE) considerably above the cost of capital percentage and increase the dividend per share every year based on a strong free cash flow. In addition to these financial targets, we pursue broad sustainability targets. For example, we have resolved to limit total greenhouse gas emissions from our production sites and our energy purchases to the 2018 level while growing production volumes. We want to strengthen the sustainability focus of our product portfolio and significantly increase sales of Accelerator products. We also strive to strengthen sustainability in our supply chains and use natural resources responsibly. We want to further improve safety in production. In addition, we aim to promote diversity within the company and create a working environment in which our employees feel that they can thrive and perform at their best.

The objective of these targets is to steer our business into a sustainable future, and at the same time, contribute to the implementation of the United Nations' Sustainable Development Goals (SDGs) (see page 42). We are focusing on issues where we as a company can make a significant contribution, such as climate protection, sustainable consumption and production, and fighting hunger.

Status of Target Achievement in 2020

Profitable growth	Target	2020 status	SDG[1]
Achieve a **return on capital employed (ROCE)** considerably above the **cost of capital percentage** every year For more information, see page 56	>9%	1.7%	8, 9
Grow **sales volumes faster** than **global chemical production** every year For more information, see page 56	>–0.4%	–0.5%	8, 9
Increase **EBITDA before special items** by **3%–5%** per year For more information, see page 58 onward	3%–5%	–10.7%	8, 9
Increase the **dividend per share** every year based on a strong **free cash flow** For more information, see page 13	>€3.30	€3.30[2]	8, 9

Effective climate protection	Target	2020 status	SDG
Grow **CO_2-neutrally** until 2030 (Development of carbon emissions compared with baseline 2018) For more information, see page 130 onward	≤21.9 MMT	20.8 MMT	13

Sustainable product portfolio	Target	2020 status	SDG
Achieve **€22 billion** in **Accelerator sales** by 2025 For more information, see page 45 onward	€22.0 billion	€16.7 billion	2, 6, 12, 13

Responsible procurement	Target	2020 status	SDG
Cover **90%** of our relevant spend with **sustainability evaluations** by 2025	90%	80%	
Have **80%** of our suppliers **improve** their **sustainability performance** upon re-evaluation For more information, see page 113	80%	68%	8, 12

Resource efficiency and safe production	Target	2020 status	SDG
Reduce worldwide **process safety incidents** per 200,000 working hours to **≤0.1** by 2025 For more information, see page 123	≤0.1	0.3	6, 8
Reduce the worldwide **lost-time injury rate** per 200,000 working hours to **≤0.1** by 2025 For more information, see page 123	≤0.1	0.3	8
Introduce **sustainable water management** at our **production sites in water stress areas** and at our **Verbund sites** by 2030 For more information, see page 139	100%	46.2%	6, 12

Employee engagement and diversity	Target	2020 status	SDG
Increase the proportion of **women in leadership positions** with disciplinary responsibility to **30%** by 2030 For more information, see page 146 onward	30%	24.3%	5
More than **80%** of our **employees** feel that at BASF, they can **thrive** and **perform at their best** For more information, see page 145	>80%	82%	8

Most important key performance indicators

1 For more information on the Sustainable Development Goals (SDGs), see page 42 and sustainabledevelopment.un.org
2 Dividend proposed by the Board of Executive Directors

Value-Based Management

A company can only create value in the long term if it generates earnings that exceed the cost of the capital employed. This is why we encourage and support all employees in thinking and acting entrepreneurially in line with our value-based management concept. Our key financial management indicator is the return on capital employed (ROCE). Based on our corporate strategy and the global targets derived from this, we have used CO_2-neutral growth and Accelerator sales as additional key performance indicators since January 1, 2020. These are the BASF Group's most important nonfinancial key performance indicators.

The BASF Group's steering concept

We follow a value-oriented steering concept with our financial targets. We use the return on capital employed (ROCE) for operational steering as a key target and management indicator for the BASF Group, its operating divisions and business units. As stated in our strategic goals, we aim to achieve a ROCE considerably above the cost of capital percentage every year. With ROCE, the same logic and data is used for internal management, external communication with the capital markets and variable compensation. This improves the consistency of the indicators used for BASF's value-based management with variable compensation and pension systems, and our shareholders' objectives.

As part of our corporate strategy and the global targets derived from this, we have also used CO_2-neutral growth and Accelerator sales as the most important nonfinancial key performance indicators since the 2020 business year. Two targets are based on these indicators: sustainability-oriented portfolio management with our Sustainable Solution Steering method and CO_2-neutral growth.

Calculating ROCE and cost of capital

ROCE is calculated as the EBIT of the segments as a percentage of the average cost of capital basis at each month-end.

To calculate the **EBIT of the segments**, we take the BASF Group's EBIT and deduct the EBIT of activities recognized under Other, which are not allocated to the divisions.

The **cost of capital basis** consists of the operating assets of the segments and is calculated using the month-end figures. Operating assets comprise the current and noncurrent asset items of the segments. These include tangible and intangible fixed assets, integral investments accounted for using the equity method, inventories, trade accounts receivable, other receivables and other assets generated by core business activities and, where appropriate, the assets of disposal groups. The cost of capital basis also includes customer and supplier financing.

The **cost of capital percentage**, which we have integrated into our ROCE target as a comparative figure, is determined using the weighted cost of capital from equity and borrowing costs (weighted average cost of capital, WACC). To calculate a pre-tax figure similar to EBIT, it is adjusted using the projected tax rate for the BASF Group for the business year. In addition, the projected net expense of Other is already provided for by an adjustment to the cost of capital percentage. The cost of equity is ascertained using the capital asset pricing model. Borrowing costs are determined based on the financing costs of the BASF Group. The cost of capital percentage for 2021 is 9% (2020: 9%).

Calculation of the indicator "CO_2-neutral growth until 2030"

We calculate the indicator CO_2-neutral growth on the basis of CO_2 emissions, which are the sum of direct emissions from production processes and the generation of steam and electricity, as well as indirect emissions from the purchase of energy. Direct emissions from the generation of energy for third parties are not considered here. Relevant emissions include other greenhouse gases according to the Greenhouse Gas Protocol, which are converted into CO_2 equivalents. We aim to grow CO_2-neutrally until 2030 compared with baseline 2018.

For more information on CO_2-neutral growth, see page 130 onward

Calculation of Accelerator sales[1]

Accelerator sales refer to sales generated by the BASF Group from products in our strategic portfolio to third parties in the business year concerned. As part of our corporate strategy, we set ourselves the global target of achieving €22 billion in Accelerator sales by 2025.

For more information on sustainability-oriented portfolio management, see page 45 onward

Value-based management throughout the company

An important part of our value management is the target agreement process, which aligns individual employee targets with BASF's targets. As of 2019, the most important financial performance indicator in the operating units is ROCE. The other units' contribution to value is also assessed according to effectiveness and efficiency on the basis of quality and cost targets. To assess this, we use metrics such as BASF's internal service score in the service and research units.

We use **ROCE** as the BASF Group's most important financial key performance indicator for measuring economic success as well as for steering the BASF Group and its operating units. EBIT before special items and capex (capital expenditure) are key performance indicators for BASF that have a direct impact on ROCE and as such, support its management.

– **EBIT before special items** is used to steer profitability at Group and segment level. This is calculated by adjusting the EBIT reported in the Consolidated Financial Statements for special items, making it especially suitable for assessing economic

1 The definition and further information can be found in the Sustainable Solution Steering manual at basf.com/en/sustainable-solution-steering

development over time. **Special items** arise from the integration of acquired businesses, restructuring measures, certain impairments, gains or losses resulting from divestitures and sales of shareholdings, and other expenses and income that arise outside of ordinary business activities.

– **Capital expenditures (capex)** comprise additions to property, plant and equipment excluding additions from acquisitions, IT investments, restoration obligations and right-of-use assets arising from leases. It is used to manage capital employed in the BASF Group. Capex is not just relevant to ROCE management, but also supports our long-term goal of increasing our dividend each year based on a strong free cash flow.

Furthermore, we comment on and forecast **sales** at Group and segment level in our financial reporting as a significant driver for EBIT before special items and thus ROCE.

For more information on the development of these indicators, see Results of Operations from page 56 onward

Innovation

Supplying a fast-growing global population with food, energy and clean water, making the best use of limited natural resources and protecting our climate are among the greatest challenges of our time. Innovations based on chemistry play a pivotal role in overcoming these. New, resource-efficient solutions and business models are needed to decouple growth from the consumption of finite resources. Together with our customers from almost all sectors, we are working on innovative processes, technologies and products for a sustainable future. This is how we ensure our long-term business success and that of our customers.

Innovation has always been the key to BASF's success, especially in a challenging market environment. The knowledge and skills of our highly qualified employees is our most valuable resource here and the source of our innovative strength. We had approximately 10,000 employees involved in research and development worldwide in 2020.

Our three global research divisions are run from our key regions – Europe, Asia Pacific and North America: Process Research & Chemical Engineering (Ludwigshafen, Germany); Advanced Materials & Systems Research (Shanghai, China); and Bioscience Research (Research Triangle Park, North Carolina). Together with the development units in our operating divisions, they form the core of our global Know-How Verbund. BASF New Business GmbH and BASF Venture Capital GmbH supplement this network with the task of developing new technologies, attractive markets and new business models for BASF.

In 2020, we generated sales of around €10 billion with products launched on the market in the past five years that stemmed from research and development activities. In the long term, we aim to continue significantly increasing sales and earnings with new and improved products – especially with Accelerator products, which make a substantial sustainability contribution in the value chain.

Employees in research and development worldwide

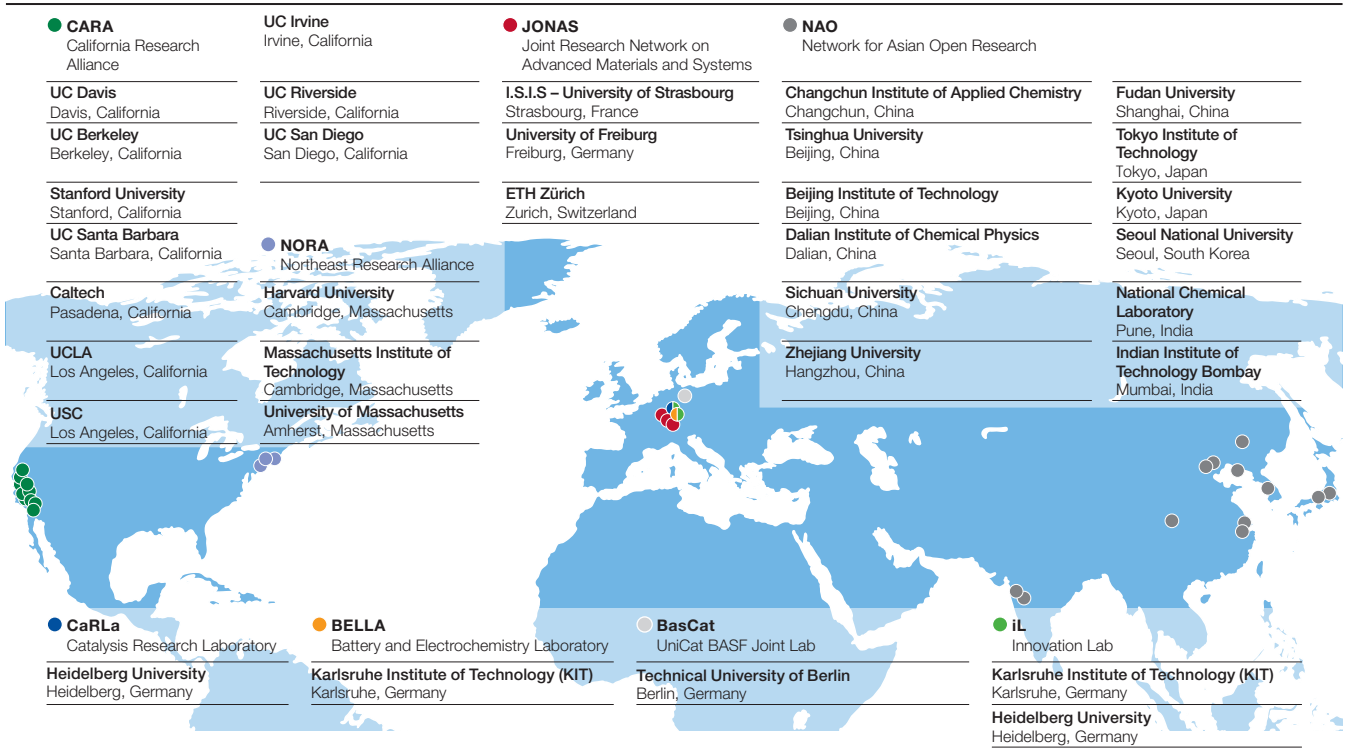
~10,000

Global network

- **Close cooperation with universities, research institutes and companies**
- **Academic Research Alliances bundle partnerships by topic and region**

Our global network of outstanding universities, research institutes and companies forms an important part of our Know-How Verbund. It gives us direct access to external scientific expertise, talented minds from various disciplines as well as new technologies, and helps us to quickly develop targeted, marketable innovations,

Global network: eight Academic Research Alliances



strengthen our portfolio with creative new projects, and in this way, reach our growth targets.

Our eight academic research alliances bundle partnerships with several research groups in a region or with a specific research focus.

Eight Academic Research Alliances

to bundle cooperation

The Northeast Research Alliance (NORA) and the California Research Alliance (CARA) are located in the United States. NORA focuses on materials science and biosciences, catalysis research, digitalization and cooperation with startups. The computer models developed together with our partners suggest new synthesis pathways for molecules and enable us to better predict molecular properties, for example for selecting test substances for crop protection products. Big data from BASF and novel algorithms were used to optimize these models. Teams at the interdisciplinary CARA research center are working on new functional materials, formulations, digital methods, catalysis, chemical synthesis, and in engineering sciences and biosciences. As part of this cooperative venture, BASF researchers and partners are investigating catalyst nanoparticles made of palladium and platinum, among other things. With the help of computer-based calculations, the team developed a completely new understanding of how catalysts work, enabling us to produce new, more powerful catalysts.

The Joint Research Network on Advanced Materials and Systems (JONAS) research center is active in Europe. Research here concentrates on supramolecular chemistry, polymer chemistry and the incubation of sustainable technologies. Biopolymer synthesis and research into the full biodegradability of biopolymers in various biospheres have been a focus area of BASF's research for many years. In cooperation with ETH Zürich, we have developed an analysis tool that can be used to evaluate biodegradable polymers with respect to both their technical properties and stakeholder acceptance at an early stage of our innovation process. The aim is to concentrate on the development of such sustainable, biodegradable polymers.

At the Network for Asian Open Research (NAO) in the Asia Pacific region, research focuses on polymer and colloid chemistry, catalysis, machine learning and smart manufacturing.

We are working on innovative components and materials for electrochemical energy storage with the Karlsruhe Institute of Technology (KIT) at the Battery and Electrochemistry Laboratory (BELLA). At the joint Catalysis Research Laboratory (CaRLa), BASF is researching homogeneous catalysis in cooperation with the University of Heidelberg. Researchers there have discovered a new approach to using CO_2 as a chemical feedstock. They identified the catalysts and process conditions to produce sodium acrylate from ethylene and CO_2, a crucial step toward scaling the process for industrial use. BasCat is a joint laboratory operated by the UniCat cluster of excellence and BASF at the Technical University of Berlin, where new heterogenous catalysis concepts are being explored together with the Fritz Haber Institute of the Max Planck Society. The iL (Innovation Lab) in Heidelberg, Germany, focuses on functional printing, printed sensors and IoT (internet of things) applications.

Our eight Academic Research Alliances are complemented by cooperations [with around 250 universities and research institutes] as well as collaborations with a large number of companies.

For more information on our collaboration initiatives, see basf.com/innovate-with-us

Strategic focus

- **Close cooperation between research and business units**
- **Strong customer focus**
- **Further development of our innovation strategies**

Research and development **expenses** amounted to €2,086 million in 2020 (2019: €2,158 million). The operating divisions accounted for 82% of total research and development expenses in 2020. The remaining 18% related to cross-divisional corporate research focusing on long-term topics of strategic importance to the BASF Group.

As part of our corporate strategy, we combined research and development at an organizational level, making it better aligned with the needs of our customers. Our aim is to continue to shorten the time to market and accelerate the company's organic growth. A strong customer focus, digitalization, creativity, efficiency and collaboration with external partners are among the most important success factors here. In order to bring promising ideas to market as quickly as possible, we regularly assess our research projects using a multistep process and prioritize our focus areas accordingly.

Our success factors

Customer focus, digitalization, creativity, efficiency and collaboration with external partners

Our cross-divisional corporate research remains closely aligned with the requirements of our operating divisions and allows space to review creative research approaches quickly and in an agile way. We strengthen existing and continually develop new, key technologies that are of central significance for our operating divisions, such as polymer technologies, catalyst processes or biotechnological methods.

We are fine-tuning our innovation strategies in all of our business areas to ensure a balanced portfolio of incremental and disruptive innovation, as well as of process, product and business models.

We have also identified additional, far-sighted topics that go above and beyond the current focus areas of our divisions. The aim is to use these to leverage new business opportunities within the next few years. In addition, we are working on overarching projects with a high technological, social or regulatory relevance. For instance, one global research and development program, the Carbon Management R&D Program, is focusing on the underlying energy-intensive production processes for basic chemicals. These basic chemicals account for around 70% of the CO_2 emissions produced by the European chemical industry.[1] The program covers topics such as the development of new catalysts for dry reforming methane with CO_2 to produce syngas, and using methane pyrolysis to produce hydrogen from natural gas or biogas.

Our global research and development presence is vital to our success. In Asia in particular, we want to continue advancing our research and development activities with a focus on growth in regional markets. A stronger presence outside Europe creates new opportunities for developing and expanding customer relationships and scientific collaborations as well as for gaining access to talented employees. This strengthens our Research and Development Verbund and makes BASF an even more attractive partner and employer. The Ludwigshafen site in Germany is and will remain the largest in our Research Verbund. This was once again underlined with the investment in a combined laboratory building for cleanroom and elemental analysis. The new building is scheduled to open in 2022 and will enable us to continue to drive forward Analytics 4.0 with innovative digitalization and automation solutions.

The number and quality of our patents also attest to our power of innovation and long-term competitiveness. In 2020, we filed around 950 new patents worldwide. The Patent Asset Index, a method that compares patent portfolios, once again ranked us among the leading companies in the chemical industry in 2020.

For a multiyear overview of research and development expenditures, see the Ten-Year Summary on page 314

Research focus areas – examples

- **Innovative recycling method for lithium-ion batteries**
- **Sustainable fungal disease control**
- **Solvent-free polyurethane system for synthetic leather**

Our focus areas in research are 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
– Quality of life

Recycling lithium-ion batteries
– Recovery of high-purity lithium
– High yields

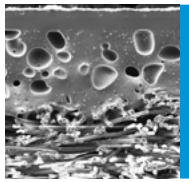
Employees from the Process Research & Chemical Engineering research division in Ludwigshafen, Germany, are developing a new chemical process to recycle lithium-ion batteries. It enables the lithium contained in the battery to be recovered in high purity and with high yields. The batteries are first disassembled and shredded, which creates a substance known as "black mass." This contains valuable resources such as lithium, cobalt and nickel. In BASF's new process, lithium is extracted directly from the black mass as lithium hydroxide, not initially as lithium carbonate like in other processes. After purification to battery quality, with foreign ions removed to trace level, the lithium hydroxide can be used directly to produce cathode active materials. The process avoids waste and has lower CO_2 emissions and energy costs than existing methods. The team successfully completed the first pilot tests in 2020 and are currently designing a pilot plant.

1 Sources: JRC (Energy efficiency and GHG emissions: Prospective scenarios for the Chemical and Petrochemical Industry 2017, Boulamanti A., Moya J.A.); DECHEMA Technology Study (Low carbon energy and feedstock for the European chemical Industry, 2017)

Revysol®

- Fungicide protects key crops against fungal diseases
- Higher yield

Triazole fungicides are crucial to fungal disease control in key crops such as wheat, corn (maize) and rice. Developing a new, sustainable active ingredient in this class of fungicides requires new approaches to research and development and the use of cutting-edge scientific tools to overcome increasing resistances and meet high regulatory requirements. No new triazole fungicide has been registered for more than 10 years. An interdisciplinary team from the research division Bioscience Research and the Agricultural Solutions segment adopted a new research approach to test and optimize the biological efficacy and the toxicological parameters of triazole fungicides at an early stage of development. Thousands of compounds were designed, synthesized and tested using 3D modeling. Today, BASF's Revysol® fungicide offers farmers around the world an effective, innovative crop protection product that protects their crops against fungal diseases and increases their yield. In 2020, the team won BASF's internal innovation award for their work.



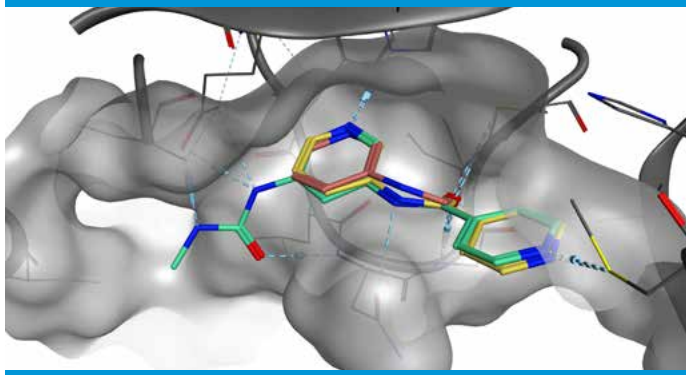
Haptex®

- Solvent-free polyurethane solution for synthetic leather
- Simplified production process

Haptex®, a solvent-free polyurethane system for synthetic leather, was developed by a team from the Advanced Materials & Systems Research research division and the Performance Materials division. Until now, polyurethane resin for synthetic leather has mainly been produced using the solvent dimethylformamide. BASF researchers have now succeeded in modifying the polyurethane formulation so that synthetic leather can be produced without organo-tin catalysts or organic solvents. Thanks to its optimized formulation, Haptex® is also low-emission and well compatible with water-based top layers in synthetic leather. Custom Haptex® synthetic leather grades do not yellow, are chemically resistant, very soft and the surface can be structured using embossing techniques. In cooperation with our customers, our experts also simplified the complex production process. Its many customizable properties mean that our customers can use Haptex® for a wide range of synthetic leather applications in industries such as furniture, automotive, footwear, sporting equipment, clothing and accessories.

For more information on research and development, see basf.com/innovations

BASF supports search for active ingredients to combat the SARS-CoV-2 coronavirus

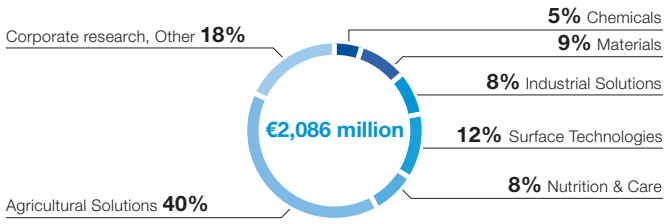


In 2020, BASF experts supported the search for improved derivatives of active ingredients to combat the SARS-CoV-2 coronavirus and provided academic working groups with free access to substances from its compound library, comprising several million entries. Our researchers were additionally involved in the global search for a substance that inhibits what is known as the viral main protease, an essential enzyme of the virus. This inhibitor aims to stop the virus from multiplying in the human body. Using an internally developed computer program and the supercomputer Quriosity, our researchers were able to identify and optimize numerous new molecules. With the help of the supercomputer, BASF also tested around 1.2 billion synthetically producible compounds for their potential to inhibit the main protease of the SARS-CoV-2 virus. BASF does not develop or produce its own vaccine. We are involved in numerous development projects to treat or prevent COVID-19 with our pharmaceutical ingredients.

For more information on our aid measures during the coronavirus pandemic, see page 49

Innovations in the segments – examples

Research and development expenses by segment 2020



Chemicals

BASF's **Styrodur® Hybrid** is the next generation of the green insulation boards made from extruded polystyrene for customers in the construction industry. The hybrid version has vertical grooves on one side to bond better with the concrete. The simpler and cleaner processing leads to considerable time and cost savings in construction, for example by eliminating the need for full-surface adhesion. These advantages are in addition to the general benefits offered by Styrodur, such as high compressive strength, low moisture absorption, and excellent thermal insulation properties, which play a significant role in reducing CO_2 emissions and cutting heating costs.

Styrodur® Hybrid
- Insulation board with excellent thermal insulation properties
- Reduces CO_2 emissions and cuts heating costs

In 2020, BASF launched **OASE® sulfexx™** – a new, energy-efficient amine gas treatment technology developed in cooperation with ExxonMobil Catalysts and Licensing LLC. The new OASE® sulfexx™ branded technology helps refiners and gas processors to meet their sulfur removal targets while reducing their carbon footprint. It ensures the highly selective removal of hydrogen sulfide (H_2S) from gas streams while minimizing carbon dioxide (CO_2) co-absorption. This provides a competitive advantage by increasing plant capacity and lowering investment and production costs.

OASE® sulfexx™
- Energy-efficient amine gas treatment technology
- Highly selective removal of hydrogen sulfide (H_2S)

Materials

Elastollan®
- New generation of recyclable bicycle tubes based on Elastollan®
- Around 40% lighter than alternatives on the market

Together with our partner Schwalbe, we have developed a new generation of bicycle tubes based on the thermoplastic polyurethane (TPU) **Elastollan®**. The new Aerothan bicycle tube offers exceptional performance, puncture resistance and stable handling thanks to the special mechanical properties of Elastollan®. It is around 40% lighter than the established alternatives on the market, is easy to assemble and has a small packing size. Another advantage of the Aerothan bicycle tubes is that they are recyclable. They are made entirely of thermoplastic polyurethane and can be returned to the manufacturer, easily and free of charge, via the tube recycling program. The material of the old tubes is processed and then reused as sealing or insulating material.

BASF's new additive for the asphalt industry, **B2Last®**, has been designed for sustainable road construction. It extends pavement life while cutting CO_2 emissions along the production chain. B2Last® meets additional health and safety requirements by enabling asphalt to be produced and processed at significantly lower process temperatures. The innovative additive enables faster completion times and reduces emissions, improving the carbon footprint and making roads more durable.

Industrial Solutions

Demand for biocide-free products with high scrub resistance and low levels of volatile organic compounds (VOC) has become a driving force in the European market for water-based interior paints in recent years. For 20 years, the market has been dominated by ethylene vinyl acetate dispersions, which cannot be used in biocide-free paints. BASF offers an attractive alternative: **Acronal® 6292**. Acronal® 6292 is a styrene-acrylate binder that makes it possible to produce environmentally friendly, biocide-free and low-VOC paints. This has enabled BASF to successfully open up a new market segment that addresses customers' requirements around avoiding allergic reactions while maintaining the same product properties.

BASF and IntelliSense.io, a leading industrial artificial intelligence (AI) company, have combined their expertise in mineral processing, ore beneficiation chemistry and industrial AI technology. The joint offering is called the **BASF Intelligent Mine powered by IntelliSense.io** and delivers AI solutions embedded with BASF's mineral processing and chemical expertise. The solution helps customers to make their mine operations more efficient, sustainable and safe, while offering a real-time decision-making platform. Each mining process, such as grinding, thickening, flotation and pumping, is supported by an Optimization as a Service application that predicts and simulates future performance, generating process-specific recommendations for optimization. This enables customers to realize efficiency gains across the entire value chain.

Surface Technologies

The **Fourtune™ FCC catalyst** is the latest addition to the refining catalysts portfolio. It is based on BASF's Multiple Framework Topology technology. Fourtune has been optimized to deliver superior butylene over propylene selectivity while maintaining catalyst activity and performance. The technology provides an answer to the increased demand for octane since today's tighter sulfur regulations often require post treatment on the gasoline stream. This can negatively impact the octane pool. The higher butylene selectivity enables refineries to optimize gasoline octane and with it, their profitability.

Glasurit® 100 Line and R-M® AGILIS

- Waterborne basecoat technology
- Reduces volatile organic compounds (VOC)

With **Glasurit® 100 Line** and **R-M® AGILIS**, BASF has introduced the most advanced waterborne basecoat technology for refinish coatings, offering outstanding efficiency and environmental advantages. The focus in product development was on sustainability, with the result that VOC levels are consistently below 250g/l. This is the lowest VOC level on the market, making the new product line the eco-friendliest automotive refinish coatings available. The innovative formulation optimizes the processing properties for fast and efficient application, enabling customers to cut process times by up to 35%. Another 20% can be saved from the reduction in material consumption. This allows body shops to reduce their CO_2 emissions through faster application and shorter drying cycles. At the same time, they can increase profitability and improve their environmental footprint.

Nutrition & Care

Together with other quality ingredients from the BASF Home Care and Industrial & Institutional Cleaning portfolio, the cellulase **Lavergy® C Bright 100 L** harnesses the combined power of different technologies to achieve a sustainable, performance-differentiated solution. Lavergy® C Bright 100 L can be combined with other selective ingredients to prevent fabrics from graying. Whether whites or colors, cotton or synthetic fibers – clothes look like new even after multiple washes. Lavergy® C Bright 100 L also meets the criteria for various ecolabeling systems including EU Ecolabel and Blue Angel. Excellent cleaning performance and good environmental compatibility, as well as suitability for use with many types of fabric are the hallmarks of BASF's one-fits-all solution.

BASF has launched the new fragrance **Isobionics® Santalol**, an alternative to sandalwood oil. Isobionics® Santalol is produced on a biotechnological basis from renewable raw materials and is 100% free of endangered sandalwood. Our fermentation technology ensures consistent high quality, effective production and year-round availability. Isobionics® Santalol resembles the floral heart of sandalwood oil and is particularly suitable for use in perfumes and exclusive personal care products thanks to its woody odor profile.

Agricultural Solutions

We leverage the potential of digitalization in agriculture to help farmers grow their business profitably and reduce their environmental footprint. Launched in 2020, the new outcome-based business model **xarvio® HEALTHY FIELDS** provides a tailored, optimized field and season-specific crop protection strategy. By measuring and classifying externally induced plant stress, automatically defining buffer zones and recording biodiversity on and off arable land, it guarantees plant health and enables farmers to achieve agreed yield forecasts. This way, we respond to modern farming challenges, requirements by society and political action plans and contribute to more sustainable farming.

In 2020, xarvio® HEALTHY FIELDS received the Crop Science Award, one of the most important and renowned awards in the agricultural industry worldwide, for the "Best Innovation in Digital Farming Technology."

Wheat is one of the most produced crops in the world and demand continues to increase based on the growing world population. Our agricultural innovations for wheat production contribute to food security, which will help to reach the U.N. Sustainable Development Goals (SDGs). Our R&D pipeline comprises solutions that help farmers to achieve better yield – balancing the needs of the environment, society and agriculture.

In 2020, we received the first registration worldwide for the new herbicide active ingredient **Tirexor®**. It will give wheat growers in Australia more choice for effective weed control to combat resistance and enable climate-smart, no-till farming. Further dossier submissions in other countries across Asia, South and North America are planned.

Our recently launched fungicide **Revysol®** will also play a crucial role in future resistance management in wheat, helping growers to better protect their crops, manage resistances and increase their yield in a sustainable way.

Hybrid wheat

- Improved harvest quality and stability
- Securing high yield in the long term

With market entry expected by mid-decade, we will introduce **hybrid wheat**,[1] supporting the nutritional needs of a growing world population. Hybrid wheat will bring much needed innovation to wheat production and start a journey to transform this crop for long-term success to deliver high performance in yield, quality and stability to meet the agronomic needs of farmers and the value chain in North America and Europe. The hybrid approach will give breeders new opportunities to adapt and improve plant characteristics and will play an important role in addressing the environmental challenges of the future.

InVigor® technologies for hybrid canola

- For pod shatter reduction and resistance to plant diseases
- More flexibility at harvest

BASF's **InVigor® hybrid canola** pod shatter reduction and clubroot resistant trait technologies help to protect yield potential from clubroot and deliver more flexibility for growers at harvest. In addition, we launched the 300 series of InVigor hybrid canola for the 2020 growing season, featuring three new hybrids that offer growers improvements in yield, pod shatter reduction protection, or clubroot resistance.

Various innovative crop protection products, such as the recently acquired L-glufosinate ammonium herbicide technology and seed treatment in combination with digital products, help farmers to manage weeds, pests and diseases and also enable higher yield.

BASF joined the AGROS program in 2020, a collaboration between the Netherlands-based Wageningen University & Research and 26 private partners looking into **autonomous vegetable growing**. The aim is to make best use of technology and accelerate innovation in order to meet the growing demand for food, while preserving natural resources. We are focusing even more strongly on the needs of our consumers with the joint development of a connected, data-driven, automated and sustainable production system. Further research relates to optimized cultivation methods for growing cucumbers based on sensors, plant physiology and artificial intelligence.

1 R&D expenses reported under Other

Integration of Sustainability

We are successful in the long term when we create value added for the environment, society and the economy with products, solutions and technologies. Sustainability is firmly anchored in our strategy and corporate governance. We carry out the company purpose "We create chemistry for a sustainable future" using the various tools of our sustainability management. We systematically incorporate sustainability into our business and our assessment, steering and compensation systems. We identify sustainability trends at an early stage and derive appropriate measures for our business to seize new business opportunities and minimize risks along the value chain.

Strategy

- **Sustainability further integrated into governance, compensation systems and business models**

We achieve long-term business success by creating value added for the environment, society and the economy. Sustainability is at the core of what we do, a driver for growth and value as well as an element of our risk management. That is why sustainability is firmly anchored into the organization as part of governance, compensation systems and business models.

Based on our corporate strategy and the global targets derived from this, we steer the sustainability targets (CO_2-neutral growth until 2030 and achieve €22 billion in Accelerator sales by 2025) as most important key performance indicators. We have established the necessary steering mechanisms and control systems at Group level. Carbon management bundles our global activities to reduce greenhouse gas emissions (see page 135). We use the Sustainable Solution Steering method to manage our product portfolio (see page 45). To assess the sustainability performance of our products and identify solutions that make a substantial sustainability contribution in the value chain (Accelerator products), we regularly reassess our product portfolio.

In addition to the two climate protection and Accelerator sales targets, we have also set ourselves further sustainability targets on responsible procurement, engaged employees, women in leadership positions, occupational health and safety, process safety and water management.

As a co-founder of the U.N. Global Compact and a recognized LEAD company, we contribute to the implementation of the United Nations' Agenda 2030 on an ongoing basis. Our products, solutions and technologies help to achieve the U.N. Sustainable Development Goals (SDGs), especially SDG 2 (Zero hunger), SDG 5 (Gender equality), SDG 6 (Clean water and sanitation), SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 12 (Responsible consumption and production) and SDG 13 (Climate action). The SDG focus areas are prioritized by internal experts. In doing so, they assess the impacts and positive contributions of our products, our corporate targets and strategic action areas. The contribution of our activities is measured using the Value to Society approach. This assesses our positive and negative impacts on the environment, society and the economy (see page 44).

We evaluate key sustainability topics with our comprehensive materiality analysis. The graphic on page 43 shows how we identify and assess relevant topics. Here, we take into account topics that we have an impact on, topics that have an impact on us, and topics that our stakeholders consider important.

The relevant topics identified based on the three dimensions of materiality include climate and energy, resource efficiency and waste, health and safety / product stewardship, emissions to air and soil, and responsibility along the value chain.

For more information on our materiality analysis, see basf.com/materiality
For more information on our Value to Society approach, see basf.com/en/value-to-society
For more information on the metastudy on sustainability trends, see basf.com/sustainability-trends

Our organizational and management structures

We are constantly working to broaden our positive impact on key sustainability topics and reduce the negative impact of our business activities. The Corporate Development unit, which is part of the Corporate Center, has steered the integration of sustainability into core business activities and decision-making processes since 2020 (see page 21). Global steering of climate-related matters is also bundled in this unit, such as coordinating measures to reach our climate protection target and steering the target on making our product portfolio more sustainable.

The Board of Executive Directors and the Supervisory Board are regularly briefed on the current status of individual sustainability topics. In addition, the Board of Executive Directors is informed about sustainability evaluations in business processes, for example, in the case of proposed investments and acquisitions. It makes decisions with strategic relevance for the Group and monitors the implementation of strategic plans and target achievement. The Corporate Sustainability Board, which is composed of heads of business and Corporate Center units and regions, supports the Board of Executive Directors on sustainability topics and discusses operational matters. A member of the Board of Executive Directors serves as chair.

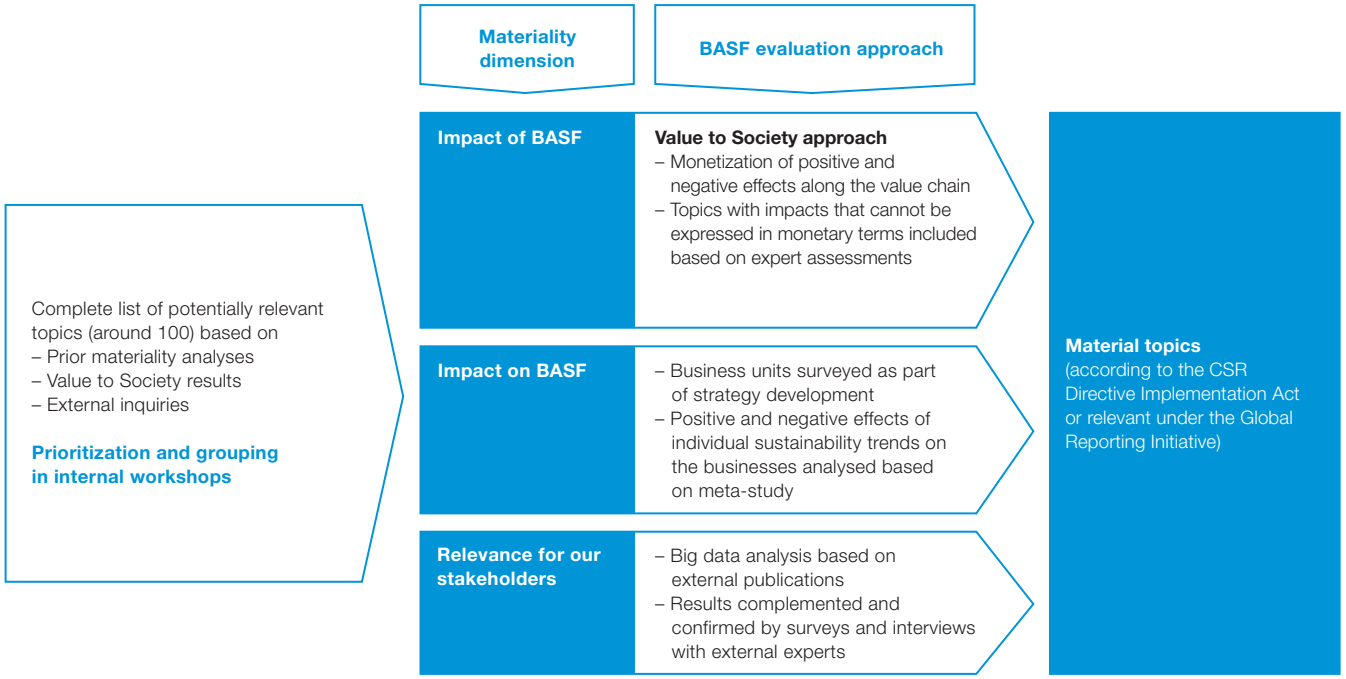
We also established an external, independent Stakeholder Advisory Council (SAC) in 2013 and a Human Rights Advisory Council (HRAC) in 2020. In the SAC, international experts from academia and society

contribute their perspectives to discussions with BASF's Board of Executive Directors. The HRAC is led by our Chief Compliance Officer. It comprises external human rights specialists and internal experts, who advise senior management. This help us to build on our strengths in how we handle human rights and address potential for improvement.

We systematically evaluate sustainability criteria, including the effects of climate change, as an integral part of decisions on acquisitions and investments in property, plant and equipment or financial assets. In this way, we not only assess economic dimensions, but also the potential impacts on areas such as the environment, human rights or the local community. We evaluate both the potential impacts of our activities as well as which effects we are exposed to.

For more information on our financial and sustainability targets, see page 32
For more information on our risk management, see pages 158 to 166
For more information on compensation structures, see the Compensation Report on page 183 onward
For more information on the organization of our sustainability management, see basf.com/sustainabilitymanagement

Identifying and assessing sustainability topics[1, 2]



1 Our stakeholders also confirmed the materiality of the nonfinancial topics that the Value to Society approach identified as having an impact along the value chain.
2 Quantitative thresholds for defining material topics have not been set due to the complexity of the assessment methods used for each dimension of materiality. The final list of topics is based on an expert comparison of the results of all the assessment approaches described.

Harnessing business opportunities and measuring value added by sustainability

- **Product Carbon Footprints (PCFs) for around 45,000 sales products by the end of 2021**

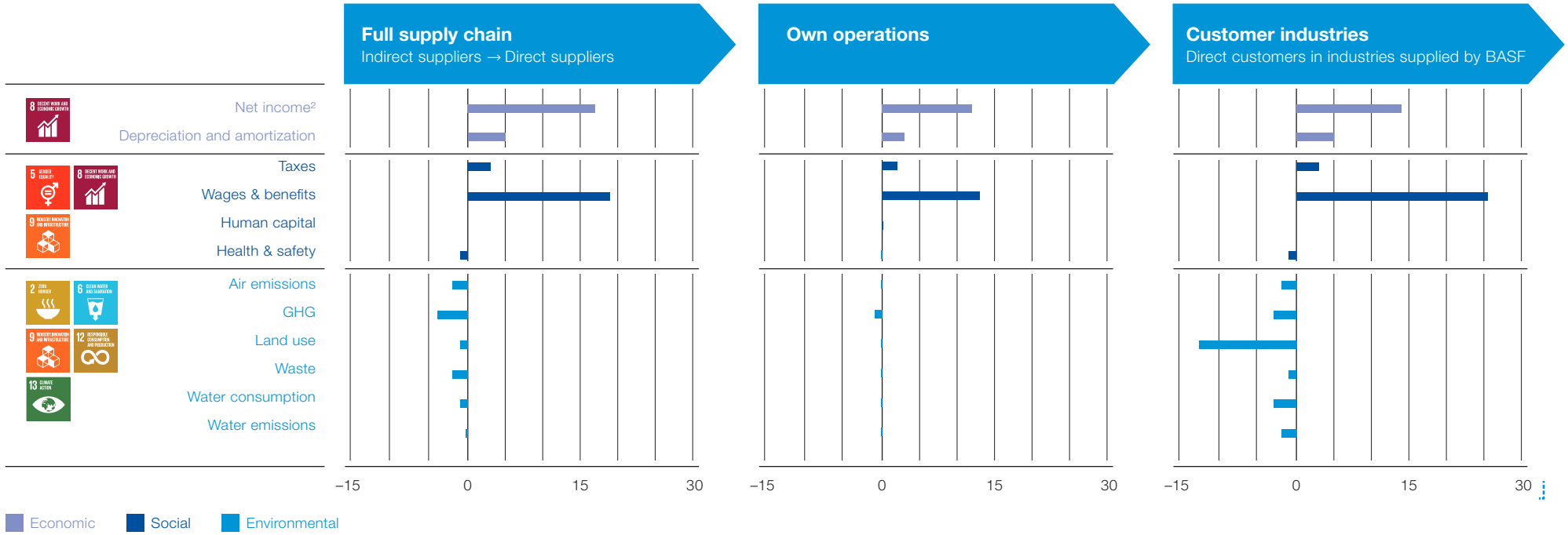
We take advantage of business opportunities by offering our customers innovative products and solutions that support their sustainability goals. We ensure that the business units automatically evaluate and take into account relevant sustainability criteria when they develop and implement strategies, research projects and innovation processes.

We want to measure the value proposition of our actions along the entire value chain. We are aware that our business activities have an impact on the environment and society, and so we strive to increase the positive contribution and minimize the negative effects of our business activities.

To achieve this, we need to continually improve our understanding of how our actions impact society and the environment. We already have many years of experience of this from evaluating our products and processes using methods such as Eco-Efficiency Analyses, the SEEbalance® Socio-Eco-Efficiency Analysis, our Sustainable Solution Steering portfolio analysis, or BASF's corporate carbon footprint.

BASF also plans to make the individual carbon footprints for around 45,000 sales products available by the end of 2021 with the help of a new, in-house digital solution. PCFs comprise all product-related greenhouse gas emissions that occur until the BASF product leaves the factory gate for the customer: from the purchased raw material to the use of energy in production processes (Scope 1–3). Calculating PCFs creates transparency for our customers and partners, enabling us to develop plans together to reduce CO_2 emissions along the value chain up to the end product.

Our Value to Society approach[1] (figures in billion €)



1 Value to Society results are calculated annually following the publication of the BASF Report. Consequently, the results shown in the BASF Report 2020 are based on the figures for the 2019 business year ("human capital" category currently only assessed for BASF production).
2 The net income of BASF's production presented in the Value to Society is calculated using the BASF Group's net income, adjusted for the interest result, the other financial result and noncontrolling interests.

We want to understand the value we contribute to society and make this transparent. However, there are still no uniform, global standards for measuring and reporting on companies' overall impact that cover economic, environmental and social aspects of business activities along the value chain. This is why we developed the Value to Society approach in 2013 together with external experts. It allows us to better understand our contribution to a sustainable future. In addition, we can use it to compare the significance of financial and nonfinancial impacts of our business activities on society and show their interdependencies.

The results illustrate the positive contributions and negative effects, both at BASF and in our value chains. Positive factors include taxes paid, wages, social benefits, employee training and our net income.[2] Negative contributions include environmental impacts such as carbon emissions, land use and emissions to air, soil and water, as well as health and safety incidents. We aim to increase the positive contributions of our business activities along the value chain and minimize the negative impacts. The Value to Society approach also enables us to continually monitor our progress. It complements existing concepts for assessing risks and business opportunities by providing a macro perspective.

We share our experiences in networks and initiatives such as the Impact Valuation Roundtable and are involved in the corresponding standardization processes within the International Organization for Standardization (ISO). We are also a founding member of the value balancing alliance e.V. (vba), a cross-industry initiative. The vba is working to develop an accounting and reporting standard that makes the value companies provide to society transparent and

comparable. The aim is to present the financial, ecological, and social impacts of business activities on the basis of a standardized framework. The vba is supported by the E.U., major auditing firms, the Organisation for Economic Co-operation and Development (OECD), leading universities and other partners. BASF is currently one of the pilot companies testing the method using its own business data. The vba receives the results of our evaluation to enhance and refine the Value to Society method.

For more information on this method and the results of Value to Society, see basf.com/en/value-to-society

For more information on our sustainability tools, see basf.com/en/measurement-methods

For more information on value balancing alliance e.V., see value-balancing.com

Steering of product portfolio based on sustainability performance

Increase sales from Accelerator products

A significant steering tool for the product portfolio, based on the sustainability performance of our products, is the Sustainable Solution Steering method. By the end of the 2020 business year, we had evaluated 98.4%[1] of the relevant portfolio.[2] This refers to the BASF Group's sales from products in its strategic portfolio to third parties in the business year concerned. By the end of 2020, sustainability analyses and assessments had been conducted for more than 57,000 specific product applications, accounting for €54.1 billion in sales. These consider the products' application in various markets and sectors. New market requirements arise as a result of the continuous development of new product solutions in the industry or changing regulatory frameworks. This has an effect on comparative assessments, which is why we regularly reassess our product portfolio.

Classification of relevant portfolio[2] according to the Sustainable Solution Steering method

Year	Sales	Million €
2020		16,740
2019		15,017
2020		30,519
2019		32,148
2020		6,799
2019		4,705
2020		72
2019		64

Transparently classifying our products on the basis of their contribution to sustainability enables us to systematically improve them. Accelerator products make a substantial sustainability contribution in the value chain. These include catalysts that reduce emissions to the environment, biodegradable mulch films for agricultural applications, and high-performance insulation materials for higher energy savings and reduced material use in building construction. Based on our corporate strategy, we have set ourselves a global target: We aim to make sustainability an even greater part of our innovation power and achieve €22 billion in Accelerator sales by 2025.

2025 target

Increase sales from Accelerator products to

€22 billion

In 2020, we generated sales of €16.7 billion with Accelerator products (2019: €15.0 billion). Accelerator products account for 30.9% of the evaluated relevant portfolio. Performer products account for 56.4% and Transitioner products for 12.6% of the solutions assessed. Sales of Accelerator products rose by 11%

1 Parts of the relevant portfolio have not yet been evaluated, including the integrated polyamide business acquired from Solvay in 2020.
2 The definition of the relevant portfolio and further information can be found in the Sustainable Solution Steering manual at basf.com/en/sustainable-solution-steering

compared with the previous year. This is primarily attributable to the positive development of Accelerator sales in the Surface Technologies and Agricultural Solutions segments. In the Agricultural Solutions segment, the first-time assessment of the seed business acquired from Bayer contributed to the increase.

If, during reassessment of our portfolio, we identify products with substantial sustainability concerns, we classify these as "Challenged." Challenged products account for around 0.1% of the evaluated relevant portfolio. We develop and implement action plans for all products in this category. These include research projects and reformulations to optimize products, or even replacing the product with an alternative. To systematically align our portfolio with contributions to sustainability, as of 2018, we will phase out all Challenged products within five years of initial classification as such at the latest. We strive to offer products that make a greater contribution to sustainability in their area of application to live up to our own commitments and meet our customers' demands. This is why our Sustainable Solution Steering method is used in areas such as our research and development pipeline, in business strategies as well as in merger and acquisition projects.

For more information on Sustainable Solution Steering, see basf.com/en/sustainable-solution-steering

Stakeholder engagement

Continuous dialog with our stakeholders

Our stakeholders include customers, employees, partners and suppliers, investors, representatives from academia, industry, politics and society, as well as from the communities surrounding our production sites. Parts of our business activities, such as the use of certain new technologies or our environmental impacts, are often viewed by stakeholders with a critical eye. We take these questions seriously, initiate dialogs and participate in discussions. Such ongoing exchange with our stakeholders helps us to even better understand what matters to groups of society, what they expect of us and which measures we need to pursue in order to establish and maintain trust, build partnerships, and increase societal acceptance for and the sustainability of our business activities. In doing so, we want to harness potential for mutual value creation and strengthen the legitimacy of our business activities – our license to operate. For important topics, we systematically identify key stakeholders at an early stage to discuss critical questions with them. Relevant considerations include their topic-specific expertise and willingness to engage in constructive dialog.

BASF was awarded the 2020 CSR Prize by the German federal government, which highlighted BASF's long-standing commitment to CSR (corporate social responsibility) and its comprehensive sustainability strategy. In its justification, it emphasized BASF's pioneering role, particularly in integrated reporting and the disclosure of CO_2 emissions, and the fact that BASF also encourages the implementation of sustainability at other companies in the industry through transparency.

We draw on the competence of global initiatives and networks, and contribute our own expertise. We are active in worldwide initiatives with various stakeholder groups. For instance, we have been a member of the U.N. Global Compact (UNGC) since its establishment in 2000. As a recognized LEAD company, we contribute to the implementation of the Agenda 2030 and the associated goals. We support UNGC Action Platforms, for example on Good Health and Well-being (SDG 3), and contribute to the UNGC Expert Network. To celebrate the 75th anniversary of the United Nations on September 21, 2020, we reaffirmed our commitment to the UNGC and pledged our support for the Women's Empowerment Principles and the CFO Principles on Integrated SDG Investments and Finance. BASF is also active in 16 local Global Compact networks.

Stakeholder demands and expectations of BASF

Customers
- Innovative and sustainable solutions
- Reliable partner

Investors
- Attractive dividend yield
- Strong long-term share performance

Society: politics, NGOs, media
- Responsible and trustworthy partner
- Production of safe products in compliance with environmental and social standards
- Jobs and taxes

Suppliers
- Fair and reliable business relationship
- Support in complying with our Supplier Code of Conduct (environmental and social requirements)

Community
- Support for local communities
- Safe, disruption-free operations
- Attractive jobs

Employees and management
- Attractive and fair employer
- Health protection
- Opportunities for professional development

In 2020, we once again met with the Stakeholder Advisory Council to discuss important aspects of sustainability. The main topics were climate protection, circular economy and sustainable finance. The Human Rights Advisory Council discussed impacts on selected aspects of our products' value chains and interacting with vulnerable groups.

Our political advocacy is conducted in accordance with transparent guidelines and our publicly stated positions. The same applies to our activities in associations. For instance, we published an Industry Associations Review comparing the energy and climate protection positions of BASF and the most important associations of which we are a member, with explanations on our approach.

BASF does not financially support political parties. In the United States, employees at BASF Corporation have exercised their right to establish a Political Action Committee (PAC). The BASF Corporation Employee PAC is an independent, federally registered employee association founded in 1998. It collects donations for political purposes and independently decides how these are used, in accordance with U.S. law.

We have a particular responsibility toward our production sites' neighbors. With the established community advisory panels, we promote open exchange between citizens and our site management and strengthen trust in our activities. Our globally binding requirements for community advisory panels are based on the grievance mechanism standards in the United Nations' Guiding Principles on Business and Human Rights. We keep track of their implementation through the existing global databank of the Responsible Care Management System.

We also use digital formats to initiate dialog on sustainability topics. The first Climathon was held in November 2020 as an initiative for employees. During the one-day hackathon, teams of (IT) experts developed digital solutions for sustainability issues, from calculating personal carbon footprints to supporting customer-focused business ideas.

For more information on stakeholder dialog, see basf.com/en/stakeholder-dialog

For more information on our guidelines for responsible lobbying, see basf.com/guidelines_political_communication

For more information on the Industry Associations Review, see basf.com/corporategovernance

For more information on the BASF Climathon, see climathon.basf.com

Social engagement

- **BASF as a responsible neighbor at our sites worldwide**
- **Contribution to the United Nations' Sustainable Development Goals**

Through our social engagement, we want to take into account the needs of the communities surrounding our production sites worldwide, help achieve the United Nations' Sustainable Development Goals (SDGs), and have a positive long-term impact on the environment and society. This is why social engagement is a cornerstone of our corporate social responsibility. Our social engagement policy was updated in 2020 and provides the guardrails for our activities. It stipulates that all social engagement measures worldwide must be conducted in line with our compliance policy, BASF's strategy and our sustainability commitments. We want to have a positive impact on society in our three focus areas: future health, future skills and future resources. We support projects that aim to have a lasting impact on specific target groups and offer learning opportunities for participating cooperation partners and BASF.

As a responsible neighbor at our Ludwigshafen site and a partner in the Rhine-Neckar metropolitan region, our social engagement in Germany includes strengthening participation and integration of disadvantaged groups as well as promoting research and discovery. It is particularly important to us that we work together with our partners to increase the impact of individual measures. In the project *#WirGestaltenSchule*, for example, we are working with our partners to improve education equality. We promote cooperation between nonprofit organizations with the *Gemeinsam Neues schaffen* program.

We are a member of *Wissensfabrik – Unternehmen für Deutschland e.V.*, a network of over 130 companies and organizations with close links to business that supports children, young people, students and young entrepreneurs through its involvement with educational institutions and start-ups. The focus is on school projects that provide hands-on experience with STEM (science, technology, engineering and mathematics). Due to the coronavirus pandemic, the project's initiatives (such as *IT2School – Gemeinsam IT entdecken* and *KiTec – Kinder entdecken Technik*) were also offered in digital formats, allowing these educational programs to continue even as school operations were restricted.

We foster societal integration, particularly of low-achieving young people and refugees, with our *Start in den Beruf* and *Start Integration* programs. In 2020, 106 young people in the BASF Training Verbund participated in these two programs in cooperation with partner companies in the Rhein-Neckar metropolitan region. The goal is to prepare participants for an apprenticeship within one year, and ultimately secure the long-term supply of qualified employees for BASF and in the region as a whole. Since being launched at the end of 2015, BASF's *Start Integration* program has supported around 420 refugees with a high probability of being granted the right to remain in Germany, helping to integrate them into the labor market. We spent around €2.6 million on the BASF Training Verbund in 2020.

We support the Espérance Banlieues program in France for children from elementary and high schools in 17 low socioeconomic areas with our Kids' Lab program. The hands-on program provides a play-based introduction to science and teaches topics such as a healthy diet. The program ultimately aims to prevent early school leaving and to make it easier to access further education. During the coronavirus pandemic, BASF France supported partner schools with donations of protective face masks and disinfectant.

We aim to create long-term value for BASF and society with new business models and cross-sector partnerships. Our Starting Ventures program helps people with precarious livelihoods to improve their income-earning opportunities and their quality of life. At the same time, the program provides access to new markets and partners, and strengthens our contribution to reaching the SDGs. For example, we support the Waste-2-Chemicals project in Lagos, Nigeria, in which citizens help to keep the city clean by collecting and sorting plastic waste. The plastic waste is converted into pyrolysis oil in a chemical recycling process and used as feedstock in the production of high-quality chemical products. BASF cooperates with the organizations Wecyclers and RecyclePoints to make this circular value creation process possible. We are also planning to build centers where plastic waste can be collected and converted into pyrolysis oil. In this way, we want to provide local collectors and their families with a regular income in the future.

We promote resource stewardship with different programs around the world, such as our Water Producer Program. This was established in 2011 through a partnership between BASF's Guaratinguetá site in Brazil, the organization Fundação Espaço ECO® and local government. BASF sponsors the program and wants to strengthen the local community and environment with the initiative. The program aims to support conservation measures usually performed by farmers – such as the reforestation of riverbank woodlands, soil restoration and protecting native plants and water sources – with financial assistance and training from the organization's environmental consultants. Since being founded, the program has supported more than 60 farmers. It directly contributes to water conservation in the Ribeirão Guaratinguetá basin, which supplies 90% of communities in the area. The Fundação Espaço ECO® was founded by BASF in Brazil and supports BASF business units and other customers on their journey to becoming more sustainable. The organization celebrated its 15th anniversary in 2020.

In the area of international development work, we support BASF Stiftung, an independent nonprofit organization, with donations for its projects with various U.N. organizations. The 2020 year-end donation campaign in favor of BASF Stiftung supported the United Nations World Food Programme's (WFP) efforts to deliver humanitarian food aid in Yemen. A total of around €396,600 was raised for WFP from donations by the employees of participating German Group companies and BASF. A donation of €65 can feed a family in Yemen for one month.

BASF Group expenses for social engagement activities[1]

~€76 million

For more information on Starting Ventures, see basf.com/en/starting-ventures
For more information on social engagement at our sites, see ludwigshafen.basf.de/commitment
For more information on our social engagement around the world, see basf.com/en/engagement

1 As of 2020, we report a total figure for our social engagement activities. Consequently, a graphic representation of individual expenses, as shown in the 2019 report, is no longer provided. The figure includes all consolidated companies with employees, including joint operations. A large part of the expenses in 2020 related to activities in connection with the Helping Hands initiative.

「Helping Hands – our aid measures during the coronavirus pandemic」

Civil society, government, business and the nonprofit sector must work closely together to overcome the coronavirus pandemic. Our Helping Hands aid campaign contributed to the fight against the novel coronavirus – as part of society, as a partner at our sites and as an international company. We used our expertise in research, production, procurement and logistics to help during the crisis.

Our activities to fight the coronavirus were wide-ranging: We produced and donated disinfectant, supplied personal protective equipment, supported medical facilities and food bank initiatives, and contributed our expertise to medical research.

Production and donation of disinfectants

Within a very short period of time, we modified production processes at plants in different countries to manufacture urgently needed disinfectants – products that are not usually part of BASF's portfolio. Employees in countries such as Brazil, Germany, France, the Netherlands, Switzerland, Spain, Turkey and the United States helped to avoid local bottlenecks with their team spirit and great flexibility. In Europe alone, BASF produced more than 900,000 liters of disinfectant between March and December and donated this to hospitals, medical workers, care homes, local government, educational institutions and nonprofit initiatives such as UNO-Flüchtlingshilfe, the German partner of the U.N. refugee agency.

Using our procurement networks

Given the strained supply situation at the beginning of the pandemic, we used our procurement networks to purchase more than 100 million protective masks and donate these to the Federal Republic of Germany and the state of Rhineland-Palatinate. We also supported local healthcare facilities in many other countries, including Belgium, Brazil, China and the United States, by providing masks, protective eyewear, protective clothing and materials to protective visors free of charge.

Assistance initiatives and programs for those in need

Together, BASF SE and BASF Stiftung also established assistance initiatives and programs for those in need. An assistance fund focused on organizations that provide and distribute food to those in need. Other institutions, individuals and BASF employees could also donate to the fund. BASF Stiftung provided assistance to those who have suffered long-term loss of income due to COVID-19 illness or whose households were in financial distress as a result of the pandemic. We also donated to hospitals and healthcare providers in the communities surrounding our sites in China, India, Italy, South Korea, Poland and Spain, for example.

BASF infrastructure supports search for active ingredients

We also made our expertise and infrastructure available for research into the virus, for example, in the search for active ingredients to treat COVID-19 patients. Our supercomputer Quriosity identified and optimized promising molecules for public research projects (see page 38 for more information). In addition, we opened our expertise and laboratory facilities to TÜV Nord at the BASF Innovation Campus in Shanghai, China, where quality checks on protective face masks were conducted on behalf of the German Federal Ministry of Health.

For more information on the Helping Hands aid campaign, see basf.com/en/helping-hands

The BASF Group's Business Year

Material Investments and Portfolio Measures

In addition to innovations, investments make a decisive contribution toward achieving our ambitious growth goals. We use targeted acquisitions to supplement our organic growth.

By investing in our plants, we create the conditions for the profitable growth we strive for while constantly improving the efficiency of our production processes. For the period from 2021 to 2025, we have planned capital expenditures (capex)[1] totaling €22.9 billion worldwide.

For more information on our investments from 2021 onward, see page 157

With a world market share of more than 40%, China is today the largest chemical market and drives the growth of global chemical production. We expect China's share to increase to around 50% by 2030. To continue to participate in this growth in Asia in the future, we plan to build an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong. Construction of the first plants started in 2020. We also plan to expand the site we operate together with our partner Sinopec in Nanjing, China.

In addition, we are refining our portfolio through acquisitions that promise above-average profitable growth as part of the BASF Verbund to help reach a relevant market position. A key consideration is that these are innovation-driven or offer a technological differentiation, and make new, sustainable business models possible.

Investments and acquisitions alike are prepared by interdisciplinary teams and assessed using various criteria. In this way, we ensure that economic, environmental and social concerns are included in strategic decision-making.

Investments and acquisitions 2020

Million €

	Investments	Acquisitions	Total
Intangible assets	103	691	794
of which goodwill	–	21	21
Property, plant and equipment[a]	3,516	559	4,075
Total	**3,619**	**1,250**	**4,869**

a Including restoration obligations, IT investments and right-of-use assets arising from leases

Investments

Investments in property, plant and equipment amounted to €3,516 million in 2020 (2019: €3,839 million). Capex[1] accounted for €2,878 million of this amount (2019: €3,349 million). Our investments in 2020 focused on the Chemicals, Materials, Surface Technologies and Nutrition & Care segments.

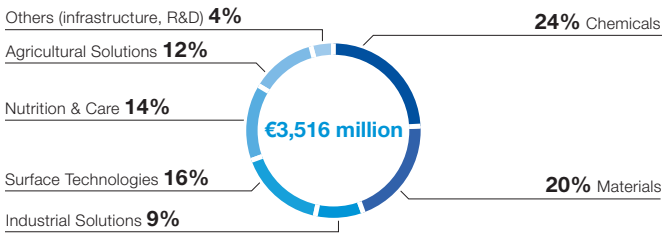
In Europe, construction continued for another production plant for vitamin A at the Ludwigshafen site in Germany. It is scheduled for startup in 2021. We are expanding the ethylene oxide complex in Antwerp, Belgium, and are building production plants for battery materials and their precursors in Harjavalta, Finland, and Schwarzheide, Germany.

In North America, we continued construction of an MDI synthesis unit in Geismar, Louisiana, and started up the first plants.

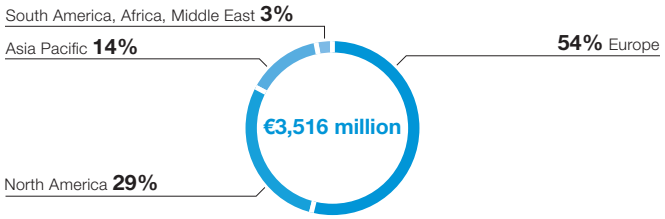
In Asia, we continued to drive forward construction of the new integrated Verbund site in Zhanjiang, China, in 2020. The first production facilities are scheduled for completion in 2022. We started up a plant for emissions catalysts in Shanghai, China.

For more information on investments within the segments, see page 69 onward

Additions to property, plant and equipment[a] by segment in 2020



Additions to property, plant and equipment[a] by region in 2020



a Including restoration obligations, IT investments and right-of-use assets arising from leases

1 Additions to property, plant and equipment excluding acquisitions, restoration obligations, IT investments and right-of-use assets arising from leases

Acquisitions

We added €559 million worth of property, plant and equipment through acquisitions in 2020. Additions to intangible assets including goodwill amounted to €691 million.

For more information on acquisitions, see the Notes to the Consolidated Financial Statements from page 235 onward

On January 31, 2020, BASF closed the acquisition of Solvay's integrated polyamide business, which was agreed in September 2017. The acquisition broadens BASF's polyamide capabilities with innovative and well-known products and enhances access to growth markets in Asia as well as in North and South America. Through the backward integration into the key raw material adiponitrile (ADN), BASF now has production plants along the entire value chain for polyamide 6.6. The transaction includes production sites in Germany, France, China, India, South Korea, Brazil and Mexico; research and development centers and technical consultation centers; and shares in Butachimie SNC and Alsachimie S.A.S. BASF acquired the polyamide business for a purchase price of €1.3 billion (on a cash and debt-free basis) and integrated it into the Performance Materials and Monomers divisions within the Materials segment.

For more information on this acquisition, see the Notes to the Consolidated Financial Statements from page 235 onward

Divestitures

On September 30, 2020,[1] we closed the divestiture of our construction chemicals business to an affiliate of Lone Star, a global private equity firm, as agreed in December 2019. The purchase price on a cash and debt-free basis was €3.17 billion. The divested construction chemicals business had around 7,500 employees and operated production sites and sales offices in more than 60 countries. It generated sales of around €2.6 billion in 2019.

For more information on this divestiture, see the Notes to the Consolidated Financial Statements from page 237 onward

Agreed transactions

On August 29, 2019, we reached an agreement with DIC, Tokyo, Japan, on the acquisition of BASF's global pigments business. The purchase price on a cash and debt-free basis is €1.15 billion. The assets and liabilities to be divested were reclassified to a disposal group in the Dispersions & Pigments division as of this date. The transaction is expected to close in the first half of 2021, subject to the approval of the relevant competition authorities.

1 The construction chemicals business was transferred in two steps, on September 30, 2020, and on November 30, 2020.

Economic Environment[1]

Global economic growth in 2020 was much weaker than we had forecast at the beginning of the year. In the first half of 2020, the coronavirus pandemic led to the worst economic slump since the Second World War. Following a recovery in the third quarter, economic activity in the fourth quarter was again disrupted by rising infection rates and government restrictions in many countries. Global gross domestic product (GDP) fell by 3.7% year on year (2019: +2.5%). Industrial production contracted by 4.0% (2019: +1.8%). Global chemical production declined by 0.4% (2019: +1.9%). The average price for a barrel of Brent crude oil decreased to $42 per barrel (2019: $64 per barrel).

For the outlook on the economic environment in 2021, see page 152 onward

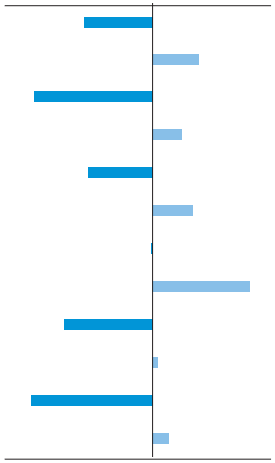
Trends in the global economy in 2020

Global gross domestic product declined by 3.7% in 2020 due to supply-side disruptions and weaker demand as a consequence of the coronavirus pandemic. A sharp decline in economic activity in China in January and February was followed by similar downturns in the rest of the world from March onward. Many companies saw production impacted by government orders and disruptions in interconnected global value chains. Online purchases could not fully compensate for the drop in offline demand. Turnover also temporarily slumped in the tourism, hospitality and cultural sectors. The resulting losses led to a decline in income and intermediate demand in this sector. Swift and strong intervention by central banks and governments in this exceptional situation prevented the global economy and financial markets from collapsing. Following a dynamic upturn in the third quarter of 2020, rising infection rates from October onward again made restrictions on economic activity necessary, especially in Europe.

Gross domestic product

Real change compared with previous year

World	**2020**	**–3.7%**
	2019	2.5%
European Union[2]	**2020**	**–6.4%**
	2019	1.6%
United States	**2020**	**–3.5%**
	2019	2.2%
Emerging markets of Asia[3]	**2020**	**–0.1%**
	2019	5.3%
Japan	**2020**	**–4.8%**
	2019	0.3%
South America	**2020**	**–6.6%**
	2019	0.9%



Economic trends by region

- **Strongest post-war decline in GDP**
- **Deep recessions in the E.U. and North America, slight growth in China**
- **Depreciation of exchange rates in emerging markets**

In the **European Union (E.U.)**, GDP contracted by 6.4% (2019: +1.6%). Europe's southwest was especially hard hit: Hard lockdowns were ordered in response to high infection rates. GDP fell by 8.3% in France, 8.8% in Italy and even shrank by 11.0% in Spain. German GDP also declined significantly, but less sharply, by 5.3%. The smaller decrease reflected the fact that the export industry benefited from the recovery in China and that the downturn in private consumption was less pronounced. GDP declined by 9.9% (2019: +1.4%) in the United Kingdom as measures to contain infection rates were taken late, but were stricter and continued for longer. Following an economic slump in the spring and a dynamic recovery in the third quarter, the eastern E.U. countries again recorded a strong rise in infection rates. As a result, governments imposed new partial lockdowns, which negatively impacted the services sector in particular. Overall, GDP in the eastern E.U. countries decreased by 4.4% in 2020 (2019: +3.8%). In **Russia**, GDP declined by 3.1% (2019: +1.3%). Industrial production in Russia was weighed down by rising infection rates from mid-September onward, weak demand for energy commodities and cuts to oil production. This dampened the economic recovery that began in the third quarter, largely driven by private consumption.

Economic developments in the **United States** were very volatile. The crisis left its mark on the unemployment rate here, which jumped from 3.5% at the beginning of the year to 14.8% in April 2020. Personal incomes rose overall as unemployment benefits were significantly bolstered by state aid. As a result, spending on consumer goods remained largely stable, while there was a clear, temporary

1 All information relating to past years in this section can deviate from the previous year's report due to statistical revisions. Where available, macroeconomic growth rates are adjusted for calendar effects. Figures for 2020 not yet available in full are estimated.
2 In the rest of this chapter, "E.U." refers to the E.U. 27.
3 We define the emerging markets of Asia as Greater China, the ASEAN countries (Brunei, Indonesia, Malaysia, Myanmar, Cambodia, Laos, the Philippines, Singapore, Thailand, Vietnam), India, Pakistan and Bangladesh.

drop in consumption of services. In the second half of 2020, the easing of restrictions in many states led to a significant recovery and saw the unemployment rate halve. Overall, U.S. GDP fell by 3.5% (2019: +2.2%).

In the **emerging markets of Asia**, the impact of the coronavirus pandemic was mixed. Economic output in **China** dropped considerably as early as the first quarter of 2020. However, a dynamic economic recovery was already underway in the second quarter of 2020 and continued in the second half of the year. Industrial production and export demand recovered particularly quickly, while domestic consumer demand reacted only after a delay. China was the only major global economy to report growth in 2020, of 2.3% (2019: +6.0%). In India, by contrast, GDP fell by 8.0% after a lockdown lasting several months (2019: +4.2%). Here, too, a strong decline was followed by a clear upturn in the second half of the year. GDP in the remaining emerging markets of Asia declined by an average of 3%. There was considerable variation from country to country.

Japan and South Korea recorded comparatively low infection rates overall. However, these also saw a significant temporary drop in domestic and foreign demand. In **Japan**, GDP sank by 4.8% (2019: +0.3%). In South Korea, higher government spending and investment cushioned the decline in GDP to only –1.0% (2019: +2.0%).

South America was severely affected by the coronavirus pandemic. The Brazilian economy was bolstered by strong fiscal stimulus measures. Economic growth started to recover in the second half of the year after restrictions were eased in some regions. The increase in public debt and rising inflation rates led to a significant depreciation of the Brazilian real. Brazilian GDP decreased by 4.6% (2019: +1.4%). Argentina saw a much stronger decline in economic output in 2020, falling by 10.4% as a result of a strict lockdown in the spring (2019: –2.1%). The country's renewed debt crisis left little room for government aid. Inflation rates of over 40% negatively impacted private consumption and the Argentine peso lost around half of its value. Exchange rates in the rest of South America remained more stable. GDP losses due to lockdowns and weaker export demand varied significantly and were between –4.8% in Uruguay and –11.9% in Peru. Overall, GDP in South America fell by 6.6% (2019: +0.9%).[1]

Trends in key customer industries

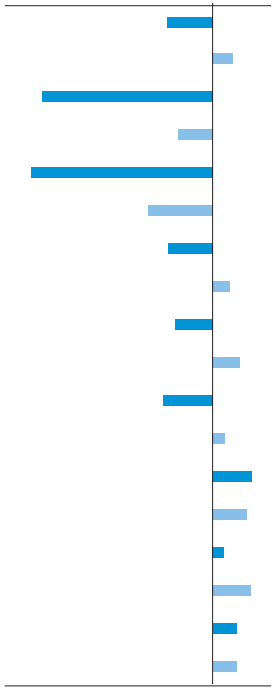
- **Strong decline in global industrial production**
- **Weak momentum and partial recovery in the automotive industry**
- **Stable trend in agriculture**

Global industrial production contracted by 4.0% in 2020 (2019: +1.8). The advanced economies saw much stronger decreases of 6.5% overall compared with the emerging markets, which only declined by 1.8%. The emerging markets performed better primarily due to the recovery of industrial production in China (2020: +2.6%; 2019: +5.7%). In the remaining emerging markets of Asia, by contrast, industrial production fell by 7.1% overall (2019: +2.1%). Industrial production decreased by 7.8% in the E.U. (2019: –0.2%) and by 10.5% in the United Kingdom (2019: –0.4%). North America (2020: –5.7%; 2019: +1.0%) and South America (2020: –7.5%; 2019: –0.6%) reported similar declines.

Growth in key customer industries

Real change compared with previous year

Industry total	**2020**	**–4.0%**
	2019	1.8%
Transportation	**2020**	**–15.0%**
	2019	–3.0%
Of which: automotive industry	**2020**	**–16.0%**
	2019	–5.7%
Energy and resources	**2020**	**–3.9%**
	2019	1.5%
Construction	**2020**	**–3.3%**
	2019	2.4%
Consumer goods	**2020**	**–4.4%**
	2019	1.1%
Electronics	**2020**	**3.5%**
	2019	3.0%
Health and nutrition	**2020**	**1.0%**
	2019	3.4%
Agriculture	**2020**	**2.1%**
	2019	2.1%



Global **automotive production** decreased by 16% after already declining by 5.7% in 2019. After a strong slowdown in China in the first quarter of 2020, followed by massive declines in the rest of the world in the second quarter, the rest of the year saw a dynamic recovery. Growth was particularly strong in China, where automotive production already exceeded the prior-year level in the third quarter. However, average annual production in China was still 4.3% below the previous year. The remaining emerging markets of Asia posted much stronger declines in production of around one-quarter. Japan and South Korea recorded more moderate decreases of 15.8% and 11.6%, respectively. Although North America and Europe also

1 Not including Venezuela

returned to pre-crisis levels over the course of the year, average production for the year was down 20.1% and 22.4% from the previous year, respectively. In the global **construction industry**, output decreased by 3.3% (2019: +2.4%). Overall, non-residential construction contracted at a slightly stronger rate than the residential and infrastructure segment. Developments varied from region to region: Construction volumes fell by 7.1% in western Europe and by 7.6% in eastern Europe, while North America posted a decrease of only 1.3%. The United States saw an upturn in the housing market, which partially offset developments in non-residential building. In Asia, construction activity declined only slightly by 0.6%. Construction activity grew by 3.5% in China, but shrank by 3.1% in Japan, 1.5% in South Korea and 18.7% in India. The construction industry also contracted significantly by 13.2% in South America. **Consumer durables** production, for example in the textile and furniture industries, fell by almost 8% on average. Production also decreased by around 4% (2019: +1.5%) in the **energy and resources** sector due to weaker demand for energy and industrial commodities. **Agricultural production** was more stable and grew by 2.1% (2019: 2.1%). The U.S. market achieved considerable growth of 2.8%, benefiting from rising exports to China and unfavorable weather conditions in parts of South America. In western and eastern Europe, by contrast, production declined by 0.8% overall. This was attributable to both dry weather conditions and regional shortages of harvest workers. In South America, agricultural production declined slightly by 0.5%. Production increased by 1.9% in Brazil but decreased by 8.4% in Argentina due to drought. In Asia, production rose by 2.7% compared with the previous years.

Trends in the chemical industry

■ Global growth much weaker than in prior year and below expectations

Contrary to our expectations, global chemical production contracted by 0.4% in 2020 (2019: +1.9%). As a result, the decline was much less pronounced than in global industrial production. This was because less cyclical customer sectors have a higher weighting in the chemical industry and because demand temporarily rose for disinfectants and cleaning products, protective clothing, single-use packaging and plexiglass.

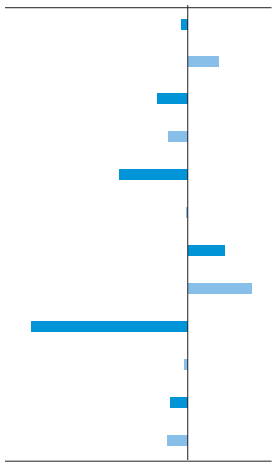
However, there were significant regional differences. In the E.U., chemical production decreased by around 2%, with significant differences between the major production locations. While production only declined by between 1% and 3% in Belgium, Germany and Spain, and was virtually unchanged in the Netherlands, it fell by around 8% in Italy and by around 9% in France. Chemical production decreased by 4.6% in North America and by 1.1% in South America.

By contrast, China, the world's largest chemical market, increased volumes by 3.4%. In the rest of Asia, on the other hand, chemical production declined, in some countries significantly (Japan: –9.8%; Malaysia: –6.2%; India: –5.4%; South Korea: –3.2%). As a result, chemical production in Asia only increased by around 1%.

Chemical production (excluding pharmaceuticals)

Real change compared with previous year

World	**2020**	**–0.4%**
	2019	1.9%
European Union	**2020**	**–1.9%**
	2019	–1.2%
United States	**2020**	**–4.3%**
	2019	–0.1%
Emerging markets of Asia	**2020**	**2.3%**
	2019	4.0%
Japan	**2020**	**–9.8%**
	2019	–0.2%
South America	**2020**	**–1.1%**
	2019	–1.3%



Price trends for key commodities

- **Sharp decline in prices for crude oil and naphtha**
- **Year-on-year decrease in gas prices, but with wide regional variance**

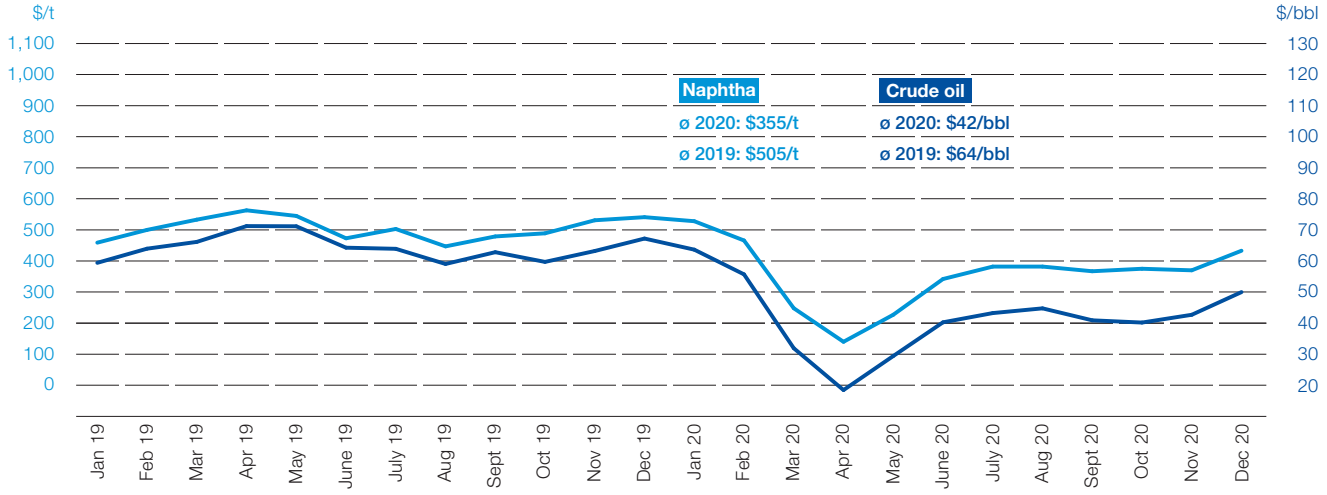
The average price for a barrel of Brent crude oil decreased to $42 per barrel (2019: $64 per barrel) and fluctuated over the course of the year between around $64 per barrel in January and around $18 per barrel in April.

Over the course of the year, the average monthly price for the chemical raw material naphtha ranged between $528 per metric ton in January and $140 per metric ton in April. At $355 per metric ton, the annualized average price of naphtha in 2020 was lower than in 2019 ($505 per metric ton).

The average price of gas in the United States was $1.99 per mmBtu, below the level of the previous year ($2.56 per mmBtu). In Europe, the average price of gas on the spot market was also significantly lower than in 2019, at $3.17 per mmBtu (2019: $4.46 per mmBtu). Gas prices in China averaged around $6.29 per mmBtu nationally (2019: $6.39 per mmBtu), while the average price in the coastal provinces was $7.48 per mmBtu (2019: $7.59 per mmBtu).

Price trends for crude oil (Brent) and naphtha

$/barrel, $/metric ton



Results of Operations

The world economy saw much weaker growth in 2020 than in 2019 as a result of the coronavirus pandemic. Growth in global industrial production and in the global chemical industry (excluding pharmaceuticals) was also below the prior-year level. In this market environment, BASF's business did not perform as well as we expected: Sales were on a level with the previous year and earnings declined considerably.

Business reviews by segment can be found from page 69 onward

Sales

■ Sales of €59,149 million at prior-year level

Sales amounted to €59,149 million in 2020, on a level with 2019. The sales performance was positively impacted by higher price levels overall, mainly as a result of higher precious metal prices in the Surface Technologies segment and portfolio effects in the Materials segment from the acquisition of Solvay's integrated polyamide business. This was offset by negative currency effects and lower volumes, especially in the Materials and Industrial Solutions segments.

Sales[a, b]

Million €	
2020	59,149
2019	59,316
2018	60,220
2017	61,223
2016	57,550

a Sales for 2018 were reduced by the share attributable to construction chemicals activities due to their presentation as discontinued operations. Figures for the years 2016 to 2017 have not been restated.
b Sales for 2017 were reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for 2016 have not been restated.

For more information on the development of Accelerator sales, see page 45 onward
For more information on the development of CO_2 emissions, see page 131

Factors influencing sales of the BASF Group

	Change in million €	Change in %
Volumes	–298	–1
Prices	1,487	3
Currencies	–1,945	–3
Acquisitions	683	1
Divestitures	–91	0
Changes in the scope of consolidation	–3	0
Total change in sales	**–167**	**0**

Income from operations

■ Considerable decline in EBIT before special items, EBIT and ROCE

Income from operations (EBIT) before special items decreased by €1,083 million to €3,560 million, mainly due to significantly lower contributions from the Chemicals and Surface Technologies segments. In the Chemicals segment, this was primarily attributable to lower margins. In the Surface Technologies segment, it was mostly the result of lower volumes in the Coatings division. EBIT before special items also declined considerably in Other and in the Materials and Agricultural Solutions segments. The decrease in the Materials segment was mainly due to lower polyamide margins and volumes. EBIT before special items was lower in the Agricultural Solutions segment, largely from currency effects. In the Nutrition & Care segment, EBIT before special items declined slightly as a result of the sales performance and a one-off payment in the Care Chemicals division in the previous year. In the Industrial Solutions segment, EBIT before special items was on a level with the previous year.

For an explanation of the indicator EBIT before special items, see page 34

EBIT before special items[a, b, c]

Million €	
2020	3,560
2019	4,643
2018	6,281
2017	7,645
2016	6,309

a EBIT before special items for 2019 has been restated to reflect the reclassification of income from non-integral companies accounted for using the equity method to net income from shareholdings. Figures for the years 2016 to 2018 have not been restated.
b EBIT before special items for 2018 was reduced by the share attributable to construction chemicals activities due to their presentation as discontinued operations. Figures for the years 2016 and 2017 have not been restated.
c EBIT before special items for 2017 was reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for 2016 have not been restated.

Special items in EBIT totaled –€3,751 million in 2020, compared with –€442 million in the previous year. The increase in special items is primarily attributable to the impairments of €2.9 billion on property, plant and equipment and intangible assets, which were mainly reported under other charges and income. Expenses of €76 million arose in connection with divestitures, mainly from the carve-out of our global pigments business. We recorded a positive earnings contribution of €286 million in the previous year, in particular from the transfer of BASF's paper and water chemicals business to the Solenis group and the sale of businesses in the Agricultural Solutions segment in accordance with the conditions imposed by antitrust authorities in connection with the acquisition of the Bayer businesses. In addition, expenses from restructuring measures rose by €325 million compared with the previous year to €952 million. These largely related to expenses for measures to streamline the global glufosinate-ammonium production network and provisions in connection with the realignment of the Global Business Services unit. Integration costs amounted to €157 million in 2020, mainly for the integrated polyamide business acquired from Solvay. In the previous year, we recorded integration costs of €303 million, primarily for the integration of the businesses acquired from Bayer in the Agricultural Solutions segment.

For the definition of special items, see page 34

Special items

Million €

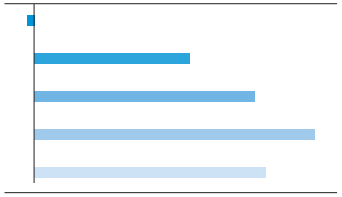
	2020	2019
Restructuring measures	–952	–627
Integration costs	–157	–303
Divestitures	–76	286
Other charges and income	–2,566	202
Total special items in EBIT	**–3,751**	**–442**

At –€191 million, **EBIT** for the BASF Group in 2020 was considerably below the previous year's level (2019: €4,201 million). This figure includes income from integral companies accounted for using the equity method, which declined from €265 million to €220 million.

EBIT[a, b, c]

Million €

2020	–191
2019	4,201
2018	5,974
2017	7,587
2016	6,275



a EBIT for 2019 has been restated to reflect the reclassification of income from non-integral companies accounted for using the equity method to net income from shareholdings. Figures for the years 2016 to 2018 have not been restated.
b EBIT for 2018 was reduced by the share attributable to construction chemicals activities due to their presentation as discontinued operations. Figures for the years 2016 and 2017 have not been restated.
c EBIT for 2017 was reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for 2016 have not been restated.

We use the indicator **return on capital employed** (ROCE). It measures the profitability of the capital employed by the segments. ROCE was 1.7%, after 7.7% in the previous year. The decline in ROCE was primarily due to considerably lower EBIT. Capital employed declined, mainly due to the impairments recognized as a consequence of the coronavirus pandemic, and currency effects.[1]

For more information on the determination of ROCE, see page 33

The calculation of EBIT as part of our statement of income is shown in the Consolidated Financial Statements on page 222

ROCE

Million €

	2020	2019
EBIT of BASF Group	–191	4,201
– EBIT of Other	–1,203	–518
EBIT of the segments	1,012	4,719
Cost of capital basis of segments, average of month-end figures	**60,111**	**60,900**
ROCE %	**1.7**	**7.7**

Capital employed

Million €

	2020	2019
Intangible assets	14,249	14,832
+ Property, plant and equipment	20,210	20,472
+ Integral investments accounted for using the equity method	1,395	1,527
+ Inventories	10,469	11,593
+ Accounts receivable, trade	9,379	10,061
+ Current and noncurrent other receivables and other assets[a]	3,149	1,913
+ Assets of disposal groups	1,260	502
Cost of capital basis of segments, average of month-end figures	**60,111**	**60,900**
+ Deviation from cost of capital basis at closing rates as of December 31	–3,948	–1,534
+ Assets not included in cost of capital	24,129	27,584
of which disposal group for the construction chemicals business	–	2,706
Assets of the BASF Group as of December 31	**80,292**	**86,950**

a Including customer/supplier financing and other adjustments

1 For more information on net assets, see page 61 onward

Net income from shareholdings, financial result and income after taxes

- **Net income from shareholdings of –€909 million negatively impacted by impairments at the shareholding in Wintershall Dea**
- **Earnings per share of –€1.15 after €9.17 in the previous year**

At –€909 million, **net income from shareholdings**[1] was €715 million below the prior-year figure. The decrease was primarily due to impairments of assets at the Wintershall Dea group, Kassel/Hamburg, Germany, in the amount of €791 million, mainly as a result of lower oil and gas price forecasts and changed reserve estimates. This reduced Wintershall Dea's earnings contribution from –€86 million in the previous year to –€890 million. The contribution from Solenis UK International Ltd., London, United Kingdom, improved by €25 million year on year to –€46 million. Higher income from other shareholdings, primarily due to write-ups, had a positive impact on net income from shareholdings.

The **financial result** amounted to –€462 million in 2020, compared with –€705 million in the previous year.

The interest result improved by €92 million to –€373 million, due in part to lower interest expenses for financial indebtedness. The other financial result improved by €151 million to –€89 million, primarily driven by lower expenses in connection with bonds in foreign currency and the corresponding hedging instruments, as well as by lower net interest expenses from pension and similar obligations. Higher interest income on income taxes also contributed here.

Income before income taxes decreased from €3,302 million in the previous year to –€1,562 million in 2020, mainly as a result of the impairments described above.

The negative income before income taxes led to tax income of €91 million, after a tax expense of €756 million in 2019. As not all impairments were tax deductible, the BASF Group's tax rate was only 5.8% in 2020 (previous year: 22.9%).

Income after taxes from continuing operations declined from €2,546 million to –€1,471 million. **Income after taxes from discontinued operations** decreased from €5,945 million in 2019 to €396 million in 2020. The 2020 figure includes the book gain of €358 million from the sale of the construction chemicals business and the income after taxes of the former Construction Chemicals division until November 30, 2020.[2] This amounted to €38 million, €14 million above the figure for the full year 2019. In the previous year, income after taxes from discontinued operations included the book gain of €5,684 million on the deconsolidation of the Wintershall companies and their income after taxes until deconsolidation on April 30, 2019.

Noncontrolling interests generated income of €15 million, after expenses of €70 million in 2019. This was due to higher losses at BASF Petronas Chemicals Sdn. Bhd., Kuala Lumpur, Malaysia, as a result of impairments, as well as from lower earnings at BASF Total Petrochemicals in Port Arthur, Texas, owing to an unplanned outage of the steam cracker. The prior-year figure also included the shares in the gas transportation companies until deconsolidation on April 30, 2019.

Net income amounted to –€1,060 million, considerably below the prior-year figure of €8,421 million. This was primarily attributable to the impairments recognized in 2020 as described above. The prior-year figure included the book gain from the deconsolidation of the Wintershall companies. Earnings per share were –€1.15, compared with €9.17 in 2019.

For information on the items in the statement of income, see the Notes to the Consolidated Financial Statements from page 228 onward

For information on the tax rate, see the Notes to the Consolidated Financial Statements from page 259 onward

For more information on the results of operations of discontinued operations, see the Notes to the Consolidated Financial Statements on page 239

Additional indicators for results of operations

- **Adjusted earnings per share decline from €4.00 to €3.21**
- **EBITDA before special items and EBITDA considerably below previous year**

We also use alternative performance measures (APMs) to steer the BASF Group. Investors, analysts and rating agencies use them to assess our performance. These are not defined by IFRS. As such, the methods of calculation can differ from those used by other companies. Alternative performance measures for the results of operations are EBIT before special items, EBITDA before special items, EBITDA, the EBITDA margin and adjusted earnings per share. Other APMs are net debt,[3] free cash flow[3] and capital expenditure (capex).[4]

Income from operations before depreciation, amortization and special items (EBITDA before special items) and **income from operations before depreciation and amortization (EBITDA)** are indicators that describe operational performance independent of age-related depreciation and amortization of assets and any impairment or reversal of impairment. Both figures are therefore particularly useful in cross-company comparisons. EBITDA before special items is also highly useful in making comparisons over time. The **EBITDA margin** is a relative indicator and is calculated as the ratio of EBITDA to sales revenue, enabling operational performance to be compared independent of the size of the underlying business.

1 To increase reporting transparency, as of January 1, 2020, companies accounted for using the equity method that are not an integral part of the BASF Group are classified as purely financial investments and presented under net income from shareholdings. For more information, see the Notes to the Consolidated Financial Statements on page 228.
2 The construction chemicals business was transferred in two steps, on September 30, 2020, and on November 30, 2020.
3 For more information on these indicators, see the Financial Position from page 63 onward
4 For more information on capex, see Value-Based Management on page 34 and Material Investments and Portfolio Measures on page 50

EBITDA before special items declined by €889 million year on year to €7,435 million in 2020. At €6,494 million, EBITDA was down €1,691 million from the prior-year figure. The EBITDA margin was 11.0% in 2020, compared with 13.8% in the previous year.

EBITDA before special items

Million €	2020	2019
EBIT	–191	4.201
– Special items	–3,751	–442
EBIT before special items	**3,560**	**4,643**
+ Depreciation and amortization[a]	3,805	3,660
+ Impairments and reversals of impairments on property, plant and equipment and intangible assets before special items[a]	70	21
Depreciation, amortization, impairments and reversals of impairments on property, plant and equipment and intangible assets before special items	**3,875**	**3,681**
EBITDA before special items	**7,435**	**8,324**

a Excluding depreciation, amortization, impairments and reversals of impairments attributable to the discontinued construction chemicals business

EBITDA

Million €	2020	2019
EBIT	–191	4,201
+ Depreciation and amortization[a]	3,805	3,660
+ Impairments and reversals of impairments on intangible assets and property, plant and equipment[a]	2,880	324
Depreciation, amortization, impairments and reversals of impairments on intangible assets and property, plant and equipment	**6,685**	**3,984**
EBITDA	**6,494**	**8,185**
Sales revenue	59,149	59,316
EBITDA margin %	**11.0**	**13.8**

a Excluding depreciation, amortization, impairments and reversals of impairments attributable to the discontinued construction chemicals business

Adjusted earnings per share

Million €	2020	2019
Income after taxes	**–1,075**	**8,491**
– Special items[a]	–4,606	–484
+ Amortization, impairments and reversals of impairments on intangible assets	1,496	652
– Amortization, impairments and reversals of impairments on intangible assets contained in special items	819	8
– Adjustments to income taxes	958	318
– Adjustments to income after taxes from discontinued operations	251	5,559
Adjusted income after taxes	**2,999**	**3,742**
– Adjusted noncontrolling interests	54	72
Adjusted net income	**2,945**	**3,670**
Weighted average number of outstanding shares (in thousands)	918,479	918,479
Adjusted earnings per share €	**3.21**	**4.00**

a Includes special items in net income from shareholdings of €855 million for 2020 and €42 million for 2019

Compared with earnings per share, **adjusted earnings per share** is firstly adjusted for special items. Amortization, impairment and reversal of impairment on intangible assets are then eliminated. Amortization of intangible assets primarily results from the purchase price allocation following acquisitions and is therefore of a temporary nature. The effects of these adjustments on income taxes and on noncontrolling interests are also considered. This makes adjusted earnings per share a suitable measure for making comparisons over time and predicting future profitability.

In 2020, adjusted earnings per share amounted to €3.21, compared with €4.00 in the previous year.

For information on the earnings per share according to IFRS, see the Notes to the Consolidated Financial Statements on page 248

Sales and earnings

Million €

		2020	2019	+/–
Sales		59,149	59,316	–0.3
Income from operations before depreciation, amortization and special items		7,435	8,324	–10.7
Income from operations before depreciation and amortization (EBITDA)		6,494	8,185	–20.7
EBITDA margin	%	11.0	13.8	–
Depreciation and amortization[a]		6,685	3,984	67.8
Income from operations (EBIT)		–191	4,201	.
Special items		–3,751	–442	.
EBIT before special items		3,560	4,643	–23.3
Income before income taxes		–1,562	3,302	.
Income after taxes from continuing operations		–1,471	2,546	.
Income after taxes from discontinued operations		396	5,945	–93.3
Net income		–1,060	8,421	.
Earnings per share	€	–1.15	9.17	.
Adjusted earnings per share	€	3.21	4.00	–19.8

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)

Sales and earnings by quarter in 2020[a]

Million €

		Q1	Q2	Q3	Q4	Full year
Sales		16,753	12,680	13,811	15,905	59,149
Income from operations before depreciation, amortization and special items		2,579	1,229	1,542	2,085	7,435
Income from operations before depreciation and amortization (EBITDA)		2,428	1,070	1,044	1,952	6,494
Depreciation and amortization[b]		972	1,011	3,682	1,020	6,685
Income from operations (EBIT)		1,456	59	–2,638	932	–191
Special items		–184	–167	–3,219	–181	–3,751
EBIT before special items		1,640	226	581	1,113	3,560
Income before income taxes		1,200	–923	–2,786	947	–1,562
Income after taxes from continuing operations		881	–888	–2,177	713	–1,471
Income after taxes from discontinued operations		22	14	13	347	396
Net income		885	–878	–2,122	1,055	–1,060
Earnings per share	€	0.97	–0.96	–2.31	1.15	–1.15
Adjusted earnings per share	€	1.26	0.25	0.60	1.10	3.21

Sales and earnings by quarter in 2019[a]

Million €

		Q1	Q2	Q3	Q4	Full year
Sales		15,596	14,478	14,556	14,686	59,316
Income from operations before depreciation, amortization and special items		2,642	1,885	1,980	1,817	8,324
Income from operations before depreciation and amortization (EBITDA)		2,770	1,546	2,259	1,610	8,185
Depreciation and amortization[b]		991	1,039	923	1,031	3,984
Income from operations (EBIT)		1,779	507	1,336	579	4,201
Special items		29	–488	280	–263	–442
EBIT before special items		1,750	995	1,056	842	4,643
Income before income taxes		1,556	293	1,177	276	3,302
Income after taxes from continuing operations		1,163	243	917	223	2,546
Income after taxes from discontinued operations		277	5,686	18	–36	5,945
Net income		1,406	5,954	911	150	8,421
Earnings per share	€	1.53	6.48	1.00	0.16	9.17
Adjusted earnings per share	€	1.64	0.83	0.89	0.64	4.00

a Quarterly results not audited
b Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)

Net Assets

Assets

	December 31, 2020		December 31, 2019	
	Million €	%	Million €	%
Intangible assets	13,145	16.4	14,525	16.7
Property, plant and equipment	19,647	24.5	21,792	25.1
Integral investments accounted for using the equity method[a]	1,878	2.3	1,885	2.2
Non-integral investments accounted for using the equity method[a]	10,874	13.5	13,123	15.1
Other financial assets	582	0.7	636	0.7
Deferred tax assets	3,386	4.2	2,887	3.3
Other receivables and miscellaneous assets	912	1.1	1,112	1.3
Noncurrent assets	**50,424**	**62.7**	**55,960**	**64.4**
Inventories	10,010	12.5	11,223	12.9
Accounts receivable, trade	9,466	11.8	9,093	10.5
Other receivables and miscellaneous assets	4,673	5.8	3,790	4.4
Marketable securities	207	0.3	444	0.5
Cash and cash equivalents	4,330	5.4	2,427	2.8
Assets of disposal groups	1,182	1.5	4,013	4.6
Current assets	**29,868**	**37.3**	**30,990**	**35.6**
Total assets	**80,292**	**100.0**	**86,950**	**100.0**

a To increase reporting transparency, as of January 1, 2020, companies accounted for using the equity method that are not an integral part of the BASF Group are classified as purely financial investments and presented separately in the balance sheet. For more information, see the Notes to the Consolidated Financial Statements on page 228.

Assets

■ Decline in total assets due to impairments and divestiture of the construction chemicals business

Total assets amounted to €80,292 million as of December 31, 2020, significantly below the prior-year level (€86,950 million).

Noncurrent assets declined by €5,536 million to €50,424 million. All items except deferred tax assets contributed here. The main driver was the €2,145 million decrease in property, plant and equipment to €19,647 million, primarily due to the impairments recognized as a consequence of the coronavirus pandemic. Negative currency effects of €934 million also contributed to the decline. Additions to property, plant and equipment amounted to €4,075 million. This figure included additions of €559 million from the acquisition of the integrated polyamide business from Solvay. Depreciation amounted to €3,130 million. At €10,874 million, non-integral investments accounted for using the equity method were also considerably below the prior-year level (€13,123 million), mainly as a result of impairments and currency effects relating to the shareholding in Wintershall Dea. Integral investments accounted for using the equity method were on a level with the prior year, at €1,878 million.

Intangible assets declined by €1,380 million to €13,145 million. This was likewise primarily attributable to impairments, amortization and currency effects. Additions of €691 million, mainly in connection with the acquisition of the integrated polyamide business from Solvay, had an offsetting effect.

More information on the above transactions can be found on page 51 of this Management's Report and in the Notes to the Consolidated Financial Statements from page 235 onward

Other financial assets were slightly below the prior-year level, declining by €54 million to €582 million. Other receivables and miscellaneous assets decreased by €200 million compared with the previous year to €912 million. This was mainly due to the lower positive fair values of derivatives and the decline in loans and interest receivables.

Deferred tax assets rose by €499 million to €3,386 million, primarily as a result of higher pension provisions and the recognition of deferred tax assets for tax loss carryforwards.

Current assets declined by €1,122 million to €29,868 million. This was largely the result of the derecognition of the disposal group for the construction chemicals business (€2,831 million). We recorded a €1,213 million decrease in inventories to €10,010 million, mainly due to the reduction in inventories in all segments and currency effects. Marketable securities declined by €237 million to €207 million.

This was partially offset by the €1,903 million increase in cash and cash equivalents compared with the previous year. At €4,330 million, this safeguards the BASF Group's liquidity in times of crisis.

Other receivables and miscellaneous assets rose by €3,790 million to €4,673 million, driven mainly by an increase in precious metal trading positions due to higher prices, as well as higher tax refund claims.

The €373 million increase in trade accounts receivable to €9,466 million was largely attributable to strong business developments in the fourth quarter.

For more information on the composition and development of individual asset items, see the Notes to the Consolidated Financial Statements from page 228 onward

Financial Position

Equity and liabilities

	December 31, 2020		December 31, 2019	
	Million €	%	Million €	%
Paid-in capital	4,291	5.3	4,291	4.9
Retained earnings	37,911	47.2	42,056	48.4
Other comprehensive income	–8,474	–10.5	–4,850	–5.6
Noncontrolling interests	670	0.8	853	1.0
Equity	**34,398**	**42.8**	**42,350**	**48.7**
Provisions for pensions and similar obligations	8,566	10.7	7,683	8.8
Deferred tax liabilities	1,447	1.8	1,764	2.0
Tax provisions	587	0.7	516	0.6
Other provisions	1,484	1.9	1,340	1.5
Financial indebtedness	15,819	19.7	15,015	17.3
Other liabilities	1,711	2.1	1,678	1.9
Noncurrent liabilities	**29,614**	**36.9**	**27,996**	**32.2**
Accounts payable, trade	5,291	6.6	5,087	5.9
Provisions	2,825	3.5	2,938	3.4
Tax liabilities	988	1.2	756	0.9
Financial indebtedness	3,395	4.3	3,362	3.9
Other liabilities	3,440	4.3	3,427	3.9
Liabilities of disposal groups	341	0.4	1,034	1.2
Current liabilities	**16,280**	**20.3**	**16,604**	**19.1**
Total equity and liabilities	**80,292**	**100.0**	**86,950**	**100.0**

Equity and liabilities

- **Equity ratio of 42.8%, compared with 48.7% in previous year**
- **Net debt declines to €14,677 million**

Equity decreased by €7,952 million compared with the previous year to €34,398 million. Retained earnings declined by €4,145 million to €37,911 million. This was the result of dividend payments for 2019 and negative net income for 2020. Other comprehensive income amounted to –€8,474 million, after –€4,850 million in the previous year. The decrease was primarily due to currency effects and actuarial losses.

The equity ratio decreased from 48.7% to 42.8%.

Compared with the end of 2019, noncurrent liabilities rose by €1,618 million to €29,614 million. This was primarily attributable to the increase in provisions for pensions and similar obligations from €7,683 million to €8,566 million, mainly as a result of slightly lower discount rates in all relevant currency zones.

In addition, noncurrent financial indebtedness rose by €804 million to €15,819 million. This was mainly due to the issue of two eurobonds (including one green bond) in the amount of €1 billion each, as well as new bank loans taken out for approximately €500 million. The reclassification of a eurobond with a carrying amount of around €1 billion to current financial indebtedness and the early repayment of U.S. bonds worth around €400 million had an offsetting effect. At €1,484 million, other provisions were €144 million below the figure as of December 31, 2019.

Deferred tax liabilities declined from €1,764 million in the previous year to €1,447 million, while tax provisions were up €71 million from the 2019 year-end figure, at €587 million.

Current liabilities declined by €324 million to €16,280 million, primarily due to the derecognition of the disposal group for the construction chemicals business.

The €113 million year-on-year decrease in current provisions to €2,825 million largely resulted from lower personnel obligations. This was partially offset by higher provisions for restructuring measures. Tax liabilities rose by €232 million compared with the previous year to €988 million. Trade accounts payable increased by €204 million to €5,291 million.

At €3,395 million, current financial indebtedness was €33 million above the prior-year figure. This was mainly due to the above-mentioned reclassification of the eurobond from noncurrent to current financial indebtedness and the issue of commercial paper. The increase was largely offset by the planned repayment of eurobonds worth around €1,300 million.

Net debt declined by €829 million compared with December 31, 2019, to €14,677 million as cash and cash equivalents rose at a faster rate than financial indebtedness.

For more information on the composition and development of individual balance sheet items, see the Notes to the Consolidated Financial Statements from page 228 onward

For more information on the development of the balance sheet, see the Ten-Year Summary on pages 314 to 317

Net debt

Million €	December 31, 2020	December 31, 2019
Noncurrent financial indebtedness	15,819	15,015
+ Current financial indebtedness	3,395	3,362
Financial indebtedness	**19,214**	**18,377**
– Marketable securities	207	444
– Cash and cash equivalents	4,330	2,427
Net debt	**14,677**	**15,506**

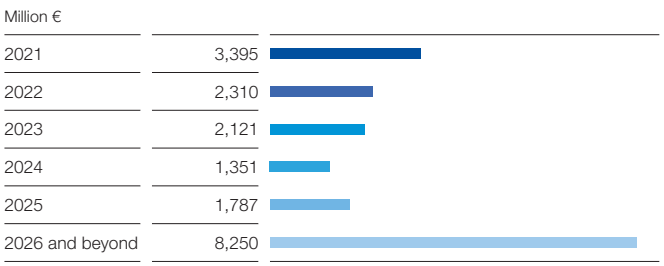
Financing policy and credit ratings

- **Financing principles remain unchanged**
- **Rated A by Moody's, Standard & Poor's and Fitch**

Our financing policy aims to ensure our solvency at all times, limiting the risks associated with financing and optimizing our cost of capital. We preferably meet our external financing needs on the international capital markets.

We strive to maintain a solid A rating, which ensures unrestricted access to financial and capital markets. Our financing measures are aligned with our operational business planning as well as the company's strategic direction and also ensure the financial flexibility to take advantage of strategic options.

Maturities of financial indebtedness

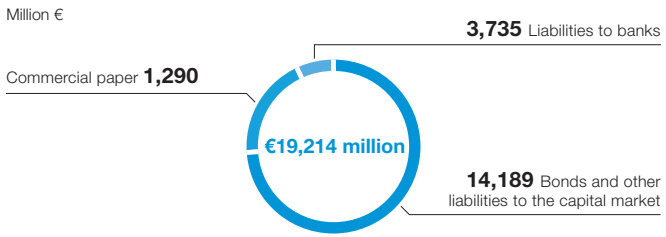


BASF enjoys good credit ratings, especially compared with competitors in the chemical industry. On December 8, 2020, Standard & Poor's confirmed its long and short-term ratings for BASF of A/A-1/outlook negative. Fitch confirmed its rating for BASF of A/F1/outlook stable on February 12, 2021. Moody's confirmed its rating for BASF of A3/P-2/outlook stable on February 12, 2021.

We have solid financing. Corporate bonds form the basis of our medium to long-term debt financing. These are issued in euros and other currencies with different maturities as part of our €20 billion debt issuance program. The goal is to create a balanced maturity profile, diversify our investor base and optimize our debt capital financing conditions.

For short-term financing, we use BASF SE's global commercial paper program, which has an issuing volume of up to $12.5 billion. As of December 31, 2020, commercial paper with a carrying amount of €1,290 million was outstanding under this program. A firmly committed, syndicated credit line of €6 billion was taken out in January 2019 to cover the repayment of outstanding commercial paper. It can also be used for general company purposes. In the second quarter of 2020, we took out a one-year credit line with several banks with a total volume of €3 billion. Neither credit line was used at any point in 2020. Our external financing is therefore largely independent of short-term fluctuations in the credit markets.

Financing instruments



BASF Group's most important financial contracts contain no side agreements with regard to specific financial ratios (financial covenants) or compliance with a specific rating (rating trigger).

To minimize risks and leverage internal optimization potential within the Group, we bundle the financing, financial investments and foreign currency hedging of BASF SE's subsidiaries within the BASF Group where possible. Foreign currency risks are primarily hedged centrally using derivative financial instruments in the market.

Our interest risk management generally pursues the goal of reducing interest expenses for the BASF Group and limiting interest risks. Interest rate hedging transactions are therefore conducted with banks in order to turn selected liabilities to the capital market from fixed to variable interest rates or vice versa.

For more information on the financing tools and hedging instruments used, see Note 21 from page 279 onward and Note 26 from page 291 onward in the Notes to the Consolidated Financial Statements

Statement of cash flows

- **Cash flows from operating activities and free cash flow lower year on year**

Cash flows from operating activities amounted to €5,413 million, compared with €7,474 million in the previous year. The decrease in cash flows from operating activities was largely due to the cash tied up in receivables, especially in trade accounts receivable. The development of trade accounts receivable tied up cash of €994 million in 2020, compared with cash released of €1,208 million in the previous year. This could not be offset by the €370 million increase in cash released from reduction in inventories.

At –€1,060 million, net income was down €9,481 million from the prior-year figure in 2020. However, the main causes of the decline in earnings did not affect cash flows from operating activities: net divestiture and disposal gains, which were €6,060 million higher in the previous year, were reclassified using miscellaneous items to cash flows from investing activities. Moreover, depreciation and amortization of property, plant and equipment and intangible assets exceeded the prior-year figure by €2,533 million due to higher impairments. In addition, negative income from companies accounted for using the equity method reduced earnings by €821 million in 2020 compared with the previous year. This likewise did not have any effect on cash.

Cash flows from investing activities amounted to –€1,904 million in 2020, meaning that cash outflows were €714 million higher than in the previous year. This was mainly attributable to the €1,001 million increase in payments made for acquisitions. In 2020, €1,240 million was paid for the polyamide business acquired from Solvay. Payments received from divestitures were at the prior-year level. In addition, cash inflows from the disposal of property, plant and equipment and intangible assets in 2020 was €677 million lower than in the previous year. This was offset by the €695 million decrease to €3,129 million in payments made for property, plant and equipment and intangible assets.

Cash flows from financing activities amounted to –€1,556 million, compared with –€6,405 million in the previous year. Dividend payments of €3,139 million were partially offset by the net cash inflow of €1,580 million from the change in financial and similar liabilities. The total cash outflow of €6,405 million in the previous year was due in particular to the net cash outflow from the change in financial and similar liabilities and dividend payments of €3,064 million.

Cash and cash equivalents amounted to €4,335 million as of December 31, 2020. They rose by a cash-effective amount of €1,953 million in 2020.

Free cash flow, which remains after deducting payments made for property, plant and equipment and intangible assets from cash flows from operating activities, represents the financial resources remaining after investments. It declined to €2,284 million compared with €3,650 million in the previous year due to the decrease in cash flows from operating activities.

Statement of cash flows

Million €

	2020	2019
Net income	–1,060	8,421
Depreciation and amortization of property, plant and equipment and intangible assets	6,751	4,218
Changes in net working capital	–400	1,410
Miscellaneous items	122	–6,575
Cash flows from operating activities	**5,413**	**7,474**
Payments made for property, plant and equipment and intangible assets	–3,129	–3,824
Acquisitions/divestitures	1,280	2,361
Changes in financial assets and miscellaneous items	–55	273
Cash flows from investing activities	**–1,904**	**–1,190**
Capital increases/repayments and other equity transactions	3	1
Changes in financial and similar liabilities	1,580	–3,342
Dividends	–3,139	–3,064
Cash flows from financing activities	**–1,556**	**–6,405**
Cash-effective changes in cash and cash equivalents	1,953	–121
Cash and cash equivalents at the beginning of the period and other changes	2,382	2,576
Cash and cash equivalents at the end of the year[a]	**4,335**	**2,455**

a In 2020 and 2019, cash and cash equivalents presented in the statement of cash flows deviated from the figures in the balance sheet due to the reclassification of cash and cash equivalents to disposal groups: €5 million for the pigments business as of December 31, 2020, and €21 million for the construction chemicals business and €7 million for the pigments business as of December 31, 2019.

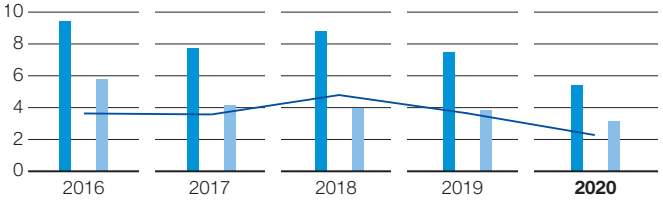
Free cash flow

Million €

	2020	2019
Cash flows from operating activities	5,413	7,474
– Payments made for property, plant and equipment and intangible assets	3,129	3,824
Free cash flow	**2,284**	**3,650**

Cash flow

Billion €



Cash flows from operating activities
Payments made for property, plant and equipment and intangible assets
Free cash flow

Actual Development Compared With Outlook for 2020

BASF Group sales in 2020 were at the prior-year level, contrary to our forecast at the beginning of the year of sales growth to between €60 billion and €63 billion. Sales development in the Chemicals, Industrial Solutions and Materials segments in particular was weaker than expected at the beginning of 2020. Lower demand as a consequence of the coronavirus pandemic led to a slight overall decline in volumes in the BASF Group, contrary to our assumptions. After forecasting lower prices, we were able to slightly increase price levels as a result of significantly higher precious metal prices. EBIT before special items amounted to €3,560 million, falling short of the €4.2 billion to €4.8 billion range we had forecast in February 2020. Earnings developments did not meet our expectations, especially in the Surface Technologies and Agricultural Solutions segments and in Other. The BASF Group's return on capital employed (ROCE) declined considerably rather than slightly compared with 2019. ROCE was also considerably below the cost of capital percentage. In April 2020, we withdrew the outlook provided in February 2020 due to the uncertainty surrounding the length and spread of the coronavirus pandemic, as well as the measures to contain it. In October 2020, we forecast sales of between €57 billion and €58 billion. We expected EBIT before special items of between €3.0 billion and €3.3 billion and a ROCE of between 0.0% and 1.0%.

Forecast/actual comparison[a]

	Sales		EBIT before special items		ROCE	
	2020 forecast	**2020 actual**	**2020 forecast**	**2020 actual**	**2020 forecast**	**2020 actual**
Chemicals	slight increase	considerable decline	considerable decline	considerable decline	slight increase	considerable decline
Materials	considerable increase	considerable decline	considerable decline	considerable decline	considerable decline	considerable decline
Industrial Solutions	slight increase	considerable decline	considerable increase	at prior-year level	considerable decline	considerable decline
Surface Technologies	slight increase	considerable increase	slight increase	considerable decline	at prior-year level	considerable decline
Nutrition & Care	considerable increase	slight decline	slight increase	slight decline	considerable increase	slight increase
Agricultural Solutions	considerable increase	slight decline	slight increase	considerable decline	slight increase	considerable decline
Other	at prior-year level	considerable decline	considerable increase	considerable decline	–	–
BASF Group	**€60 billion–€63 billion[b]**	**€59,149 million**	**€4.2 billion–€4.8 billion[b]**	**€3,560 million**	**6.7%–7.7%[b]**	**1.7%**

a For sales, "slight" represents a change of 1–5%, while "considerable" applies to changes of 6% and higher. "At prior-year level" indicates no change (+/–0%). For earnings, "slight" means a change of 1–10%, while "considerable" is used for changes of 11% and higher. "At prior-year level" indicates no change (+/–0%). At a cost of capital percentage of 9% for 2020, we define a change in ROCE of 0.1 to 1.0 percentage points as "slight," a change of more than 1.0 percentage points as "considerable" and no change (+/–0 percentage points) as "at prior-year level."
b We withdrew our outlook in April 2020 and updated it in October 2020, forecasting sales of between €57 billion and €58 billion, EBIT before special items of between €3.0 billion and €3.3 billion, and a ROCE of between 0.0% and 1.0%.

Sales in the **Chemicals** segment declined considerably in 2020, after we had expected slight growth at the beginning of the year. This was largely the result of lower prices than expected in both divisions. Also, volumes were at the prior-year level overall, contrary to our forecast of volume growth. We were able to increase volumes in the Intermediates division as planned. By contrast, sales volumes in the Petrochemicals division remained at the prior-year level. This was primarily due to the effects of the coronavirus pandemic and lower product availability owing to the unplanned outage at the steam cracker in Port Arthur, Texas. EBIT before special items declined considerably as expected. ROCE declined considerably instead of rising slightly as expected. This was due to lower margins in both divisions as a result of the effects of the coronavirus pandemic and special charges, mainly for impairments on property, plant and equipment.

Sales in the **Materials** segment declined considerably, contrary to our forecast of considerable sales growth. Lower prices and negative currency effects exceeded the positive contribution from the acquisition of Solvay's integrated polyamide business. Volumes did not meet expectations either and were lower rather than higher. This was mainly attributable to weaker demand from our customer industries as a result of the coronavirus pandemic, especially from the automotive industry. EBIT before special items and ROCE declined considerably as expected.

Sales in the **Industrial Solutions** segment declined considerably, falling short of our expectations of slight growth. This was primarily due to lower price levels in both divisions. Contrary to our forecast, we recorded lower volumes in the Performance Chemicals division. In the Dispersions & Pigments division, too, sales volumes were merely on a level with the previous year. In a continued challenging market environment, the segment's EBIT before special items was at the prior-year level, after we had forecast a considerable increase. This was mainly driven by volumes development. ROCE was considerably below the prior-year level, as expected.

We considerably improved sales in the **Surface Technologies** segment, outperforming our forecast of a slight increase. The increase was primarily attributable to considerably higher sales in the Catalysts division as a result of higher precious metal prices. This more than offset the sales decrease in the Coatings division, which declined considerably rather than slightly. EBIT before special items declined considerably, contrary to our expectations of a slight increase. This was mainly due to volumes development in the Coatings division and higher fixed costs in the Catalysts division. Improved earnings in precious metal trading were unable to compensate for this. ROCE declined considerably and was thus below our expectations. This was largely the result of special charges,

mainly for goodwill impairments in the surface treatments cash-generating unit, and for property, plant and equipment in the Catalysts division.

In the **Nutrition & Care** segment, sales declined slightly instead of rising considerably as forecast. Although both divisions increased sales volumes as forecast, this was unable to compensate for negative currency effects and the expected decrease in price levels. EBIT before special items also declined slightly instead of rising slightly, mainly as a result of sales developments. Rather than increasing considerably as expected, ROCE rose only slightly, primarily due to impairments in connection with the optimization of production sites within the Nutrition & Health division.

Contrary to our forecast at the beginning of the year of a considerable increase, sales in the **Agricultural Solutions** segment declined slightly in a continued challenging market environment. We only increased sales volumes slightly, not considerably, which meant that significantly negative currency effects could not be offset. EBIT before special items declined considerably as a result. We had anticipated a slight increase at the beginning of 2020. ROCE also declined considerably, contrary to our assumption of a slight increase. This was primarily due to special charges for streamlining the global glufosinate-ammonium production network.

Sales in **Other** were considerably below the previous year in 2020, instead of being at the 2019 level as expected. This was mainly due to the sales decrease in commodity trading and the remaining activities of BASF's paper and water chemicals business, which were not part of the transfer to Solenis and are reported under Other. We were unable to considerably increase EBIT before special items as forecast. Instead, EBIT before special items declined considerably due to lower contributions from other businesses.

In 2020, we invested a total of €2.9 billion in capital expenditures (capex), excluding additions from acquisitions, IT investments, restoration obligations and right-of-use assets arising from leases. The figure forecast in February 2020 was €3.4 billion and the figure forecast in April 2020 was €2.8 billion.

For information on our expectations for 2021, see page 155 onward
For information on investments, see page 50

Business Review by Segment

Segment overview

Million €

	Sales		Income from operations before depreciation and amortization (EBITDA)		Income from operations (EBIT) before special items	
	2020	2019	2020	2019	2020	2019
Chemicals	8,071	9,532	1,237	1,545	445	791
Materials	10,736	11,466	1,556	1,691	835	1,003
Industrial Solutions	7,644	8,389	1,099	1,327	822	820
Surface Technologies	16,659	13,142	900	1,120	484	722
Nutrition & Care	6,019	6,075	1,152	1,189	773	793
Agricultural Solutions	7,660	7,814	1,582	1,647	970	1,095
Other	2,360	2,898	–1,032	–334	–769	–581
BASF Group	**59,149**	**59,316**	**6,494**	**8,185**	**3,560**	**4,643**

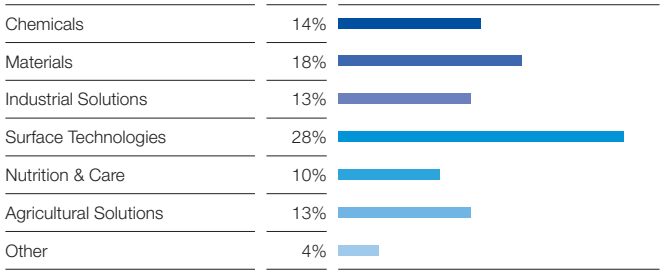
Segment overview

Million €

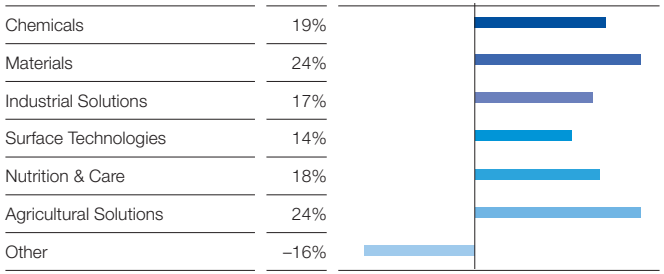
	Income from operations (EBIT)		Assets		Investments including acquisitions[a]	
	2020	2019	2020	2019	2020	2019
Chemicals	–192	622	7,896	8,978	871	1,108
Materials	–109	973	9,118	8,782	1,957	784
Industrial Solutions	630	889	6,402	6,903	331	426
Surface Technologies	–587	663	11,691	11,773	585	565
Nutrition & Care	688	644	6,214	6,399	510	595
Agricultural Solutions	582	928	14,840	16,530	459	320
Other	–1,203	–518	24,131	27,585	156	299
BASF Group	**–191**	**4,201**	**80,292**	**86,950**	**4,869**	**4,097**

a Additions to property, plant and equipment (of which from acquisitions: €559 million in 2020 and €3 million in 2019) and intangible assets (of which from acquisitions: €691 million in 2020 and –€37 million in 2019)

Contributions to total sales by segment



Contributions to EBITDA by segment



Sales[a]

Million €

	Q1		Q2		Q3		Q4	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Chemicals	2,350	2,548	1,791	2,180	1,783	2,429	2,147	2,375
Materials	2,874	2,931	2,143	2,961	2,657	2,894	3,062	2,680
Industrial Solutions	2,098	2,186	1,819	2,141	1,844	2,130	1,883	1,932
Surface Technologies	4,328	3,022	3,099	3,161	4,142	3,325	5,090	3,634
Nutrition & Care	1,582	1,561	1,555	1,495	1,427	1,519	1,455	1,500
Agricultural Solutions	2,819	2,649	1,766	1,796	1,474	1,561	1,601	1,808
Other	702	699	507	744	484	698	667	757
BASF Group	**16,753**	**15,596**	**12,680**	**14,478**	**13,811**	**14,556**	**15,905**	**14,686**

Income from operations (EBIT) before special items[a]

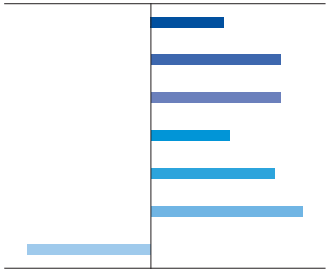
Million €

	Q1		Q2		Q3		Q4	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Chemicals	174	306	–2	119	46	251	227	115
Materials	209	323	–80	334	217	266	489	80
Industrial Solutions	273	264	163	243	186	205	200	108
Surface Technologies	220	151	–151	129	200	206	215	236
Nutrition & Care	254	222	256	220	143	225	120	126
Agricultural Solutions	809	740	120	121	26	73	15	161
Other	–299	–256	–80	–171	–237	–170	–153	16
BASF Group	**1,640**	**1,750**	**226**	**995**	**581**	**1,056**	**1,113**	**842**

a Quarterly results not audited

Contributions to EBIT before special items by segment

Chemicals	13%
Materials	23%
Industrial Solutions	23%
Surface Technologies	14%
Nutrition & Care	22%
Agricultural Solutions	27%
Other	–22%



Income from operations (EBIT)[a]

Million €

	Q1		Q2		Q3		Q4	
	2020	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**
Chemicals	170	302	–18	–37	–504	248	160	109
Materials	119	321	–102	319	–546	262	420	71
Industrial Solutions	240	407	133	228	78	207	179	47
Surface Technologies	217	144	–176	125	–803	192	175	202
Nutrition & Care	244	124	255	207	86	224	103	89
Agricultural Solutions	787	772	95	29	–304	43	4	84
Other	–321	–291	–128	–364	–645	160	–109	–23
BASF Group	**1,456**	**1,779**	**59**	**507**	**–2,638**	**1,336**	**932**	**579**

a Quarterly results not audited

Chemicals

The Chemicals segment consists of the Petrochemicals and Intermediates divisions. It supplies the other segments with basic chemicals and intermediates, contributing to the organic growth of our key value chains. Alongside internal transfers, our customers mainly come from the chemical and plastics industries. We aim to expand our competitiveness through technological leadership and operational excellence.

Divisions

Petrochemicals

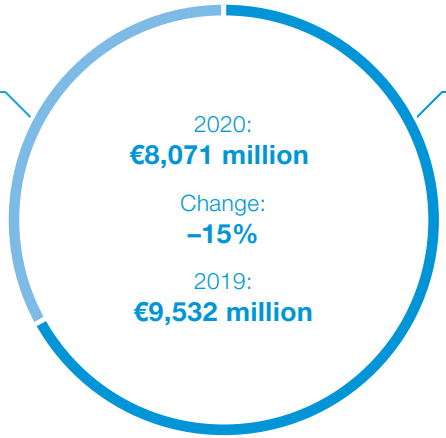
Broad portfolio of high-quality basic chemicals and specialties tailored to the needs of internal and external customers that serve as starting materials for products such as dispersions, paints, coatings, plastics, insulating materials and hygiene products

Intermediates

Comprehensive portfolio of intermediates and specialties, which are used as precursors for products such as coatings, plastics, textile fibers, pharmaceuticals and crop protection products

Sales

Intermediates €2,645 million
Change: **–8%**
Percentage of sales: **33%**



Petrochemicals €5,426 million
Change: **–19%**
Percentage of sales: **67%**

Factors influencing sales

Volumes	0%
Prices	–13%
Portfolio	0%
Currencies	–2%
Sales	**–15%**

Income from operations before special items

Million €

2020	**445**
2019	791

Change: **–€346 million**

Strategy

- **Integrated production facilities form core of Verbund**
- **Technological leadership and operational excellence provide most important competitive edge**

The Chemicals segment is at the heart of the Verbund. Its production facilities supply BASF's segments with basic chemicals and intermediates to produce higher value-added products. In this way, the segment makes a significant contribution to BASF's organic growth. The Chemicals segment is also a reliable supplier and provides chemicals of consistently high quality and markets them to customers in downstream industries.

We create value through process and product innovation and invest in research and development to implement new, sustainable technologies and to make our existing technologies even more efficient. Technological leadership, operational excellence and a clear focus on individual value chains are among our most important competitive advantages. We concentrate on the critical success factors of the classic chemicals business: leveraging economies of scale and the advantages of our Verbund, high asset reliability, continuous optimization of access to raw materials, lean and energy efficient processes, and reliable, cost-effective logistics. Furthermore, we are constantly improving our global production structures and aligning these with regional market requirements. We continuously improve our value chains and are expanding our market position – especially in Asia – with investments and collaborations in growth markets.

How we create value – an example

ChemCycling™

An innovative approach to recycling plastic waste

Value for the environment

Recycled raw materials used in the Verbund from 2025 onward

250,000 metric tons

Value for BASF and for our customers

Number of sales products using recycled raw materials

40 products

ChemCycling™ is a vital lever in creating a circular economy for plastics. The project covers plastic waste for which high-value processing is not yet available and makes it possible to produce virgin-grade chemical products from recycled feedstocks. At the same time, greenhouse gas emissions are lower than for conventional products made from primary fossil resources as the waste is no longer incinerated. In 2020, we processed around 1,000 metric tons of recycled raw materials in the Verbund, saving the same amount of fossil resources. We plan to successively increase the use of recycled feedstocks over the coming years. The ChemCycling™ project will play a significant part in achieving BASF's target of using 250,000 metric tons of recycled and waste-based feedstocks annually from 2025 onward.

For more information on ChemCycling™, see page 116 onward

As part of its ChemCycling™ project, BASF uses pyrolysis oil produced by partners from post-consumer plastic waste as a feedstock in its Verbund production. We manufacture virgin-grade plastics from the pyrolysis oil according to a mass balance approach. Currently, BASF already has 40 independently certified sales products with an allocated share of recycled raw materials in its portfolio. These products have the same properties as those produced from fossil raw materials. This means that our customers can process them in the same way as conventionally produced products and use them in demanding applications such as food packaging or automotive parts. Our customers commercially marketed the first applications based on chemically recycled plastic waste in 2020.

There is continued focus on the construction of an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong.

As part of a memorandum of understanding signed in October 2019, the Abu Dhabi National Oil Company, the Adani group, BASF and Borealis AG have completed a joint feasibility study for a chemical complex in Mundra, India. The global economic uncertainties caused by the coronavirus pandemic led the partners to put the project on hold in November 2020. The partners remain convinced of the strong fundamentals represented by the Indian market and have agreed to re-examine market conditions in the future.

In our existing 50:50 joint venture BASF-YPC Company Limited (BYC) in Nanjing, China, BASF and Sinopec plan to further expand the site to strengthen the joint production of chemical products in China. In addition, in 2020 we increased the production capacity for neopentyl glycol at the Nanjing site to further support the growth of our customers in China. Strategically, we continue to invest in growth markets, such as the planned expansion of production capacities for tertiary butylamines in Nanjing, China, by 2022.

At our Verbund site in Antwerp, Belgium, we are expanding our ethylene oxide plant. The project also includes several downstream plants, for example, to produce surfactants. After completing the multi-stage startup process for the new, highly efficient acetylene plant in Ludwigshafen, Germany, we have improved our competitiveness and strengthened the product line's sustainability.

As part of the global optimization of production structures, BASF Idemitsu Co. Ltd, a joint venture between BASF and Idemitsu Kosan Co. Ltd., closed a production plant for butanediol in Chiba, Japan, in 2020. Another butanediol plant operated by our joint venture BASF Petronas Chemicals Sdn. Bhd. in Kuantan, Malaysia, will be closed in 2021.

Products, customers and applications

Division	Products	Customer industries and applications
Petrochemicals	Ethylene, propylene, butadiene, benzene, alcohols, solvents, plasticizers, alkylene oxides, glycols, acrylic monomers, styrene and polystyrene, styrenic foams, superabsorbents	Use in the BASF Verbund Chemical and plastics industry, construction, detergent, hygiene, automotive, packaging and textile industries; production of paints, coatings, cosmetics, oilfield and paper chemicals
Intermediates	Basic products: butanediol and derivatives, alkylamines and alkanolamines, neopentyl glycol, formic and propionic acid Specialties: specialty amines such as tertiary butylamine and polyetheramine, gas treatment chemicals, vinyl monomers, acid chlorides, chloroformates, chiral intermediates	Use in the BASF Verbund Chemical, plastics, coatings, construction, automotive, textile, pharmaceutical and agricultural industries; production of detergents and cleaners as well as crop protection products and textile fibers

Material investments

Location	Project	Additional annual capacity through expansion (metric tons)	Total annual capacity (metric tons)	Startup
Antwerp, Belgium	Expansion: ethylene oxide plant	n/a	n/a	2022
Nanjing, China	Expansion: neopentyl glycol plant[a]	40,000	80,000	2020
	Expansion: tertiary butylamine plant	30% increase	–	2022

a Operated by a joint venture with Sinopec

Production capacities of selected products[a]

Product	Sites: Europe	North America	Asia Pacific	South America, Africa, Middle East	Annual capacity (metric tons)
Acrylic acid	■	■	■	■	1,510,000
Alkylamines	■	■	■		250,000
Formic acid	■	■	■		305,000
Benzene	■	■	■		910,000
Butadiene	■	■	■		680,000
Butanediol equivalents	■	■	■		645,000
Ethanolamines and derivatives	■		■		430,000
Ethylene	■	■	■		3,480,000
Ethylene oxide	■	■	■		1,445,000
Neopentyl glycol	■	■	■		255,000
Oxo-C4 alcohols (calculated as butyraldehyde)	■	■	■		1,625,000
PolyTHF®	■	■	■		350,000
Propionic acid	■		■		180,000
Propylene	■	■	■		2,630,000
Styropor®/Neopor®	■		■		545,000
Superabsorbents	■	■	■	■	590,000
Plasticizers	■	■			595,000

a All capacities are included at 100%, including plants belonging to joint operations and joint ventures.

Business review

- **Sales down 15% to €8,071 million, mainly due to lower prices**
- **EBIT before special items declines 44% to €445 million as a result of considerably lower contributions from both divisions**

Sales to third parties in the Chemicals segment declined by €1,461 million year on year to €8,071 million in 2020. This was primarily due to the considerable decrease in the Petrochemicals division, where sales declined by €1,244 million to €5,426 million. At €2,645 million, sales in the Intermediates division decreased by €217 million compared with the prior-year figure.

Factors influencing sales – Chemicals

	Chemicals	Petrochemicals	Intermediates
Volumes	0%	0%	1%
Prices	–13%	–17%	–7%
Portfolio	0%	0%	0%
Currencies	–2%	–2%	–2%
Sales	**–15%**	**–19%**	**–8%**

Sales development was mainly driven by significantly lower prices. In the Petrochemicals division, prices declined in almost all value chains as a result of lower raw materials prices and higher product availability on the market. Higher product availability on the market also led to lower prices in the Intermediates division, particularly in the acids and polyalcohols business and in the butanediol and derivatives business. Sales were also negatively impacted by currency effects.

Segment data – Chemicals

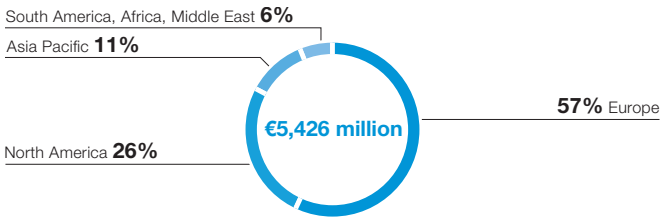
Million €		2020	2019	+/–
Sales to third parties		8,071	9,532	–15%
of which Petrochemicals		5,426	6,670	–19%
Intermediates		2,645	2,862	–8%
Intersegment transfers		2,861	3,428	–17%
Sales including transfers		10,932	12,960	–16%
Income from operations before depreciation, amortization and special items		1,305	1,574	–17%
Income from operations before depreciation and amortization (EBITDA)		1,237	1,545	–20%
EBITDA margin	%	15.3	16.2	–
Depreciation and amortization[a]		1,429	923	55%
Income from operations (EBIT)		–192	622	.
Special items		–637	–169	.
EBIT before special items		445	791	–44%
Return on capital employed (ROCE)	%	–2.2	6.8	–
Assets		7,896	8,978	–12%
Investments including acquisitions[b]		871	1,108	–21%
Research and development expenses		96	108	–11%

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

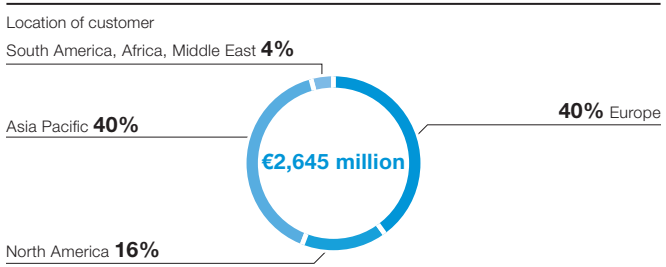
Volumes matched the prior-year level. The Intermediates division recorded slightly higher volumes in Asia, mainly in the amines business. This was offset by lower sales volumes, especially in the amines business in Europe and in the butanediol and derivatives business in North America. In the Petrochemicals division, volumes were at the level of the previous year. Sales volumes declined, primarily due to the effects of the coronavirus pandemic and the unplanned outage at the steam cracker in Port Arthur, Texas. The main offsetting factor was higher volumes of steam cracker products in Europe.

Petrochemicals – Sales by region

Location of customer



Intermediates – Sales by region



Income from operations (EBIT) before special items was €445 million, €346 million below the 2019 figure. The considerable decrease affected both divisions, but in particular the Petrochemicals division, and was primarily attributable to lower margins.

EBIT declined by €814 million year on year to –€192 million. This included special charges of €637 million, mainly for impairments on property, plant and equipment in North America, Asia and Europe. These primarily reflected expectations of a prolonged oversupply of basic chemicals and the resulting decrease in prices and margins.

See page 155 for the outlook for 2021

Materials

The Materials segment is composed of the Performance Materials division and the Monomers division. The Materials segment's portfolio comprises advanced materials and their precursors for new applications and systems. These include isocyanates and polyamides as well as inorganic basic products and specialties for the plastics and plastics processing industries. We want to focus primarily on organic growth through differentiation via specific technological expertise, industry know-how and customer proximity to maximize value in the isocyanate and polyamide value chains.

Divisions

Performance Materials

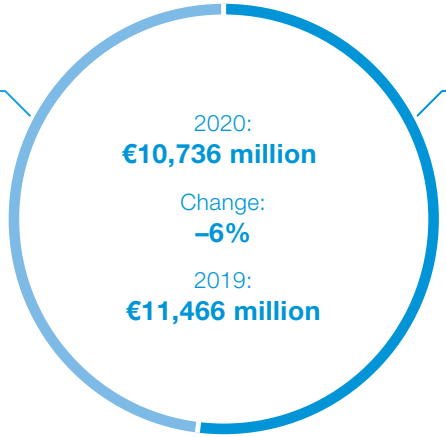
Polyurethanes, thermoplastics and foam specialties for sectors such as the transportation, construction and consumer goods industries, as well as for industrial applications

Monomers

Isocyanates and polyamides as well as inorganic basic products and specialties for sectors such as the plastics, automotive and construction industries

Sales

Monomers €5,101 million
Change: **–6%**
Percentage of sales: **48%**



Performance Materials €5,635 million
Change: **–7%**
Percentage of sales: **52%**

Factors influencing sales

Volumes	–5%
Prices	–5%
Portfolio	6%
Currencies	–2%
Sales	**–6%**

Income from operations before special items

Million €

2020	**835**
2019	1,003

Change: **–€168 million**

Strategy

- **Industry-leading portfolio of high-performance materials and their precursors, leveraging two integrated value chains**
- **Differentiated products and solutions for the automotive, construction and consumer goods industries**

The Materials segment provides a toolbox of high-performance materials that is unique in the industry. Our major integrated isocyanate and polyamide value chains are complemented by a number of specialties for the plastics and plastics processing industries. The Materials segment offers specially developed polymers and solutions to customer industries such as automotive, construction, electrical and electronics, and consumer goods.

We cater to the growing needs of consumers in all key markets by developing new applications, high-performance materials, systems and digital solutions. Application know-how, industry knowledge and customer proximity are key differentiators. BASF's competence in this field is extended by advanced material simulation capabilities, which are a unique selling proposition in the industry.

Additional differentiators, which continue to gain importance, are our products that enable a circular economy and our sustainable production approaches. BASF plays a vital role in substantial parts of plastic value chains, from monomers to polymers and their formulated specialties. This offers us the unique opportunity to shape and close cycles with our technological capabilities. One example is a recent development of a chemical recycling process for used mattresses.

Differentiated service and product offerings enable us to continuously expand the application horizon of our portfolio. The segment's global production network allows us to operate close to our customers.

How we create value – an example

Adipic acid

More sustainable adipic acid production in Ludwigshafen reduces carbon footprint

Value for the environment

CO_2 avoided per year

100,000 metric tons

Value for BASF

Annual production volume

720,000 metric tons

The synthesis of adipic acid is a very complex process in which nitrous oxide is produced. BASF re-uses the nitrous oxide in the Verbund instead of decomposing it, as is usual in the chemicals industry. Most of the nitrous oxide is isolated and used as a feedstock in the Intermediates division. BASF avoids 100,000 metric tons of CO_2 per year through investments in our production plants and the strength of our Verbund in Ludwigshafen, Germany. The carbon footprint can be further reduced with additional measures such as using the mass balance approach, electricity from renewable sources and the ChemCycling™ method.

Adipic acid is a monomer used in the production of polyamides and polyesters. It is also used as a chemical intermediate, for example to produce plastics for the automotive industry. BASF produces around 720,000 metric tons of adipic acid per year at its sites in Ludwigshafen, Germany; Chalampé, France; and Onsan, South Korea.

On January 31, 2020, BASF closed the acquisition of Solvay's integrated polyamide business, which was agreed in September 2017. The transaction broadens BASF's polyamide capabilities, allowing us to support our customers with even better engineering plastics solutions for applications such as autonomous driving and e-mobility. It also enhances access to growth markets in Asia as well as in North and South America. Through the backward integration into the key raw material adiponitrile (ADN), BASF now has production plants along the entire value chain for polyamide 6.6. At closing, approximately 700 Solvay employees joined BASF.

For more information on the transaction with Solvay, see page 51

In May 2020, BASF started construction of the first plants at its smart Verbund site in Zhanjiang in the southern Chinese province of Guangdong. This came as another milestone in the development of the company's investment project since its official commencement in November 2019. The plants will produce engineering plastics and thermoplastic polyurethane (TPU) to serve the increasing needs of various growth industries in the southern China market and in other Asian markets.

Products, customers and applications

Division	Products	Customer industries and applications
Performance Materials	Engineering plastics, biodegradable plastics, foam specialties, polyurethanes	Automotive manufacture, electrical engineering, packaging, games, sports and leisure, household, mechanical engineering, construction, agriculture, medical technology, sanitation and water industry, solar thermal energy and photovoltaics
Monomers	Isocyanates (MDI, TDI), ammonia, caprolactam, adipic acid, chlorine, urea, glues and impregnating resins, caustic soda, polyamides 6 and 6.6, standard alcoholates, sulfuric and nitric acid	Use in the BASF Verbund Industries such as plastics, woodworking, furniture, packaging, textile, construction and automotive

Production capacities of selected products[a]

	Sites				
Product	Europe	North America	Asia Pacific	South America, Africa, Middle East	Annual capacity (metric tons)
Ammonia	■	■			1,765,000
Chlorine	■				595,000
Urea	■				545,000
Isocyanates	■	■	■		2,610,000
Polyamides 6 and 6.6	■	■	■		925,000
Polyamide precursors	■	■	■		1,420,000
Propylene oxide	■				675,000
Sulfuric acid	■				920,000

a All capacities are included at 100%, including plants belonging to joint operations and joint ventures.

Material investments

Location	Project	Startup
Geismar, Louisiana	Construction: MDI synthesis unit	2020
Guaratinguetá, Brazil	Capacity expansion: sodium methylate	2020
Zhanjiang, China	Construction: engineering plastics plant	2022

Business review

- **Sales 6% below previous year at €10,736 million, mainly as a result of lower prices and volumes**
- **EBIT before special items down 17% at €835 million, primarily due to lower polyamide margins and volumes**

Sales to third parties in the Materials segment declined by €730 million compared with 2019 to €10,736 million. The decline was mostly attributable to the Performance Materials division, where sales decreased by €429 million year on year to €5,635 million. The Monomers division recorded a sales decrease of €301 million to €5,101 million.

Factors influencing sales – Materials

	Materials	Performance Materials	Monomers
Volumes	–5%	–6%	–4%
Prices	–5%	–4%	–7%
Portfolio	6%	5%	7%
Currencies	–2%	–2%	–2%
Sales	**–6%**	**–7%**	**–6%**

Segment data – Materials

Million €		2020	2019	+/–
Sales to third parties		10,736	11,466	–6%
of which Performance Materials		5,635	6,064	–7%
Monomers		5,101	5,402	–6%
Intersegment transfers		720	849	–15%
Sales including transfers		11,456	12,315	–7%
Income from operations before depreciation, amortization and special items		1,714	1,719	0%
Income from operations before depreciation and amortization (EBITDA)		1,556	1,691	–8%
EBITDA margin	%	14.5	14.7	–
Depreciation and amortization[a]		1,665	718	132%
Income from operations (EBIT)		–109	973	.
Special items		–944	–30	.
EBIT before special items		835	1,003	–17%
Return on capital employed (ROCE)	%	–1.1	10.7	–
Assets		9,118	8,782	4%
Investments including acquisitions[b]		1,957	784	150%
Research and development expenses		182	193	–6%

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

The sales decrease was due in part to lower prices. In the Monomers division, prices levels declined for polyamides in particular due to lower raw materials prices and higher product availability on the market. Isocyanate prices also decreased. In the Performance Materials division, prices declined for engineering plastics and polyurethane systems in particular as a result of lower raw materials prices.

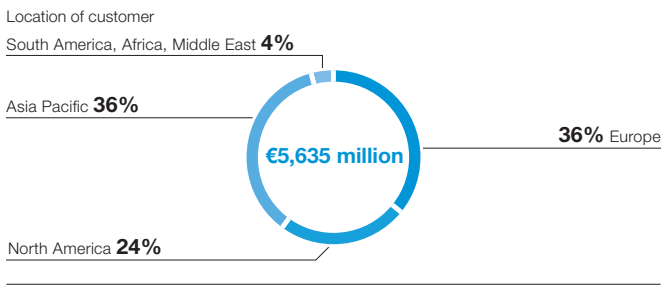
Sales were also reduced by lower volumes in both divisions due to the effects of the coronavirus pandemic. In the Performance Materials division, volumes declined for engineering plastics, polyurethane systems and Cellasto, primarily as a result of weaker demand from the automotive industry in Europe and North America in particular. The Monomers division recorded lower volumes, especially of toluene diisocyanates (TDI) and polyamides.

Currency effects had a slightly negative impact on sales.

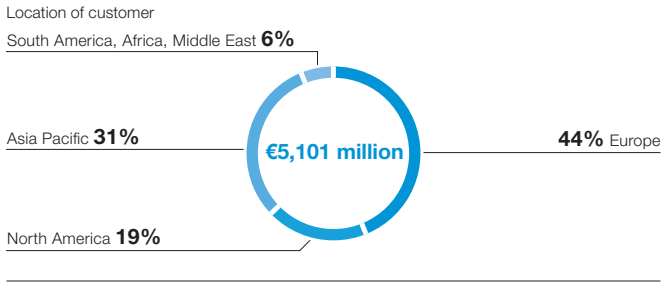
Sales in both divisions were positively impacted by portfolio effects from the acquisition of Solvay's integrated polyamide business.

In the Performance Materials division, sales to the automotive industry were considerably below the previous year due mainly to lower volumes. In Asia, sales volumes grew in 2020 after a weak first half of the year, driven by strong demand in China, while volumes in Europe and North America remained below the prior-year level. Sales in the consumer goods industry declined, primarily due to lower prices, while volumes were only slightly below the level of the previous year. Higher volumes in Asia, especially in the appliances segment, were able to partially offset lower sales volumes in Europe and North America. Sales also decreased considerably in the construction industry due to lower volumes and prices. Significantly higher sales volumes in Asia, especially in China, were unable to offset lower volumes in Europe and North America.

Performance Materials – Sales by region



Monomers – Sales by region



Income from operations (EBIT) before special items declined by €168 million compared with the previous year to €835 million. This was attributable to a considerable decrease in the Monomers division, mainly due to lower polyamide margins and volumes.

In the Performance Materials division, EBIT before special items was slightly above the prior-year level, primarily as a result of improved margins.

EBIT declined by €1,082 million year on year to –€109 million. This included special charges of €944 million, mainly for impairments on property, plant and equipment in Europe due to a continued oversupply and the resulting pressure on prices and margins.

See page 155 for the outlook for 2021

Industrial Solutions

The Industrial Solutions segment consists of the Dispersions & Pigments and the Performance Chemicals divisions. It develops and markets ingredients and additives for industrial applications, such as fuel and lubricant solutions, polymer dispersions, pigments, resins, electronic materials, antioxidants, light stabilizers, oilfield chemicals, and mineral processing and hydrometallurgical chemicals. We aim to grow organically in key industries such as automotive, plastics, electronics, and energy and resources, and expand our position in value-enhancing additives and solutions by leveraging our comprehensive industry expertise and application know-how.

Divisions

Dispersions & Pigments

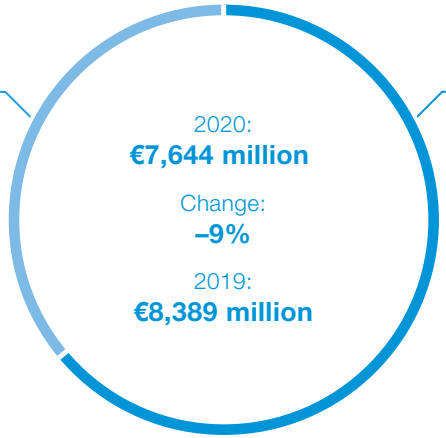
Raw materials used to formulate products in the coatings, construction, paper, printing and packaging, adhesives and electronics industries

Performance Chemicals

Customized products for various customer industries such as chemicals, plastics, consumer goods, energy and resources, as well as automotive and transportation

Sales

Performance Chemicals €2,775 million
Change: **–14%**
Percentage of sales: **36%**



Dispersions & Pigments €4,869 million
Change: **–6%**
Percentage of sales: **64%**

Factors influencing sales

Volumes	–2%
Prices	–4%
Portfolio	–1%
Currencies	–2%
Sales	**–9%**

Income from operations before special items

Million €

2020	**822**
2019	820

Change: **€2 million**

Strategy

- **Tailor-made products and solutions improve our customers' applications and processes**
- **Global presence ensures reliable supply to customers in all regions**

We take on the challenges posed by important future issues, especially those resulting from population growth: scarce resources, environmental and climatic stressors, as well as the desire for better quality of life. To achieve this, we focus on research and development and maintain close relationships with leading companies in our customer industries. We position ourselves globally to reliably supply customers in all regions. We invest in the development of innovations that enable our products and processes – as well as our customers' applications and processes – to make a contribution to sustainability, for example, by allowing resources to be used more efficiently.

Through our focus on the development of sustainable solutions, our products create additional value for our customers and enable differentiation. We develop new solutions together with our customers and strive for long-term partnerships that create profitable growth opportunities for both parties. To achieve this, we draw on our innovative strength and our many years of experience and in-depth industry expertise. Efficient production setups, backward integration in our Production Verbund's value chains, capacity management, and technology and cost leadership are also essential.

We support our customers by serving as a reliable supplier with consistently high product quality, good value offerings and lean processes. Through our in-depth application knowledge and technological innovations, we strengthen customer relationships in key industries.

We are increasing global production capacity for the antioxidant Irganox® 1010 by 40% through projects to expand production at our sites in Jurong, Singapore, and Kaisten, Switzerland. With the start of production in Kaisten in 2019 and Jurong in 2021, BASF aims to better serve the growing demand from customers in Asia and Europe, the Middle East and Africa. In addition, we plan to increase production capacities for the antioxidant Irganox® 1520L by 20% at the Pontecchio Marconi site in Italy. The expansion is scheduled to come on stream in the first quarter of 2021.

To continue to provide a reliable supply of high-quality dispersions solutions in the growing ASEAN, Australian and New Zealand markets, we have doubled the production capacity for acrylics dispersions in Pasir Gudang, Malaysia. The additional capacities started up in January 2021.

How we create value – an example

OPPANOL® B12 BMBcert™

First polyisobutene derived from 100% renewable resources

Value for the environment

Reduces greenhouse gas emissions by

up to 85%

Value for BASF

Annual volume of the relevant market in Europe

>15,000 metric tons

More and more industrial businesses are actively working to reduce their carbon footprint, and sustainable production is also playing an increasingly important role for customers when choosing which product to buy. Its properties make OPPANOL® a key building block for applications such as chewing gum, window sealants and adhesives. OPPANOL® improves product processing for our customers and makes their end products more efficient. BASF offers a sustainable alternative to conventional, fossil-based products with the new-generation polyisobutene OPPANOL® B 12 BMBcert™. By using 100% renewable resources like biogas in the production of OPPANOL® B 12 BMBcert™, BASF reduces greenhouse gas emissions by up to 85% compared with conventional production processes – without affecting product performance.

BASF has been marketing and developing polyisobutene for almost 90 years, setting standards on the market for this unique product. Since being launched in 1931, OPPANOL® has been a key competitive differentiator in our customers' products, helping them to meet their targets. OPPANOL® offers solutions for a wide range of different applications. Formulations that provide a steam barrier, electrical insulation, good adhesion and flexibility at low temperatures (cold flow) are possible, depending on the requirements. The new and improved OPPANOL® B 12 BMBcert™ makes BASF the first company to use the biomass balance approach to produce and offer this product based on 100% renewable resources. The European market for OPPANOL® B 12 BMBcert™ has a volume of over 15,000 metric tons per year.

We expanded our dispersions portfolio at our site in Huizhou, China, to better serve the fast-growing packaging industry in southern China. The expansion complements our production capacities in Shanghai, China, reduces lead times and improves raw material supply for our customers. Production capacities for water-based polyurethane dispersions at our Castellbisbal site in Spain were also expanded to meet rising demand.

In July and August 2020, we announced a strategic partnership with IntelliSense.io and a strategic investment by BASF in the company to combine expertise in mineral processing, ore beneficiation chemistry and industrial AI technology.

On August 29, 2019, we reached an agreement with DIC, Tokyo, Japan, on the acquisition of BASF's global pigments business. The purchase price on a cash and debt-free basis is €1.15 billion. The assets and liabilities to be divested were reclassified to a disposal group in the Dispersions & Pigments division as of this date. The transaction is expected to close in the first half of 2021, subject to the approval of the relevant competition authorities.

Products, customers and applications

Division	Products	Customer industries and applications
Dispersions & Pigments	Polymer dispersions, resins, additives, pigments, electronic materials	Coatings, construction, paper, printing and packaging, adhesives and electronics industries
Performance Chemicals	Antioxidants, light stabilizers and flame retardants for plastic applications Fuel and refinery additives, polyisobutene, brake fluids and engine coolants, lubricant additives and basestocks, components for metalworking fluids and compounded lubricants Process chemicals for the extraction of oil, gas, metals and minerals; chemicals for enhanced oil recovery Kaolin minerals	Chemicals, plastics, consumer goods, automotive and transportation industries, as well as energy and resources

Production capacities of selected products[a]

	Sites				
Product	**Europe**	**North America**	**Asia Pacific**	**South America, Africa, Middle East**	**Annual capacity (metric tons)**
Acrylics dispersions	■	■	■	■	1,742,000
Formulation additives	■	■	■		66,000
Polyisobutene	■		■		265,000

a All capacities are included at 100%, including plants belonging to joint operations and joint ventures.

Material investments

Location	Project	Startup
Castellbisbal, Spain	Capacity expansion: water-based polyurethane dispersions	2020
Cincinnati, Ohio	Construction: production plant for engine coolants	2020
Huizhou, China	Capacity expansion: dispersions for packaging	2020
Jinshan, China	Capacity expansion: synthetic esters	2022
Jurong, Singapore	Capacity expansion: antioxidants (Irganox®)	2021
Pasir Gudang, Malaysia	Capacity expansion: production plant for acrylics dispersions	2021
Pontecchio Marconi, Italy	Capacity expansion: light stabilizers (Tinuvin® NOR® 356)	2022
	Capacity expansion: antioxidants (Irganox®)	2021

Business review

- **Sales down 9% to €7,644 million, mainly due to lower prices**
- **EBIT before special items of €822 million, on a level with the previous year**

At €7,644 million, **sales to third parties** in the Industrial Solutions segment were €745 million below the prior-year figure in 2020. This was due to considerably lower sales in both divisions. Sales declined by €436 million to €2,775 million in the Performance Chemicals division and decreased by €309 million to €4,869 million in the Dispersions & Pigments division.

Factors influencing sales – Industrial Solutions

	Industrial Solutions	Dispersions & Pigments	Performance Chemicals
Volumes	–2%	0%	–5%
Prices	–4%	–5%	–3%
Portfolio	–1%	0%	–4%
Currencies	–2%	–1%	–2%
Sales	**–9%**	**–6%**	**–14%**

The sales performance was driven by lower price levels, especially in the Dispersions & Pigments division due to the decrease in raw materials prices.

Lower volumes overall also contributed to the sales decrease. In the Performance Chemicals division, the decline in sales volumes was most pronounced in the fuel and lubricant solutions and oilfield chemicals businesses. In the Dispersions & Pigments division, volumes were at the level of the previous year.

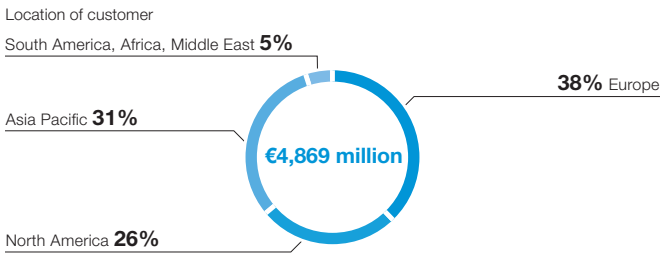
Segment data – Industrial Solutions

Million €		2020	2019	+/–
Sales to third parties		7,644	8,389	–9%
of which Dispersions & Pigments		4,869	5,178	–6%
Performance Chemicals		2,775	3,211	–14%
Intersegment transfers		375	524	–28%
Sales including transfers		8,019	8,913	–10%
Income from operations before depreciation, amortization and special items		1,189	1,249	–5%
Income from operations before depreciation and amortization (EBITDA)		1,099	1,327	–17%
EBITDA margin	%	14.4	15.8	–
Depreciation and amortization[a]		469	438	7%
Income from operations (EBIT)		630	889	–29%
Special items		–192	69	.
EBIT before special items		822	820	0%
Return on capital employed (ROCE)	%	9.3	12.5	–
Assets		6,402	6,903	–7%
Investments including acquisitions[b]		331	426	–22%
Research and development expenses		177	192	–8%

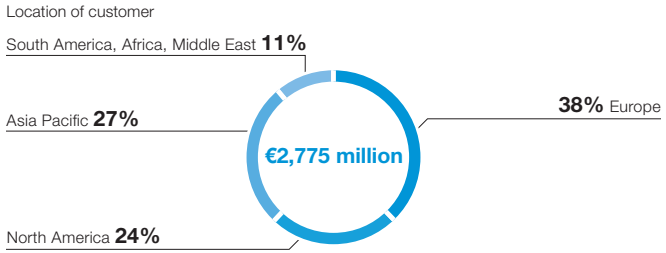
a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

Sales were additionally reduced by negative currency effects in both divisions as well as portfolio effects from the transfer of BASF's paper and water chemicals business, which was previously reported under the Performance Chemicals division, to the Solenis group as of January 31, 2019.

Dispersions & Pigments – Sales by region



Performance Chemicals – Sales by region



Income from operations (EBIT) before special items was on a level with the previous year at €822 million. Considerably higher EBIT before special items in the Dispersions & Pigments division was offset by a considerably lower contribution from the Performance Chemicals division.

The increase in the Dispersions & Pigments division was largely attributable to lower fixed costs, mainly as a result of cost optimization measures. This more than offset lower margins, primarily from the price-related decrease in sales.

The decline in the Performance Chemicals division was mainly driven by lower volumes.

Compared with 2019, **EBIT** declined by €259 million to €630 million. EBIT included special charges of €192 million, mainly in connection with the carve-out of the pigments business and for impairments on property, plant and equipment in all regions. This primarily reflected the decline in production in the automotive industry as well as the expected slow recovery due to the effects of the coronavirus pandemic.

See page 155 for the outlook for 2021

Surface Technologies

The Surface Technologies segment comprises the Catalysts and Coatings divisions, which offer chemical solutions for surfaces. Its portfolio serves the automotive and chemical industries and includes automotive OEM and refinish coatings, surface treatment, catalysts, battery materials, and precious and base metal services. We improve our customers' applications and processes with tailored products, technologies and solutions, and support them through geographical proximity and supply reliability across all regions. The aim is to drive BASF's growth by leveraging our portfolio of technologies and expanding our position as a leading and innovative provider of battery materials and surface coatings solutions.

Divisions

Catalysts

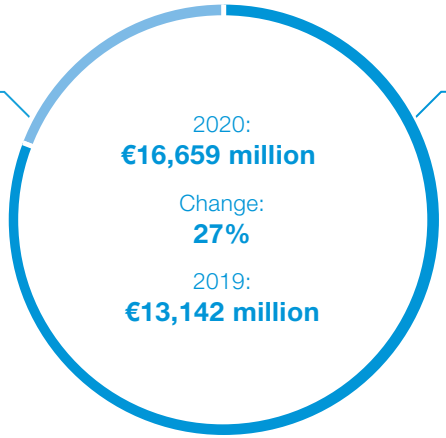
Mobile emissions catalysts, chemical catalysts and adsorbents, refining catalysts, battery materials, precious and base metal products and services, precious metal trading, recycling, clean air technologies

Coatings

Automotive OEM coatings, automotive refinish coatings and services, decorative paints, surface-applied treatments for metal, plastic and glass substrates for a wide range of industries

Sales

Coatings €3,089 million
Change: **–18%**
Percentage of sales: **19%**



Catalysts €13,570 million
Change: **44%**
Percentage of sales: **81%**

Factors influencing sales

Volumes	–1%
Prices	32%
Portfolio	0%
Currencies	–4%
Sales	**27%**

Income from operations before special items

Million €

2020	**484**
2019	722

Change: **–€238 million**

Strategy

- **Development of chemical solutions for surfaces in close collaboration with our customers and partners**
- **Expanding growth and a leading market position in battery materials**

In the Surface Technologies segment, our focus is on the protection, modification and development of surfaces. We develop innovative products and technologies in close collaboration with our customers from the catalysts, coatings and battery materials sectors, and offer precious and base metal as well as surface treatment services. Our aim is to drive growth by leveraging our portfolio of technologies to find the best solution for our customers in terms of functionality and cost. This helps our customers to drive forward innovation in their industries and contribute to sustainable development.

Key growth drivers for us are the positive medium-term development of the automotive market, especially in Asia, the trend toward sustainable, low-emission mobility in the automotive industry, and the associated rise in demand for battery materials for electromobility. Together with our customers, we are developing customized, sustainable solutions in these growth areas for battery materials, emission control, lightweight engineering concepts and functional coatings. Our specialties and system solutions enable customers to stand out from their competition.

We aim to expand our position as a leading and innovative provider of battery materials and benefit from the strong growth in this market segment. A global, customer-focused production network for battery materials is crucial here. In 2020, BASF announced plans to invest in a new production plant for cathode active materials in Schwarzheide, Germany. The new plant will use precursors from the precursor plant for cathode active materials in Harjavalta, Finland, which was announced in 2018. The two plants are scheduled for startup in 2022 and will produce cathode active materials for around 400,000 fully electric mid-size vehicles per year. With these investments in Finland and Germany, BASF aims to become the first cathode active materials supplier with local production capacities in what are currently the three main markets: Asia, the United States and Europe.

How we create value – an example

FWC+ catalyst

Next generation of BASF's four-way conversion catalyst for highly efficient particulate removal

Value for our customers

Significantly reduces particulates in exhaust gas emissions by

up to 95%

Value for BASF

Estimated annual sales potential from 2022

>€20 million

Our automotive customers are increasingly interested in developing environmentally friendly engines with lower exhaust emissions. We support them with highly efficient catalysts and filters and also help them to meet strict regulatory requirements. The FWC+ catalyst for gasoline engines is an example of BASF's expertise in mobile emissions control. The FWC+ catalyst is a highly efficient filter that reduces particulates in exhaust gas emissions by up to 95%. This reduces the environmental impact and significantly improves air quality.

The conventional four-way conversion catalysts used in gasoline engines filter out ultra-fine particles and chemically remove substances such as carbon monoxide (CO), unburned hydrocarbons (HC) and nitrogen oxides (NO_x) in exhaust gas. This exhaust purification technology was significantly improved with the development of the FWC+ catalyst – the next generation of the four-way conversion catalyst. These new, additional components in the exhaust system now filter particulates much more efficiently than in the past. The technology was initially introduced to the Chinese passenger car market in 2019 before being launched in Europe in 2020. It has an estimated annual sales potential of more than €20 million from 2022 onward.

Products, customers and applications

Division	Products	Customer industries and applications
Catalysts	Automotive catalysts, process catalysts and technologies Battery materials Precious and base metal services	Automotive, chemical and pharmaceutical industries, refineries, battery manufacturers, solutions for the protection of air quality as well as the production of fuels, chemicals, plastics and battery materials
Coatings	Coatings solutions for automotive applications, technology and system solutions for surface treatments, decorative paints	Automotive industry, body shops, steel industry, aviation, aluminum applications in the architecture and construction industries, household appliances, painting businesses and private consumers

Material investments

Location	Project	Startup
Caojing, China	Capacity expansion: resin plant	2020
Greenville, Ohio	Capacity expansion: resin plant	2021
Harjavalta, Finland	Construction: precursor plant for cathode active materials	2022
Jiangmen, China	Capacity expansion: automotive refinish coatings plant	2022
Münster, Germany	Construction: plant for coating functional films	2020
	Construction: laboratory building for automotive coatings	2022
	Replacement: small can filling and packaging system	2021
	Construction: cathodic dip coating line	2022
Pinghu, China	New surface treatment site	2021
Shanghai, China	Construction: plant for mobile emissions catalysts	2019/2020
Schwarzheide, Germany	Construction: cathode active materials plant	2022
Środa Śląska, Poland	Capacity expansion: plant for mobile emissions catalysts	2020

Business review

- **Sales rise 27% to €16,659 million due to growth in the Catalysts division, mainly as a result of significantly higher precious metal prices**
- **EBIT before special items 33% lower at €484 million due to decreases in both divisions**

Sales to third parties in the Surface Technologies segment rose by €3,517 million to €16,659 million in 2020. This was due to considerably higher sales in the Catalysts division, which rose by €4,174 million year on year to €13,570 million. In the Coatings division, sales declined by €657 million to €3,089 million.

Factors influencing sales – Surface Technologies

	Surface Technologies	Catalysts	Coatings
Volumes	–1%	5%	–14%
Prices	32%	43%	1%
Portfolio	0%	0%	0%
Currencies	–4%	–4%	–5%
Sales	**27%**	**44%**	**–18%**

Segment data – Surface Technologies

Million €		2020	2019	+/–
Sales to third parties		16,659	13,142	27%
of which Catalysts		13,570	9,396	44%
Coatings		3,089	3,746	–18%
Intersegment transfers		203	212	–4%
Sales including transfers		16,862	13,354	26%
Income from operations before depreciation, amortization and special items		966	1,173	–18%
Income from operations before depreciation and amortization (EBITDA)		900	1,120	–20%
EBITDA margin	%	5.4	8.5	–
Depreciation and amortization[a]		1,487	457	225%
Income from operations (EBIT)		–587	663	.
Special items		–1,071	–59	.
EBIT before special items		484	722	–33%
Return on capital employed (ROCE)	%	–4.8	5.7	–
Assets		11,691	11,773	–1%
Investments including acquisitions[b]		585	565	4%
Research and development expenses		246	214	15%

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

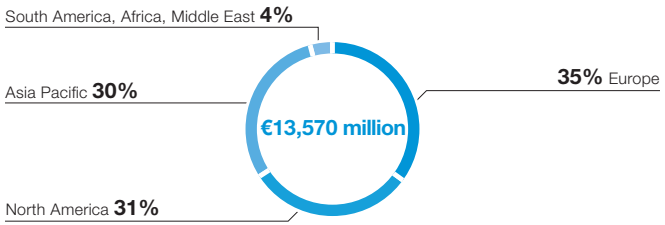
Sales growth was largely driven by the strong increase in precious metal prices in the Catalysts division. In precious metal trading, sales rose to €7,612 million, mainly as a result of higher prices (2019: €4,585 million). The Coatings division also achieved slightly higher prices, primarily in the decorative paints and surface treatments businesses.

Negative currency effects had an offsetting impact in both divisions.

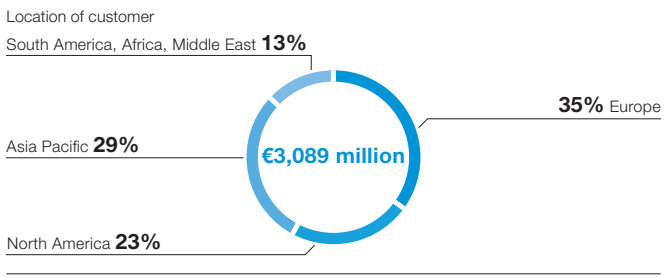
Sales developments was also weighed down by slightly lower volumes overall. This was largely the result of weaker demand from the automotive and aviation industries due to the effects of the coronavirus pandemic, which significantly depressed volumes development in the Coatings division. Sales volumes declined significantly here, especially in the automotive OEM coatings, surface treatments and automotive refinish coatings businesses. Higher volumes in the Catalysts division for mobile emissions catalysts in Asia and in precious metal trading were unable to compensate for this. Sales volumes declined for chemical catalysts and refining catalysts in particular.

Catalysts – Sales by region

Location of customer



Coatings – Sales by region



Income from operations (EBIT) before special items amounted to €484 million, €238 million below the prior-year level due to lower earnings in both divisions. In the Coatings division, this was mainly attributable to the development of volumes. Lower fixed costs and lower raw materials prices were unable to compensate for this. EBIT before special items declined in the Catalysts division, mainly as a result of higher fixed costs, driven in particular by growth initiatives for battery chemicals. This could not be offset by a significant improvement in earnings in precious metal trading.

EBIT decreased by €1,250 million to –€587 million. EBIT included special charges, mainly for goodwill impairments of €786 million in the surface treatments cash-generating unit, and for property, plant and equipment, primarily in the Catalysts division in Europe. This largely reflected significantly weaker demand due to the effects of the coronavirus pandemic as well as the expected slow recovery in the automotive and aviation industries.

See page 155 for the outlook for 2021

Nutrition & Care

In the Nutrition & Care segment – consisting of the Care Chemicals and Nutrition & Health divisions – we serve the growing and increasingly sophisticated demands for fast-moving consumer goods. Our customers include food and feed producers as well as the pharmaceutical, cosmetics, detergent and cleaner industries. We also offer solutions for technical applications and for crop protection and plant nutrition. We strive to expand our position as a leading provider of ingredients and solutions for consumer applications in the areas of nutrition, home and personal care. Our goal is to drive organic growth by focusing on emerging markets, new business models and sustainability trends in consumer markets, supported by targeted acquisitions.

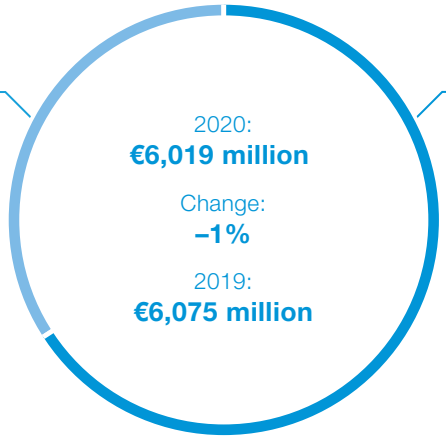
Divisions

Care Chemicals
Ingredients for the cosmetics, detergent and cleaner industries, agrochemical and technical applications

Nutrition & Health
Products for the food and feed industries, the flavor and fragrance industry, the pharmaceutical industry and the bioethanol industry

Sales

Nutrition & Health €2,030 million
Change: **4%**
Percentage of sales: **34%**



Care Chemicals €3,989 million
Change: **–3%**
Percentage of sales: **66%**

Factors influencing sales

Volumes	3%
Prices	–1%
Portfolio	0%
Currencies	–3%
Sales	**–1%**

Income from operations before special items

Million €

2020	**773**
2019	793

Change: **–€20 million**

Strategy

- **Organic growth driven by sustainable solutions for emerging markets, new business models and targeted acquisitions**
- **Efficient production structures through strong integration of standard products into the Verbund**

In the Nutrition & Care segment, we strive to expand our position as a leading provider of nutrition and care ingredients for consumer applications. We aim to enhance our technology capabilities in fields such as biotechnology and broaden our product portfolio with bio-based and biodegradable innovations. Targeted acquisitions complement our focus on emerging markets, new business models and sustainability trends in consumer markets. A strong integration of various standard products such as surfactants and vitamins into the Verbund enables efficient production structures and cost leadership.

Future growth in our markets will be driven by trends like growing consumer awareness and the resulting demand for sustainable product solutions, natural and organic ingredients and their traceability. In addition, the shift toward individualization and local production supports new players and business models. Digitalization and a focused technology and product portfolio as well as close cooperation with our customers is crucial to meeting these dynamic market requirements both now and in the future.

Innovation will be the key driver here, which is why we offer our customers tailor-made solutions and new functionalities via product and process innovation. Research platforms focusing on bio-based and biodegradable products have been established to complement our existing portfolio.

We are working on innovative approaches beyond the existing purely chemical solutions with research and development in white biotech and fermentation technologies. Our enzymes unit, founded in 2018, centrally steers the research, technology and production of the enzyme businesses at BASF. In addition, this business unit markets enzymes directly. This allows us to focus and accelerate existing enzyme business in various industries.

In September 2019, BASF entered the market for natural flavors and fragrance ingredients with the acquisition of Isobionics, an innovation leader in biotechnology serving the global market for natural flavors and fragrances, and through a cooperation agreement with Conagen, Bedford, Massachusetts, a leader in biotechnology research.

For standard products such as vitamins or surfactants, we focus on backward integration in our Production Verbund's value chains and cost leadership.

How we create value – an example

Kolliphor® P 188 Bio

High-purity poloxamer designed for biologics manufacturing

Value for our customers

Reduces process-related impurities

around **40-fold**

Value for BASF

Estimated annual volume growth

>10%

In drug manufacturing, cultivating cell cultures is a complex process with stringent regulatory requirements that must be met to ensure a high level of purity and cell viability. This enables consistent drug production. Kolliphor® P 188 Bio is a high-performance pharmaceutical processing aid from BASF that supports the cultivation of cell cultures. It is added to cell culture systems to reduce risks such as shear stress. A validated production process and regular controls ensure the purity and quality of Kolliphor® P 188 Bio. Its consistent performance and supply reduce process-related impurities in our customers' manufacturing processes around 40-fold. This saves them from conducting additional tests and simplifies the manufacturing process.

Identifying and enhancing key product characteristics in the manufacturing process enables BASF to meet the needs of its customers and at the same time, exploit new market opportunities. Kolliphor® P 188 Bio is an example of this. Developed and produced by BASF, this pharmaceutical processing aid is used in drug production and ensures product quality, consistency and performance in cell cultures. With Kolliphor® P 188 Bio, we expect to grow faster than the market for biologics processing aids in the future by winning new customers from other industries such as cosmetics. We anticipate annual volume growth of an estimated over 10%.

We expanded our existing ibuprofen production capacities in Bishop, Texas. Our expanded vitamin A production facilities in Ludwigshafen, Germany, will begin operation in 2021. BASF is also investing in its integrated complex for ethylene oxide and derivates such as surfactants at the Verbund site in Antwerp, Belgium.

To meet rising demand for high-performance and safe UV filters, BASF is investing in a new production line at the Kaohsiung site in Taiwan and plans to double its global Uvinul® A Plus production capacity by mid-2022. The product is a photostable UVA filter that reliably filters the sun's dangerous UVA rays and provides protection against free radicals and skin damage.

By the end of 2021, BASF will increase its capacities for methane sulfonic acid by around 65% in response to growing cross-industry demand, strengthening its position as a leading global producer. This involves an investment to construct a new methane sulfonic acid plant at the Ludwigshafen site in Germany. Methane sulfonic acid is an organic acid used in numerous applications ranging from chemical and biofuel synthesis to industrial cleaning and metal surface treatment in the electronics industry.

Products, customers and applications

Division	Products	Customer industries and applications
Care Chemicals	Ingredients for skin and hair cleansing and care products, such as emollients, cosmetic active ingredients, polymers and UV filters Ingredients for detergents and cleaners in household, institution or industry, such as surfactants, enzymes, chelating agents, water-soluble polymers, biocides and products for optical effects Chemical ingredients and processing additives, for example for crop protection, excipients for chemical processes such as emulsion polymerization, metal surface treatments or textile processing, as well as products for concrete additives, biofuels and other industrial applications	Cosmetics industry, detergent and cleaner industry, agrochemical industry, technical applications for various industries
Nutrition & Health	Additives for the food and feed industries, such as vitamins, carotenoids, sterols, enzymes, emulsifiers, omega-3 fatty acids, human milk oligosaccharides Industrial enzymes for bioethanol and food production Natural and synthetic flavors and fragrances, such as citral, geraniol, citronellol, L-menthol and linalool, Isobionics® Santalol, valencene and nootkatone Excipients for the pharmaceutical industry and selected, high-volume active pharmaceutical ingredients, such as ibuprofen and omega-3 fatty acids	Food and feed industries, flavor and fragrance industry, pharmaceutical industry and bioethanol industry

Production capacities of selected products[a]

	Sites				
Product	**Europe**	**North America**	**Asia Pacific**	**South America, Africa, Middle East**	**Annual capacity (metric tons)**
Anionic surfactants	■	■	■	■	600,000
Citral	■		■		78,000
Chelating agents	■	■		■	170,000
Methane sulfonic acid	■				30,000
Nonionic surfactants	■	■	■		635,000

a All capacities are included at 100%, including plants belonging to joint operations and joint ventures.

Material investments

Location	Project	Startup
Antwerp, Belgium	Capacity expansion: alkoxylates	2018–2022
Bishop, Texas	Capacity expansion: production plant for ibuprofen	2020
Düsseldorf, Germany	Gradual upgrade of production plants in accordance with the Good Manufacturing Practice Standard issued by the European Federation for Cosmetic Ingredients (EFfCI)	2022
Jinshan, China	Capacity expansion: alkoxylates	2020
Kaohsiung, Taiwan	New production line: UV filters	2022
Ludwigshafen, Germany	Capacity expansion: production plant for methane sulfonic acid	2021
	Construction: production plant for vitamin A	2021

Business review

- **Sales decline €56 million to €6,019 million, mainly as a result of negative currency effects**
- **EBIT before special items decreases slightly by €20 million to €773 million due to lower contribution from the Care Chemicals division**

Sales to third parties in the Nutrition & Care segment declined by €56 million year on year to €6,019 million in 2020. Sales in the Nutrition & Health division improved by €73 million to €2,030 million. This was unable to fully offset the slight sales decrease of €129 million to €3,989 million in the Care Chemicals division.

Factors influencing sales – Nutrition & Care

	Nutrition & Care	Care Chemicals	Nutrition & Health
Volumes	3%	2%	7%
Prices	–1%	–2%	0%
Portfolio	0%	0%	0%
Currencies	–3%	–3%	–3%
Sales	**–1%**	**–3%**	**4%**

The sales performance of both divisions was impacted by negative currency effects.

Sales were also reduced by lower price levels in the Care Chemicals division, especially in the home care, industrial and institutional cleaning and industrial formulators business. Prices in the Nutrition & Health division were on a level with the previous year.

Segment data – Nutrition & Care

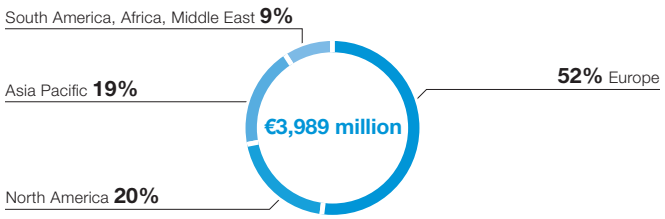
Million €		2020	2019	+/–
Sales to third parties		6,019	6,075	–1%
of which Care Chemicals		3,989	4,118	–3%
Nutrition & Health		2,030	1,957	4%
Intersegment transfers		429	490	–12%
Sales including transfers		6,448	6,565	–2%
Income from operations before depreciation, amortization and special items		1,190	1,214	–2%
Income from operations before depreciation and amortization (EBITDA)		1,152	1,189	–3%
EBITDA margin	%	19.1	19.6	–
Depreciation and amortization[a]		464	545	–15%
Income from operations (EBIT)		688	644	7%
Special items		–85	–149	43%
EBIT before special items		773	793	–3%
Return on capital employed (ROCE)	%	10.6	10.0	–
Assets		6,214	6,399	–3%
Investments including acquisitions[b]		510	595	–14%
Research and development expenses		160	161	–1%

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

Sales were positively impacted by higher volumes. Volumes rose significantly in the Nutrition & Health division, particularly in the pharmaceutical, aroma ingredients and human nutrition businesses. In the Care Chemicals division, we recorded higher sales volumes in the oleo surfactants and fatty alcohols business, as well as in the home care, industrial and institutional cleaning and industrial formulators business. This was partially offset by lower volumes in the personal care solutions business.

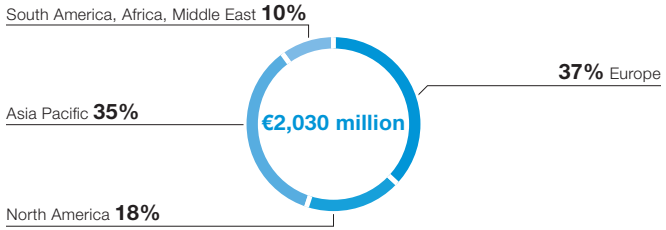
Care Chemicals – Sales by region

Location of customer



Nutrition & Health – Sales by region

Location of customer



Income from operations (EBIT) before special items decreased by €20 million compared with the previous year to €773 million due to a slightly lower contribution from the Care Chemicals division. This was primarily the result of lower sales and a one-off payment received by the personal care solutions business in the previous year.

EBIT before special items in the Nutrition & Health division increased considerably compared with 2019. This was mainly attributable to higher volumes. Higher fixed costs had an offsetting effect. In the previous year, fixed costs were reduced by an insurance payment.

EBIT rose by €44 million year on year to €688 million. This included special charges of €85 million, mainly for impairments and provisions, primarily for the optimization of production structures in the Nutrition & Health division in North America and Europe.

See page 155 for the outlook for 2021

Agricultural Solutions

In the Agricultural Solutions segment, we aim to further strengthen our market position as an integrated provider of seeds, crop protection and digital solutions. Our connected offer comprises fungicides, herbicides, insecticides and biological solutions, as well as seeds and seed treatment products, complemented by digital products to help farmers achieve better yield. Our strategy is based on innovation-driven organic growth and targeted portfolio expansion through acquisitions. Customer needs, societal expectations and regulatory requirements are our innovation drivers.

Indications and sectors

Fungicides
Protecting crops against harmful fungal diseases

Herbicides
Reducing competition from weeds for nutrients, water and sunlight

Insecticides
Combating insect pests in agriculture and beyond

Seed Treatment
Improving seeds' potential with chemical and biological protection as well as inoculants

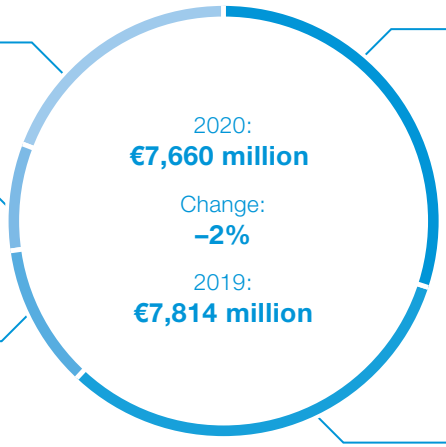
Seeds & Traits
Optimizing and developing seeds and new traits

Sales

Seeds & Traits €1,495 million
Change: **3%**
Percentage of sales: **19%**

Seed Treatment €609 million
Change: **–5%**
Percentage of sales: **8%**

Insecticides €825 million
Change: **3%**
Percentage of sales: **11%**



Fungicides €2,267 million
Change: **–2%**
Percentage of sales: **30%**

Herbicides €2,464 million
Change: **–6%**
Percentage of sales: **32%**

Factors influencing sales

Volumes	5%
Prices	2%
Portfolio	0%
Currencies	–9%
Sales	**–2%**

Income from operations before special items

Million €	
2020	**970**
2019	1,095

Change: **–€125 million**

Strategy

- **Innovation-driven strategy for profitable growth in selected markets**
- **Strong customer orientation with a focus on strategic, regional crop systems**
- **A wide-ranging portfolio with more sustainable solutions**

Farming is fundamental given that by 2050, the world's population is expected to increase by two billion people.[1] The growing demand for food must be reconciled with limited natural resources such as arable land and water. Agriculture is a key enabler in providing enough healthy, affordable food and responding to changing consumer behavior while reducing the impact on the environment. As one of the world's leading agricultural solutions companies, we want to create a positive impact and help shape a sustainable future for farming. At BASF, we believe that the way forward for agriculture is to find the right balance – for farmers, agriculture and future generations.

Farmers need to balance resources, technology, climate and societal uncertainty in order to produce in an economically sound way. We support them in finding the right balance by focusing more than ever on the needs of our customers, societal concerns and regulatory requirements. With a deep understanding of the way individual growers manage their farms and crop systems, we provide a connected offer, including seeds, traits, crop protection, and digital products and solutions.

Our innovation-driven strategy for agriculture focuses on four selected crop combinations, known as crop systems: 1. soy, corn (maize) and cotton in the Americas; 2. wheat, canola (oilseed rape) and sunflowers in North America and Europe; 3. rice in Asia; and 4. fruit and vegetables globally. We actively steer our connected offer for farmers and the agricultural industry toward sustainable solutions by integrating sustainability criteria into all business and portfolio decisions.

The success of our customers depends on many factors such as weather, disease, pest and weed pressure, soil conditions and prices for agricultural produce. Our customers strive for better yield – yield produced in ways that are recognized as valuable by society, are kind to the planet and enable farmers to run their farms profitably in the long term while embracing digital and other new technologies in day-to-day farm operations.

Our innovative digital products, marketed under the xarvio® Digital Farming Solutions brand, help farmers to make better decisions, enable precision farming and in this way, enhance sustainability.

Investments

The investment in a crop protection production hub in Singapore will, as announced in 2020, supply multiple formulation technologies in close proximity to farmers in Asia Pacific. We also invested in the expansion of our production site in Sparks, Georgia, establishing a

How we create value – an example

BioSolutions by BASF

Natural partners for the cultivation of field and specialty crops and conventional crop protection

Value for our customers and the environment

Nemasys® C: biological pest control with an effectiveness of

up to 90%

Value for BASF

BioSolutions by BASF portfolio with annual sales of

>€150 million

Beneficial nematodes provide flexible pest control as they fit into both conventional and organic farming practices and work across glasshouse and outdoor-grown field crops, fruits and vegetables as well as turf. These effective BioSolutions by BASF are in some cases the only option to limit the spread of destructive pests such as the codling moth. The larvae of this pest burrow under the bark of apple trees to overwinter, where they cannot be reached with other crop protection products. We have developed Nemasys® C beneficial nematodes that reach these overwintering larvae and provide up to 90% control in U.S. apple orchards, mitigating insect numbers for the following year.

BioSolutions are part of our portfolio for sustainable agriculture. To develop BioSolutions, we focus on leveraging in-house expertise and strategic partnerships. These solutions are based on natural mechanisms like beneficial nematodes, micro-organisms, plant extracts and pheromones. They are natural partners for a wide range of field and specialty crops and can be used in organic farming or as a complement to conventional crop protection products. Demand for BioSolutions, including seed treatment, soil and foliar applications, results in annual sales of over €150 million.

1 Source: U.N. World Population Prospects 2019

new formulation plant for seed treatment products there. At the Nunhem site in the Netherlands, we started the expansion of our breeding facilities for vegetable seeds with a state-of-the-art tomato greenhouse. Further investments were made in the modernization of site infrastructure in the Americas and Europe. To meet continuing high demand for our innovative solutions in the future, between 2021 and 2025, we will invest more than €950 million in developing and expanding our infrastructure and in our production and formulation capacities for active ingredients as well as for seed solutions.

Research and development

Our research and development activities are aligned with our strategic crop systems to support our customers' success with innovations. In 2020, we spent €840 million on research and development in the Agricultural Solutions division, representing around 11% of the segment's sales. Our well-stocked innovation pipeline comprises novel seeds and traits, new chemical and biological crop protection products, new formulations and digital solutions to be launched between 2020 and 2030. With a peak sales potential[1] of more than €7.5 billion, our innovation pipeline has an even stronger focus on sustainable solutions – enabled by a research and development process that is driven by sustainability criteria. We innovate to create new business opportunities for farmers and for BASF by developing solutions that meet the needs of customers and consumers. By 2030, we will launch more than 30 major pipeline projects across all business areas. These will provide sustainable solutions to help farmers achieve better yield in their farm operations and promote healthy eating, balancing economic, environment and societal demands. Research and development activities in the Agricultural Solutions division range from seeds and traits, research and breeding capacities to solutions that protect plants against fungal diseases, insect pests and weeds, and improve soil management and plant health.

Our research and development is based on a global network of research sites, seed production and breeding capacities. It positions us to seize future market opportunities and increase our competitiveness.

Our biotechnology activities and our research and development capabilities comprise advanced breeding techniques, analytics, technology platforms and trait validation. To offer tailor-made, sustainable crop solutions, our research platform on gene identification focuses on plant characteristics that enable higher yields and better quality, disease resistance and tolerance of negative environmental factors, such as drought. We apply state-of-the-art scientific methods, including genetic engineering and selective genome editing. These activities are closely connected to our activities in the field of biotechnology, which are part of BASF's Bioscience Research division. Corporate research and development expenses, sales, earnings and all other data for BASF's Bioscience Research division are not reported in the Agricultural Solutions segment; they continue to be reported under Other.

Sustainability

In 2020, we launched our Agricultural Solutions sustainability commitments. We focus on four areas to help farmers to find the right balance: climate-smart farming, sustainable solutions, digital farming and smart stewardship.

Climate-smart farming: We help farmers tackle pressing climate challenges with the right combination of technologies designed to increase yield, make farm management easier and more effective, and reduce the impact on the environment. Our technologies include nitrogen management products to improve fertilizer efficiency and lower greenhouse gas emissions, no-till herbicides, seeds and traits for more stress-resilient crops, natural biological inoculants as well as digital solutions.

Sustainable solutions: We systematically steer our innovation pipeline according to sustainability criteria from an early stage. This enables us to continually develop innovations that offer added value for farmers, the environment and society. We also assess each product in our existing portfolio with respect to its contribution to sustainability. In this way, we systematically steer our portfolio to every year increase the share of sales from solutions that make a substantial sustainability contribution.

Digital farming: Digitalization has the power to transform agriculture and make it more efficient, inclusive and sustainable. Our digital solutions help farmers to produce more with less by growing their business profitably while reducing their environmental footprint.

Smart stewardship: Our stewardship tools and services are tailored to farmers' daily work. Farmers get the support they need to use our products safely: access to tools and services, protective equipment, customized training, digital solutions and new and future-oriented application technologies such as drones.

1 Peak sales describes the highest sales value to be expected in one year. For more information, see the Glossary on page 322.

Products, customers and applications

Indications and sectors	Applications	Selected products
Fungicides	Protecting crops against harmful fungal diseases; improving plant health, securing yield and harvest quality	Boscalid, dimethomorph, F500®, Initium®, metiram, metrafenone, Revysol®, Serifel®, Xemium®
Herbicides	Reducing competition from weeds for nutrients, water and sunlight to secure yield and harvest quality	Basta®, dimethenamid-p, Engenia®, Finale®, imazamox, Kixor®, Liberty®, pendimethalin, Tirexor®, topramezone
Insecticides	Combating insect pests in agriculture and beyond, such as in the fields of public health, professional pest control and landscape maintenance	Alpha-cypermethrin, chlorfenapyr, fipronil, Inscalis®, Interceptor®, Nealta®, teflubenzuron, Termidor®
Seed Treatment	Improving seeds' potential with chemical and biological protection as well as inoculants	Flo Rite®, ILEVO®, Integral®, Nodulator® PRO, Poncho®, Serifel®, Systiva®, Vault® HP, Velondis®
Seeds & Traits	Seeds and traits for key field crops such as canola (oilseed rape), cotton, soybean and wheat, as well as vegetable seeds	Credenz®, FiberMax®, InVigor®, LibertyLink®, Nunhems®, Stoneville®

Business review

- **Sales of €7,660 million, slightly below prior-year level despite higher volumes due to negative currency effects**
- **EBIT before special items of €970 million, down 11% from the 2019 figure mainly due to currency effects**

At €7,660 million, **sales to third parties** in the Agricultural Solutions segment were €154 million below the prior-year level in 2020. Sales performance was significantly weighed down by negative currency effects, particularly in the region South America, Africa, Middle East. This contrasted with volume growth in a challenging market environment. Overall, prices were slightly above the prior-year level.

Factors influencing sales – Agricultural Solutions

Volumes	5%
Prices	2%
Portfolio	0%
Currencies	–9%
Sales	**–2%**

Segment data – Agricultural Solutions

Million €		2020	2019	+/–
Sales to third parties		7,660	7,814	–2%
Intersegment transfers		91	197	–54%
Sales including transfers		7,751	8,011	–3%
Income from operations before depreciation, amortization and special items		1,680	1,809	–7%
Income from operations before depreciation and amortization (EBITDA)		1,582	1,647	–4%
EBITDA margin	%	20.7	21.1	–
Depreciation and amortization[a]		1,000	719	39%
Income from operations (EBIT)		582	928	–37%
Special items		–388	–167	.
EBIT before special items		970	1,095	–11%
Return on capital employed (ROCE)	%	3.6	5.3	–
Assets		14,840	16,530	–10%
Investments including acquisitions[b]		459	320	43%
Research and development expenses		840	879	–4%

a Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
b Additions to property, plant and equipment and intangible assets

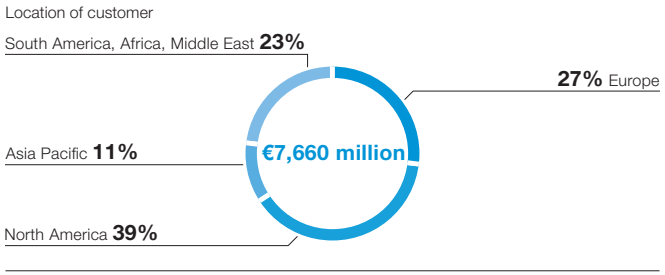
In **Europe**, sales declined by €85 million year on year to €2,035 million. This was largely attributable to lower volumes, especially of herbicides and fungicides, mainly as a consequence of dry weather conditions in large parts of Europe. Sales were also reduced by negative currency effects, primarily in Turkey and eastern Europe. Prices were on a level with the previous year.

Sales in **North America** decreased by €104 million to €3,004 million. Prices were slightly below the prior-year level in a continued challenging market environment, especially for herbicides and fungicides. Sales development was also weighed down by negative currency effects. This was partially offset by higher sales volumes, particularly for fungicides, after the distributor destocking and challenges relating to weather conditions and trade conflicts that dominated the previous year.

Sales in **Asia** rose by €59 million to €844 million. This was largely attributable to higher sales volumes, especially of herbicides and fungicides, primarily in India, China and Australia. Slightly higher price levels contributed to the positive sales development, while negative currency effects had a dampening impact.

Sales in the region **South America, Africa, Middle East** amounted to €1,777 million, €24 million below the previous year. This was primarily due to significantly negative currency effects, mainly from the depreciation of the Brazilian real. Considerably higher volumes in all indications and sectors, especially in Brazil, and higher price levels were unable to fully offset the negative currency developments.

Agricultural Solutions – Sales by region



Income from operations (EBIT) before special items was €970 million, €125 million below the 2019 figure. This was mainly due to currency effects.

EBIT amounted to €582 million, €346 million less than in the previous year. This figure included special charges in the amount of €388 million, primarily from impairments in connection with measures to streamline the global glufosinate-ammonium production network.

See page 155 for the outlook for 2021

Other

Sales in Other declined by €538 million compared with 2019 to €2,360 million. This was mainly due to the sales decrease in commodity trading and the remaining activities of BASF's paper and water chemicals business, which were not part of the transfer to Solenis and are reported under Other.

At –€769 million, **income from operations before special items** in Other was €188 million below the prior-year figure. This is largely attributable to lower contributions from other businesses and to positive effects in 2019, primarily from changes to pension benefits in the United States.

EBIT declined by €685 million to –€1,203 million. This included special charges, in particular for the realignment of the Global Business Services unit. The prior-year figure included special income from the sale of our share of the Klybeck site in Basel, Switzerland.

Financial data – Other[a]

Million €	2020	2019	+/–
Sales	2,360	2,898	–19%
Income from operations before depreciation, amortization and special items[b]	–609	–414	–47%
Income from operations before depreciation and amortization (EBITDA)[b]	–1,032	–334	.
Depreciation and amortization[c]	171	184	–7%
Income from operations (EBIT)[b]	–1,203	–518	.
Special items[b]	–434	63	.
EBIT before special items[b]	–769	–581	–32%
of which costs for cross-divisional corporate research	–364	–397	8%
costs of corporate headquarters	–214	–231	7%
other businesses	143	179	–20%
foreign currency results, hedging and other measurement effects	–58	–89	35%
miscellaneous income and expenses	–276	–43	.
Assets[d]	24,131	27,585	–13%
Investments including acquisitions[e]	156	299	–48%
Research and development expenses	385	411	–6%

a Information on the composition of Other can be found in the Notes to the Consolidated Financial Statements from page 241 onward.
b The 2019 figures have been restated to reflect the reclassification of income from non-integral companies accounted for using the equity method to net income from shareholdings.
c Depreciation and amortization of property, plant and equipment and intangible assets (including impairments and reversals of impairments)
d Contains assets of businesses recognized under Other as well as reconciliation to assets of the BASF Group
e Additions to property, plant and equipment and intangible assets

Non-Integral Oil and Gas Business

Macroeconomic environment

The price of a barrel of Brent crude oil averaged $42 in 2020 (previous year: $64). Gas prices on the European spot markets declined significantly compared with the previous year. The strong price declines in the first half of 2020 were attributable to the drop in global macroeconomic demand caused by the coronavirus pandemic. Oil and gas prices partially recovered in the second half of the year.

Equity-accounted income of the oil and gas business

As of January 1, 2020, BASF no longer presents equity-accounted income from Wintershall Dea in the BASF Group's EBIT and EBIT before special items, but under net income from shareholdings. Wintershall Dea contributed –€890 million to net income from shareholdings in 2020. This included impairments of €791 million, mainly as a result of lower oil and gas price forecasts and changed reserve estimates. In the previous year, Wintershall's earnings were presented in income after taxes from discontinued operations until the merger of Wintershall and DEA on April 30, 2019. Equity-accounted income from Wintershall Dea in the period from May 1, 2019, to December 31, 2019, amounted to –€86 million.

Wintershall Dea conducts production, development[1] and exploration activities in the following countries:
- Egypt (production, development, exploration)
- Algeria (production)
- Argentina (production, development, exploration)
- Brazil (exploration)
- Denmark (production, exploration)
- Germany (production, development, exploration)
- Libya (production)
- Mexico (production, development, exploration)
- Netherlands (production, development, exploration)
- Norway (production, development, exploration)
- Russia (production, development)
- United Arab Emirates (development, exploration)
- United Kingdom (production, development, exploration)

Wintershall Dea's activities in 2020

Wintershall Dea produced 227 million BOE (barrels of oil equivalent) in 2020, of which around 162 million BOE of gas. This corresponded to a daily production of 623 thousand BOE. Despite the macroeconomic downturn caused by the coronavirus pandemic, Wintershall Dea was able to increase daily production slightly compared with the period from May 1, 2019, to December 31, 2019.

Investment projects continued largely as planned. The Ærfugl project in Norway started production of phase 1 on schedule and budget – a milestone for subsea development in the Norwegian Sea. However, a number of projects, such as the Njord and Nova projects in Norway, were delayed by the coronavirus pandemic. In Russia, the Achim Development joint venture operated with Gazprom, in which Wintershall Dea holds a 25.01% interest, continued field development in blocks 4A and 5A of the Achimov Formation. Production is expected to start in the first quarter of 2021. Another investment focus is Egypt, especially the Nile Delta. The Raven subproject there commenced production at the beginning of 2021.

The Achimgaz joint venture with Gazprom successfully drilled further production wells. Production is running at the expected high level. Severneftegazprom, a joint venture between Gazprom, Wintershall Dea and OMV, reached a major milestone in 2020: The Yuzhno-Russkoye field in Russia's Yamalo-Nenets Autonomous District has produced 300 billion cubic meters of natural gas since production began in 2007.

In October 2020, Wintershall Aktiengesellschaft, in which Wintershall Dea holds a 51% interest, transferred operatorship of Contract Areas 91 (formerly concession 96) and 107 (formerly concession 97) onshore Libya's Sirte basin to Sarir Oil Operations B.V. (SOO), a newly established joint operating company with the National Oil Corporation (NOC).

Wintershall Dea drilled 11 exploration wells in 2020. Of these, around 64% were successful.

Wintershall Dea is also active in gas transportation. This includes interests in GASCADE Gastransport GmbH and OPAL Gastransport GmbH & Co. KG held by WIGA Transport Beteiligungs-GmbH & Co. KG, and the interest in Nord Stream AG held directly by Wintershall Dea. Wintershall Dea is involved in the financing of the Nord Stream 2 pipeline project, but does not hold an interest in the company.

As part of its climate strategy, which was communicated in November 2020, Wintershall Dea aims to achieve net zero emissions[2] from upstream activities by 2030 and reduce the methane intensity of its own natural gas production to 0.1% by 2025. During the next 10 years, Wintershall Dea intends to invest around €400 million in reducing and offsetting greenhouse gas emissions.

In 2020, Wintershall Dea continued to drive forward the integration that began with the merger and was able to realize the intended synergies. Wintershall Dea has undertaken preparations for a stock exchange listing, which is expected to take place over the course of 2021 subject to market conditions.

1 Development activities include projects before and after the FID (final investment decision)
2 Scope 1 and 2 emissions from upstream activities operated by Wintershall Dea and upstream activities not operated by Wintershall Dea on a pro rata basis

Regional Results

Regions

Million €

	Sales by location of company			Sales by location of customer			Income from operations by location of company[a]		
	2020	**2019**	**+/–**	**2020**	**2019**	**+/–**	**2020**	**2019**	**+/–**
Europe	24,223	25,706	–6%	23,129	23,827	–3%	–1,005	2,125	.
of which Germany	10,296	14,049	–27%	5,510	6,123	–10%	–1,712	504	.
North America	16,440	16,420	0%	15,709	15,948	–1%	–201	692	.
Asia Pacific	14,895	13,384	11%	15,406	14,203	8%	768	1,082	–29%
South America, Africa, Middle East	3,591	3,806	–6%	4,905	5,338	–8%	247	302	–18%
BASF Group	**59,149**	**59,316**	**0%**	**59,149**	**59,316**	**0%**	**–191**	**4,201**	**.**

a The 2019 figures have been restated to reflect the reclassification of income from non-integral companies accounted for using the equity method to net income from shareholdings.

Europe

- **Sales down 6% compared with 2019 at €24,223 million**
- **EBIT declines €3,130 million to –€1,005 million**

Sales at companies located in Europe decreased by 6% year on year to €24,223 million. This was mainly due to considerably lower sales in the Chemicals and Materials segments. Sales also declined considerably in Other and in the Industrial Solutions and Agricultural Solutions segments, and slightly in the Nutrition & Care segment. Considerable sales growth in the Surface Technologies segment was unable to compensate for this.

Sales performance was primarily driven by lower volumes in almost all segments and in Other, but especially in the Materials segment as a result of weaker demand from the automotive industry. Price levels declined in the Chemicals segment in particular, especially for steam cracker products due to higher product availability on the market and lower raw materials prices, as well as in the Materials segment as a result of lower isocyanates prices. By contrast, prices in the Surface Technologies segment were well above the prior-year level. Negative currency effects also contributed to the sales decrease. Portfolio effects in the Materials segment from the acquisition of Solvay's integrated polyamide business had an offsetting impact.

At –€1,005 million, EBIT was down €3,130 million from the previous year. All segments and Other recorded lower contributions, but especially the Materials segment. This was largely attributable to impairments.

We are strengthening our position in the European market with investments such as the construction of a precursor plant for cathode active materials in Harjavalta, Finland, and the construction of a cathode active materials plant in Schwarzheide, Germany. With these investments, BASF aims to expand its position as a leading and innovative provider of battery materials. The two plants are scheduled for startup in 2022 and will be able to equip around 400,000 fully electric mid-size vehicles per year.

North America

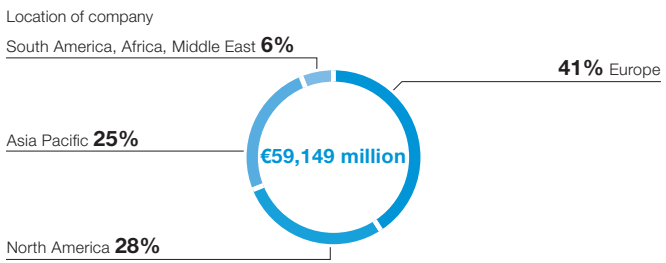
- **Sales of €16,440 million at prior-year level**
- **EBIT declines €893 million to –€201 million**

Sales at companies located in North America were on a level with the previous year, at €16,440 million. In local currency terms, they rose by 2%. Considerable sales growth in the Surface Technologies segment and slightly higher sales in the Nutrition & Care segment were offset by considerable sales decreases in the Chemicals, Materials and Industrial Solutions segments, as well as slightly lower sales in the Agricultural Solutions segment.

Sales performance was positively impacted by an increase in prices on the back of significantly higher price levels in the Surface Technologies segment. This more than compensated for lower prices in all other segments. Sales were weighed down by lower volumes, especially in the Surface Technologies, Materials, Chemicals and Industrial Solutions segments. This was mainly the result of lower demand from the automotive industry due to the effects of the coronavirus pandemic and the unplanned outage at the steam cracker in Port Arthur, Texas. Sales were also reduced by negative currency effects.

At –€201 million, EBIT was down €893 million from the prior-year figure due to significantly lower contributions from almost all segments, but especially from the Surface Technologies segment. EBIT includes special charges, mainly from impairments in the Surface Technologies, Agricultural Solutions and Chemicals segments. In addition, the contribution from the Industrial Solutions segment was lower, after the transfer of the paper and water chemicals business to the Solenis group had positively impacted the segment's earnings in the previous year. By contrast, EBIT rose considerably in Other and in the Nutrition & Care segment.

Sales by region



Asia Pacific

- **Sales growth of 11% to €14,895 million**
- **EBIT down 29% to €768 million**

Sales at companies headquartered in the Asia Pacific region rose by 11% to €14,895 million in 2020. In local currency terms, sales were 14% above the prior-year level. This was largely due to considerably higher sales in the Surface Technologies segment. Sales also rose considerably in the Agricultural Solutions segment, while the Materials segment recorded a slight improvement. By contrast, sales declined considerably in the Industrial Solutions segment and slightly in the Chemicals segment. Sales were at prior-year level in the Nutrition & Care segment.

The sales performance was primarily the result of higher volumes in all segments, but especially in the Surface Technologies and Agricultural Solutions segments. Higher prices overall, mainly attributable to the Surface Technologies segment, also contributed to the increase in sales. By contrast, prices in the Materials, Industrial Solutions, Chemicals and Nutrition & Care segments were below the prior-year level. Sales were buoyed by portfolio effects, especially in the Materials segment following the acquisition of the integrated polyamide business from Solvay. Negative currency effects had an offsetting impact.

EBIT in the region declined by €314 million compared with 2019 to €768 million, primarily as a result of impairments. This was largely due to the considerable decrease in EBIT in the Chemicals and Surface Technologies segments. The Industrial Solutions segment's contribution was also significantly lower. By contrast, the Materials, Nutrition & Care and Agricultural Solutions segments posted much higher earnings.

Even in the coronavirus pandemic, the Asia Pacific region remains the strongest growth driver in the chemical industry. Our investments in local production plants and in research and development meet the needs of our local customers and lay the foundation for future growth in the Asian market. Following the official groundbreaking in November 2019, we started construction of the first plants at the planned integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong. The first plants will produce engineering plastics and thermoplastic polyurethane (TPU) to serve the growing demand in various growth industries in Asia, including in the southern Chinese market. We also expanded our dispersions portfolio at our site in Huizhou, China, to better serve the fast-growing packaging industry in southern China. At the Nanjing site, in 2020, we increased the production capacity for neopentyl glycol to meet our Chinese customers' demands for environmentally friendly automotive refinish coatings.

South America, Africa, Middle East

- **Sales down 6% at €3,591 million**
- **EBIT declines 18% to €247 million**

Sales at companies located in the region South America, Africa, Middle East declined by 6% year on year to €3,591 million. In local currency terms, by contrast, they rose by 22%. The decline in sales in euros was mainly due to considerably lower sales in the Surface Technologies segment. Sales were also considerably below the prior-year level in the Industrial Solutions segment and decreased slightly in the Agricultural Solutions segment. By contrast, the Materials segment recorded considerable sales growth, while the Chemicals and Nutrition & Care segments posted slight increases.

Sales performance in South America was primarily attributable to negative currency effects. Higher price levels in all segments except Chemicals had an offsetting effect. We also increased sales volumes overall. Higher volumes, particularly in the Agricultural Solutions segment, more than compensated for lower sales volumes in the Surface Technologies segment due to the effects of the coronavirus pandemic. Portfolio effects, especially in the Materials segment from the acquisition of Solvay's integrated polyamide business, had a positive impact on sales.

Companies located in Africa and in the Middle East recorded a considerable sales decrease overall. Higher prices were unable to offset lower volumes and negative currency effects.

At €247 million, EBIT in the region South America, Africa, Middle East was down €55 million from the prior-year figure. This was due to lower contributions from Other and from the Agricultural Solutions, Industrial Solutions, Surface Technologies and Nutrition & Care segments. EBIT improved considerably in the Materials and Chemicals segments.

Responsible Conduct Along the Value Chain

SUPPLIERS → BASF → CUSTOMERS

We want to contribute to a world that offers a viable future with enhanced quality of life for everyone. That is why sustainability is firmly anchored in our corporate purpose, our strategy, our targets and our operating business (see page 42). It is at the core of what we do, a driver for growth and an element of our risk management. We pursue a holistic approach that covers the entire value chain – from our suppliers and our own activities to our customers.

We contribute to a sustainable development and to the United Nations' Sustainable Development Goals (SDGs) in many different ways (see page 32). For instance, our innovations, products and technologies help to better use natural resources, produce enough food, enable climate-smart mobility, reduce emissions, or increase the capabilities of renewable energy. Alongside these positive contributions, our business activities also have negative impacts. For example, we create CO_2 emissions and procure raw materials, the sourcing of which by our suppliers involves a potential risk of human rights violations. This is why we are constantly working to broaden our positive impact on key sustainability topics (see page 42) along our value chains and reduce the negative impact.

Strategy

- **Comprehensive management and monitoring systems to uphold our responsibility to the environment and society**

We are committed to doing business in a responsible, safe, efficient and respectful way. Our actions are guided by our corporate values and our global Code of Conduct. We comply with and in some cases exceed the applicable laws and regulations with voluntary commitments. We stipulate binding rules for our employees with standards that apply throughout the Group. In doing so, we consider, respect and promote internationally recognized principles such as the 10 principles of the U.N. Global Compact, the Universal Declaration of Human Rights, or the Core Labor Standards of the International Labor Organization (ILO).

We want to ensure that we act in line with the applicable laws and uphold our responsibility to the environment and society with our comprehensive management and monitoring systems. Our global Responsible Care Management System covers environmental protection, health and safety (see page 121). We meet our responsibilities with respect to international labor and social standards chiefly through three elements: the Compliance Program (including internal and external compliance hotlines), close dialog with our stakeholders (such as with employee representatives or international organizations) and the guideline on compliance with international labor norms, which applies Group-wide. This guideline specifies what the issues in our global Code of Conduct mean for our employees.

Our business partners are also expected to comply with prevailing laws and regulations and to align their actions with internationally recognized principles. We have established appropriate management and control systems, for example, for working with our suppliers (see page 113).

We are involved in numerous initiatives to drive forward sustainability in general and, specifically, as this relates to our value chains. These include the World Business Council for Sustainable Development (WBCSD) and OECD's Business for Inclusive Growth (B4IG) initiative, as well as networks with thematic focus like the Alliance to End Plastic Waste (AEPW), the Global Battery Alliance (GBA) or the

Roundtable on Sustainable Palm Oil (RSPO). In addition, we realize a wide range of projects – often together with partners – for example, to improve sustainability in the supply chain, to promote a circular economy model or on the responsible use of crop protection products.

For more information on sustainability management, see page 42 onward
For more information on responsible procurement, see page 113 onward
For more information on environmental protection, health and safety, see page 121 onward
For more information on employees, see page 144 onward
For more information on social engagement, see page 47 onward
For more information on corporate governance and compliance, see page 167 onward

Responsibility for human rights

- **Human rights topics coordinated and steered by Corporate Compliance**
- **Creation of an independent Human Rights Advisory Council for trust-based dialog and consultation**

BASF acknowledges its responsibility to respect internationally recognized human rights. For many years now, we have engaged in constructive dialog on human rights with other companies, nongovernmental organizations, international organizations and multistakeholder initiatives to better understand different perspectives and address conflicting goals. BASF is a founding member of the U.N. Global Compact and a member of the Global Business Initiative on Human Rights (GBI), a group of globally operating companies from various sectors. The initiative aims to ensure implementation of the U.N. Guiding Principles on Business and Human Rights. We are confronted by the fact that there are states that do not honor their obligation to protect human rights. People are particularly at risk in such countries and companies' ability to act is often limited. Nevertheless, we are committed to our values – including and especially there – and contribute to the respect of human rights.

We have embedded this into our Code of Conduct and our human rights position (for more information, see page 177). All employees and members of management bodies are responsible for ensuring that we act in accordance with our Code of Conduct and our human rights position. We uphold our standards worldwide, including where they exceed local legal requirements. We avoid causing or contributing to adverse human rights impacts through our own operations.

Our Corporate Compliance unit is responsible for steering human rights topics and developing binding policies. A group of internal experts from various specialist units – environment, health and safety, sustainability, legal, procurement, human resources and supply chain – and the operating divisions works closely together to coordinate measures across units. This expert working group provides support and advice in challenging and critical situations, on the development of internal processes, and on the creation of information and training offerings, among other things. Together with our Human Rights Advisory Council, it ensures that we can meet our due diligence obligations.

We established the Human Rights Advisory Council to systematically integrate external expertise. Its members include independent international human rights experts. The trust-based dialog on human rights topics helps us to better understand critical perspectives and to deal more openly with dilemmas. At the same time, the renowned external experts show us where we have potential for improvement and help us to build on our strengths in how we handle human rights. The council is chaired by our Chief Compliance Officer. Meetings are also attended by employees from Corporate Sustainability and Corporate Compliance. Other representatives, for example, from the operating divisions or procurement, are invited depending on the focus topics. Its composition allows the Human Rights Advisory Council to provide an external perspective on our processes and contribute this in discussions with senior management. Similarly, the Stakeholder Advisory Council brings outside views to discussions with the Board of Executive Directors. We see assuming our human rights responsibilities as a continuous process. This is why we continuously review our policies and processes and update them if necessary.

In 2020, we conducted a comprehensive review of our human rights management system and the related processes. The review showed that we have achieved important milestones in the area of human rights and in terms of our due diligence processes. These include the introduction of explicit questions on due diligence aspects in the risk analyses conducted by business units, standard supplier assessments or evaluations of investment projects. The analysis, which was discussed with the Board of Executive Directors, did however also reveal potential for improvement that we have ambitions to pursue, such as awareness of human rights topics within our organization. Continued efforts are needed to help all employees better understand how these topics are relevant to our daily work. In addition, we want to expand our due diligence process to more effectively identify challenges at different stages of our value chain. A human rights risk assessment is to be more systematically incorporated into strategy development for our procurement units. We also want to further strengthen our grievance mechanisms and introduce a standardized global hotline and reporting system in 2021. In consultation with the Human Rights Advisory Council, Corporate Compliance is developing specific measures for improvement together with the expert group and the relevant units. Awareness-raising measures are currently being developed, including training concepts and content to make employees more conscious of human rights.

We want to ensure that our actions do not have a negative impact on human rights. We have long used monitoring and management systems to identify potential and actual negative impacts. Our measures and criteria for monitoring and observing human rights are integrated into supplier assessment processes and our global monitoring systems for environmental protection, safety and security, health protection and product stewardship. They are also integrated into the evaluation of investment, acquisition and divestiture

projects, assessments along the product life cycle, and systems to monitor labor and social standards. Aspects of human rights related to site security, such as the right to liberty and security of person, are a component of the global qualification requirements of our security personnel. Respect for human rights is a mandatory element of any contract with service providers of the BASF Group who are active in this area.

As an international company, we are a part of society in the countries in which we operate and have business relationships with different partners around the world. We have trustful working relationships with our partners (joint venture partners, contractors, suppliers, and customers), expect them to comply with internationally recognized human rights standards and to demand the same of their partners further along the value chain. For instance, we contractually agreed with our two joint venture partners in the Chinese region of Xinjiang that the basis for joint activities is the BASF Code of Conduct and the requirements embedded in it to respect human rights and relevant labor and social standards (such as the exclusion of forced labor and discrimination in hiring, promotion and dismissal practices). We review this on a regular basis with audits. The most recent audits on compliance with labor and social standards at our joint ventures were performed in the first half of 2020, despite the challenges posed by the coronavirus pandemic. The audits were conducted with the support of a well-known external auditor. They reviewed the implementation of measures agreed in previous internal audits and again verified compliance with BASF's requirements regarding international labor and social standards.

We support our partners in their efforts to meet their respective responsibilities. This is because we can only meet our goal of eradicating human rights abuses along our value chains if we work together. We have defined our expectations in a binding Supplier Code of Conduct.

Employees and third parties around the world can report potential violations of laws or company guidelines to our compliance hotlines. Since 2020, employees have also been able to contact specialists directly via a new internal online platform or the corresponding app. In 2020, 261 human rights-related complaints were received by phone as well as by post and e-mail. All complaints received were reviewed and forwarded to the relevant departments for in-depth investigation. If justified, appropriate measures were taken.

We report on our global targets, monitoring systems and measures to integrate human rights topics into our business activities in publications such as this report and online.

For more information on standards in our supply chain, see page 113 onward

For more information on our production standards, see page 121 onward

For more information on systems for monitoring labor and social standards, see page 144 onward

For more information on corporate governance and compliance, see page 167 onward

See basf.com/humanrights for more information on the human rights position and a comprehensive report on the implementation of due diligence in human rights in accordance with the requirements of the National Action Plan developed by the German government, and in accordance with the U.N. Guiding Principles on Business and Human Rights

For more information on the Human Rights Advisory Council, see basf.com/human-rights-council

Supplier Management

SUPPLIERS → BASF → CUSTOMERS

BASF sources a wide range of raw materials, technical goods and services. Our suppliers are an important part of our value chain. Our objective is to secure competitive advantages for BASF through our professional procurement structures. At the same time, together with our suppliers, we want to improve sustainability in the supply chain and minimize risks.

Strategy

Our partnerships with suppliers are based on mutual value creation, as well as a reliable supply of raw materials, technical goods and services at competitive prices.[1] We work together in an open and transparent way to generate long-term benefits for both sides.

Our sustainability-oriented supply chain management helps to manage risks. We have defined our standards and processes in global guidelines and are constantly refining and optimizing these. Our risk-based approach aims to identify and evaluate sustainability risks in our value chains as best possible to improve sustainability together with our suppliers. We regularly review and document progress based on the risk level. Employees with procurement responsibility receive ongoing training in sustainability-oriented supplier management and responsible procurement. In 2020, 462 BASF employees received such training.

Our expectations of our suppliers are laid down in the global Supplier Code of Conduct. This clarifies for our suppliers the standards to be met and supports them in carrying out our requirements. We count on reliable supply relationships and want to make our suppliers' contribution to sustainable development visible to us.

2025 target

Share of relevant spend covered by sustainability evaluations **90%**

2025 target

Percentage of suppliers with improved sustainability performance upon re-evaluation **80%**

We actively promote sustainability in the supply chain and have set ourselves ambitious targets for this: By 2025, we aim to have conducted sustainability evaluations for 90% of the BASF Group's relevant spend[2] and will develop action plans where improvement is necessary. In addition, we are working toward having 80% of suppliers improve their sustainability performance upon re-evaluation by 2025. In 2020, 80% of the relevant spend had been evaluated. Of the suppliers re-evaluated in 2020, 68% had improved. The global targets are embedded in the target agreements of persons responsible for procurement.

For more information on suppliers, see basf.com/suppliers

Worldwide procurement

Our more than 70,000 Tier 1 suppliers play an important role in value creation at our company. We work in long-term partnership with companies from different industries around the world. They supply us with raw materials, precursors, investment goods and consumables, perform a range of services and are innovation partners. Procurement management systems such as guidelines and targets are set centrally and are binding for all employees with procurement responsibility worldwide.

We acquired raw materials, goods and services for our own production worth approximately €31.5 billion in 2020. Of this, around 90% was procured locally.[3] There were no substantial changes to our supplier structure.

What we expect from our suppliers

Together with our suppliers, we want to improve sustainability in the supply chain. Consequently, we expect our suppliers to comply with the applicable laws in full and to adhere to internationally recognized environmental, social and corporate governance standards. We also expect our suppliers to make an effort to implement these standards at their suppliers. In addition, we ask our suppliers to acknowledge, support and abide by our Supplier Code of Conduct – or to demonstrate and ensure their commitment to the principles specified in the Code of Conduct, for example in their own code of conduct. Our Supplier Code of Conduct is founded on internationally recognized guidelines, such as the principles of the United Nations' Global Compact, the U.N. Guiding Principles on Business and Human Rights, the International Labor Organization (ILO) conventions and the topic areas of the Responsible Care initiative. Topics covered by the Code of Conduct include compliance with human rights, the exclusion of child and forced labor, safeguarding labor and social standards, and antidiscrimination and anticorruption policies in

1 BASF considers all direct suppliers of the BASF Group in the business year concerned as Tier 1 suppliers. These are suppliers that provide us with raw materials, investment goods, consumables and services. Suppliers can be natural persons, companies or legal persons under public law.
2 We understand relevant spend as procurement volumes with relevant suppliers. We define relevant suppliers as Tier 1 suppliers showing an elevated sustainability risk potential as identified by our risk matrices, our purchasers' assessments or other sources.
3 "Local" means that a supplier is located in the same region (according to BASF's definition) as the procuring company.

addition to protecting the environment. The Code of Conduct is available in the most relevant languages for our suppliers and is integrated into electronic ordering systems and purchasing conditions across the Group. In 2020, 4,918 new suppliers committed to our Code of Conduct.

BASF reserves the right to conduct audits or evaluations to ensure that suppliers comply with the applicable laws, rules and standards. In addition, BASF reserves the right to discontinue business relationships for non-adherence to international principles, failure to correct violations, or for displaying patterns of non-compliance with these standards. Potential violations of laws, rules or standards can be reported – including anonymously – to one of our more than 50 externally operated hotlines worldwide. Each case is documented and investigated, and appropriate measures are taken as necessary.

For more information on responsible conduct along the value chain, see page 110 onward
For more information on the Supplier Code of Conduct, see basf.com/suppliers

Selection and evaluation of our suppliers

New suppliers are selected and existing suppliers are evaluated not only on the basis of economic criteria, but also environmental, social and corporate governance standards. As such, the selection, evaluation and auditing of suppliers is an important part of our sustainable supply chain management. Approaches and responsibilities are set out in a global guideline. Due to the size and scale of our supplier portfolio, our suppliers are evaluated based on risk, including materiality and country and industry-specific risks. We also use observations from our employees in procurement and information from internal and external databases, such as Together for Sustainability (TfS) assessments.

We have suppliers with a high potential sustainability risk evaluated by third parties, either through sustainability evaluations or on-site audits. The list of suppliers to be assessed is updated every year. Sustainability evaluations and on-site audits are mainly conducted according to the TfS framework. A total of 50 raw material supplier sites were audited on sustainability standards on our behalf in 2020. We received sustainability evaluations for 628 suppliers. We also take into account other certification systems and external audits, such as from the Roundtable on Sustainable Palm Oil, when evaluating our suppliers' sustainability performance. Depending on business requirements, we additionally conduct our own Responsible Care audits at selected suppliers (see page 121).

For more information on raw materials, see page 116 onward
For more information on Together for Sustainability, see basf.com/en/together-for-sustainability

Audit results

We carefully analyze the results of sustainability evaluations and on-site audits and document these in a central database. The supplier audits conducted over the past few years have identified some need for adjustment with respect to environmental, social and corporate governance standards, for example in waste management or deviations in occupational health and safety measures and standards under labor law. Follow-up audits in 2020 identified improvements, for example the correct storage of hazardous substances, proper disposal of waste, the implementation of occupational and process safety measures, the correct implementation of emergency plans, and compliance with labor law requirements. In 2020, none of our audits identified any instances of child labor or dangerous work and overtime performed by persons under 18.

In January 2020, a full mining-specific re-audit was performed at our platinum supplier Sibanye-Stillwater in Marikana, South Africa,[1] in accordance with TfS standards to re-evaluate the situation following the previous audits in 2015 and 2017. This identified fundamentally solid management systems at Sibanye-Stillwater in line with good industry practice and international standards, especially in the area of health and safety. The audit also recognized the significant efforts by Sibanye-Stillwater since the acquisition of Lonmin in 2019 in the area of social engagement, as well as the establishment of an

Together for Sustainability (TfS)

BASF is a founding member of Together for Sustainability (TfS). The initiative was established in 2011 to improve sustainability in the supply chain. The focus is on standardizing and simplifying supplier evaluations and audits globally. This increases transparency and creates synergies. Suppliers only have to complete an assessment process once. The results are then made available to all TfS members in a database and are mutually recognized – saving time and money for both parties. Suppliers are evaluated by independent experts either in on-site audits or online assessments. The latter are conducted by EcoVadis, a ratings agency specialized in sustainability analyses.

At the end of 2020, TfS had 29 members with a combined procurement spend of around €227 billion. A total of 258 audits and 4,675 online assessments were performed. As a TfS member, BASF itself is assessed and was one of the best-rated companies in 2020. With 80 points in sustainable procurement, BASF is among the top 1% in this category worldwide.

For more information on Together for Sustainability, see tfs-initiative.com

1 In 2012, an extended strike at a mine formerly operated by Lonmin Plc, London, UK, in Marikana, South Africa, culminated in a violent confrontation between mine workers and armed South African police. Employees of the platinum supplier Lonmin were among the fatalities. Ownership of the Marikana mine was transferred to Sibanye-Stillwater with its acquisition of Lonmin in 2019.

inclusive stakeholder engagement forum. These include maintaining the cooperation between Sibanye-Stillwater and the authorities to improve local living conditions. In addition, the audit team recommended that the implementation and management of the social engagement strategy continue to be systematically monitored.

Need for action was identified in areas such as health and safety and the environment, for example in storing corrosive substances, fire-fighting capabilities and compliance with soil and water emission limits. All of the deviations identified by the audit were included in an action plan. BASF and Sibanye-Stillwater discuss the progress made on its implementation four times a year. The improvements were documented by the end of 2020 as planned. Sibanye-Stillwater is a member and supporter of the International Platinum Group Metals Association (IPA) sustainability initiative that was co-founded by BASF. The initiative's measures include conducting comprehensive sustainability audits in the South African platinum group metals sector and exchanging factors for success. BASF continued its regular dialog with local stakeholder groups in 2020.

We are also in regular contact with our supplier Nornickel on sustainability matters and other aspects relevant to our cooperation. These include current events and the findings from the mining-specific TfS audits conducted in 2017 at Nornickel's sites in Polar and Kola (both in Russia) and in Harjavalta, Finland. The audits identified some need for adjustment in the areas of waste, wastewater, emissions and land rehabilitation to mitigate environmental and production risks. A number of points have since been implemented, while others are still outstanding and are included in site-specific action plans. In addition, Nornickel has committed to becoming certified according to the standards of the International Council on Mining and Metals (ICMM) and the Initiative for Responsible Mining Assurance (IRMA). This involves comprehensive audits, which are planned for 2021.

For more information on the supplier relationship with the Sibanye-Stillwater mine, see basf.com/en/marikana

Supplier development

Using TfS evaluations, we pursue a risk-oriented approach with clearly defined, BASF-specific follow-up processes. If we identify deviations from our standards, we ask our suppliers to develop and implement corrective measures within a reasonable time frame. We support them in their efforts, for example by providing training on environmental, social and corporate governance topics. We trained employees from 43 Chinese suppliers in 2020 as part of a partnership with the East China University of Science and Technology in Shanghai, China.

As part of TfS, training was developed for suppliers that already have a sustainability rating but have potential for improvement in environmental, social and corporate governance. In 2020, more than 1,000 participants attended TfS training on this topic in China and Brazil. The TfS Supplier Academy is also developing training opportunities for our suppliers around the world. These will be implemented in 2021.

We review our suppliers' progress according to a defined timeframe based on the sustainability risk identified, or after five years at the latest. In the case of ongoing, serious violations of the standards defined in our Supplier Code of Conduct or international principles, we reserve the right to impose commercial sanctions. These can go as far as termination of the business relationship. In 2020, this was decided in four cases.

Raw Materials

SUPPLIERS → BASF → CUSTOMERS

In 2020, BASF purchased a total of around 30,000 different raw materials from more than 6,500 suppliers. Using resources as efficiently and responsibly as possible and the concept of a circular economy are firmly embedded in our strategy and our actions, supported by our Verbund structure and the use of renewable and recycled feedstocks. We expect our suppliers to source and produce raw materials responsibly. In the search for alternative raw materials, we employ solutions that also contribute to sustainability.

Strategy

Our strategy covers the entire value chain – from responsible procurement and using and recycling raw materials efficiently in our own processes to developing green products and technologies for our customers. We want to decouple growth from resource consumption with process and product innovations to drive forward the shift toward closed-loop value creation systems (see page 30). Alongside economic, environmental and social criteria, we also consider aspects such as product safety and supply security when selecting raw materials for our production processes.

Our expectations of our suppliers are laid down in the Supplier Code of Conduct (see page 113). We take a closer look at suppliers in critical supply chains, for example for mineral raw materials, renewable resources such as palm kernel oil, for a number of pigments or highly toxic substances. Upstream stages of the value chain are assessed for serious sustainability risks and, if necessary, suitable remedial measures are identified. In addition, we develop and test approaches to make raw materials supply more sustainable in joint initiatives with suppliers and other partners. Examples include our cooperative ventures to recycle battery materials (see page 119) or our joint activities on certified sustainable supply chains for renewable raw materials such as palm and castor oil.

The mass balance approach

Many BASF value chains start in syngas plants or steam crackers, where fossil resources, mostly natural gas and naphtha, are converted into hydrogen and carbon monoxide or important basic chemicals such as ethylene and propylene. These are used to create thousands of products in the BASF Verbund. Alongside fossil resources, bio-based and recycled raw materials such as biomethane, bio-naphtha or pyrolysis oil can be used as feedstocks. It is not possible to physically or chemically match the feedstock to the output as our plants simultaneously process fossil, bio-based and recycled raw materials. The share of bio-based or recycled raw materials can be allocated to certain products using the mass balance approach, which is audited by a third party, and certification (such as the REDcert2 standard for the chemical industry). It is similar in principle to green power, which has been established for many years: Energy from renewable sources is fed into the grid and then charged to individual customers. Mass balance products are identical in quality to conventional products but make a substantial sustainability contribution to the use of bio-based or recycled raw materials. This method has already been applied to over 200 BASF products (2019: around 80 products), for example, for engineering plastics, superabsorbents, dispersions and intermediates. We share our expertise in various stakeholder platforms to harmonize and standardize different allocation methods and certification systems for mass balance products. For instance, BASF contributed to position paper on the mass balance approach published by the industry association PlasticsEurope in 2020.

For more information, see basf.com/massbalance

BASF's Verbund concept is key to making the use of raw materials in our own processes as efficient as possible: Intelligently linking and steering our plants and processes creates efficient value chains. By-products from one facility are used as feedstocks elsewhere. This saves raw materials and energy (see page 130). At the same time, the Verbund offers many opportunities to use renewable and recycled raw materials. We want to better leverage this potential going forward (see page 30). For example, we are driving forward chemical recycling of mixed plastic waste and used tires in our ChemCycling™ project (see page 118).

Resource efficiency and stewardship are also becoming increasingly important topics for our customers. That is why we are constantly working to reduce the resources consumed in the production of our products, for example through more efficient processes or the use of renewable and recycled raw materials. This enables us to offer our customers solutions that make a greater contribution to sustainability, like a smaller carbon footprint. Our products also improve our customers' resource efficiency and sustainability in many areas. For example, metal pretreatment using our innovative Oxsilan® thin-film technology requires significantly less material than conventional processes. At the same time, it can achieve water savings of up to 50% and reduce energy costs by up to 40%.

Fossil and petrochemical resources

BASF's most important raw materials (based on volume) include liquid gas and natural gas, as well as crude oil-based petrochemical products such as naphtha and benzene. We mainly use liquid gas and natural gas to generate energy and steam, and to produce key basic chemicals such as ammonia or acetylene. Naphtha is mostly fed into our steam cracker, where it is split into products such as ethylene and propylene – both important feedstocks for numerous value chains. We use aromatics such as benzene or toluene to manufacture high-performance plastics, among other products. Thanks to a high degree of forward and backward integration, we can produce many feedstocks for our value chains efficiently while conserving resources within the BASF Verbund. This increases supply security and reduces dependence on external supply sources to just a few key raw materials. We source these from different suppliers to minimize supply risks.

As part of our efforts to improve sustainability, we are continuously investigating whether fossil and petrochemical resources can be replaced with non-fossil alternatives. We carefully consider economic, environmental and social aspects, as well as other important criteria like supply security and product safety. Our aim is to increase the share of renewable and recycled feedstocks in our value chains. This brings with it challenges and compromises in the supply of both energy and resources for carbon-based organic chemistry, for example, in striking the balance between competitiveness and the additional costs of using renewable energy, or between renewable resources and land use. We raise awareness of these trade-offs through close dialog with our stakeholders and our involvement in sustainability initiatives, and help to find solutions.

Renewable resources

- **Numerous projects and cooperative ventures to improve sustainability along the value chain**

In addition to fossil resources, we employ renewable raw materials, mainly based on vegetable oils, fats, grains, sugar and wood. In 2020, we purchased around 1.2 million metric tons of renewable raw materials. For instance, we use renewable resources to produce ingredients for the detergent and cleaner industry, or to source natural active ingredients for the cosmetics industry. We also use renewable feedstocks such as biomethane or bio-naphtha in our Verbund as an alternative to fossil resources. The mass balance approach allows us to allocate the amount of renewable resources used to a wide variety of end products (see box on page 116). Examples include the biomass balance polyisobutene OPPANOL® BMBCert™ (see page 84) or the biomass balance versions of our Styropor®, Neopor® and Styrodur® insulation materials.

As for fossil raw materials, we also consider how renewable resources impact sustainability topics along the value chain. Alongside positive effects like saving greenhouse gas emissions, these can also have negative effects on areas such as biodiversity, land use or working conditions, depending on the raw material. This is why we carefully weigh up the advantages and disadvantages of using renewable resources, for example using Eco-Efficiency Analyses. We also take recognized certification standards such as the Roundtable on Sustainable Palm Oil into account in our decisions. We want to minimize raw material-specific risks and increase sustainability with measures, projects and targeted involvement in initiatives. Our activities here concentrate on value chains that are relevant quantitatively, such as palm-based raw materials, or that do not yet have certification standards, such as castor oil. We are also working on product innovations and on enhancing production processes to improve the profitability and competitiveness of renewable resources.

Palm oil, palm kernel oil and their derivatives are some of our most important renewable resources. We mainly use these raw materials to produce ingredients for the cosmetics, detergent, cleaner and food industries. We aim to ensure that palm-based raw materials come from certified sustainable sources and have actively supported the Roundtable on Sustainable Palm Oil (RSPO) since 2004. Based on the Group-wide Supplier Code of Conduct (see page 113), we have laid down our expectations of suppliers in the oil palm value chain in an additional Palm Sourcing Policy. This addresses aspects such as forest and peat conservation, respect of human and labor rights, smallholder inclusion, and certification and traceability standards. The annual BASF Palm Progress Report reports on our measures and progress toward more sustainability and transparency in the value chain.

We purchased 227,213 metric tons of certified palm oil and palm kernel oil in 2020. We therefore reached our goal of only sourcing RSPO-certified palm oil and palm kernel oil by 2020. By 2025, we want to do the same for the most important intermediate products based on palm oil and palm kernel oil, including fractions and primary oleochemical derivatives as well as vegetable oil esters. We were able to trace 96% of our global palm footprint to oil mill level as of the end of 2020. In addition, we continued to drive forward the RSPO supply chain certification of our sites for cosmetic ingredients. At the end of 2020, 25 production sites worldwide were certified by the RSPO.

We continue to see growing demand for certified palm-based products from our customers. Sales volumes rose by more than 30% compared with the previous year. We are expanding our range of certified sustainable products in accordance with the RSPO's mass balance supply chain model. This helps our customers to meet their obligations to customers, consumers and stakeholders.

We source most of our palm-based raw materials from Malaysia and Indonesia. Smallholders account for around one-third of the total volumes produced there. We have worked together with The Estée Lauder Companies, the RSPO and Solidaridad in Indonesia since 2019 to strengthen smallholder structures and sustainable production methods at local level. The project in the province of Lampung supports around 1,000 independent smallholders in improving their livelihoods and the sustainable production of palm oil and palm kernel oil. The focus is on efficient and sustainable farming practices and health and safety standards. The goal is for at least one-third of program participants to become certified according to the RSPO Smallholder Standard in three years.

Also important for BASF, albeit at a much smaller scale, is castor oil. We use castor oil to manufacture products such as plastics and ingredients for paints and coatings, as well as products for the cosmetics and pharmaceutical industries. We established the Sustainable Castor Initiative – Pragati in 2016 together with Arkema, Jayant Agro and Solidaridad as there were previously no globally defined and recognized certification standards. The aim is to improve the economic situation of castor oil farmers in India and, at the same time, raise awareness of sustainable farming methods. Around 80% of the world's castor beans are produced in India, mainly by smallholders. As part of the project, smallholder farmers receive training on topics such as cultivation methods, efficient water use, health and the safe use of crop protection products based on a specially developed sustainability code. Since the project was initiated, more than 4,500 smallholders and over 8,700 hectares of land have been certified for sustainable castor cultivation. Yields from this land have risen by at least 50% compared with baseline 2016. We will source the first certified sustainable castor oil from the program in 2021. In the long term, we want to increase the share of this oil to cover our total demand.

Our raw materials for cosmetic active ingredients mainly come from plants. Two examples of holistic programs that consider the various aspects of sustainability are our products based on rambutan and argan. The rambutan tree belongs to the soapberry family. Its fruit is mainly sold for food. Our research and development discovered a method to extract the bioactives contained in the peel, leaves and seeds. The commercialization of the rambutan tree's by-products, which were previously disposed of as waste, creates new income streams for farmers and expands our portfolio of natural active ingredients. As part of our rambutan program, we have worked closely together with two small plantations in the Vietnamese province of Dong Nai since 2014, which supply us with sustainably produced, certified organic raw materials. The partnership focuses in particular on responsible farming practices and social inclusion, including gender equality, safe working conditions and fair incomes.

We have cooperated with Targanine in the region of Agadir in Morocco since 2005. The network of six argan oil cooperatives supplies 16 products – including argan oil, essential oils and bee products – to BASF under fair trade conditions. Some 2,000 women from rural areas now work in the cooperatives. Commercialization helps to preserve the argan forest and strengthens local communities, for example, by providing additional income and through literacy programs and health initiatives. In 2020, the certification organization Ecocert awarded our cosmetic active ingredient Lipofructyl™ Argan the "Fair for Life" label for the fourth time in a row, confirming the sustainability of the supply chain.

For more information on renewable resources, see basf.com/renewables

For more information on our voluntary commitment to palm oil products and the Palm Progress Report, see basf.com/en/palm-dialog

Recycled feedstocks

Recycling is becoming increasingly important due to limited resources, growing sustainability requirements in the markets and regulatory developments. We want to increase the use of recycled feedstocks with our Circular Economy Program. From 2025 onward, we aim to process around 250,000 metric tons of recycled and waste-based raw materials every year worldwide, replacing fossil raw materials (see page 30).

One focus here is chemically recycling plastic waste. This technology complements mechanical recycling and can help to reduce the amount of plastic waste that is disposed of in landfill or thermally recovered. Chemical recycling breaks down plastics into their building blocks or converts them into basic chemicals. Different methods are used to achieve this. In our ChemCycling™ project, our partners use the thermochemical process of pyrolysis to extract pyrolysis oil from mixed plastic waste or used tires, which were not previously recycled. We can feed this pyrolysis oil into our Verbund structure as an alternative to fossil raw materials and use it to make new products. These have the same properties as products manufactured from fossil feedstocks. We use a certified mas balance approach to allocate the percentage of recycled materials to the end product (see box on page 116). Since 2020, we have been able to offer our customers the first commercial Ccycled™ products. After investing in Quantafuel AS in 2019, we expanded our supply base with

pyrolysis oil from used tires in 2020 with a partnership with New Energy and an investment in Pyrum Innovations AG.

We also took a crucial step forward in the chemical recycling of used polyurethane foam mattresses in 2020: A wet chemical process developed by BASF can be used to break down soft polyurethane foam to recover the polyol originally used, which can be used to produce new polyurethane foam. The first test foams show promising results.

BASF continues to recycle the precious metals used in automotive, process and chemical catalysts. These contain precious metals like platinum, palladium and rhodium. Treating and recovering resources from spent automotive catalysts is a complex process. All of the precious metals we recover in this way are reused as feedstocks in catalyst production.

The growing demand for electromobility is also increasing the need for lithium-ion battery recycling. As a leading producer of battery materials with local production capacities in the three main markets – Asia, Europe and the United States – in the future, BASF has in-depth expertise in battery chemistry and process technology. Together with our partners, we are leveraging this expertise to develop a closed-loop system for the raw materials used to produce cathode active materials, such as nickel, cobalt, manganese and lithium. The objective is to further increase sustainability in the value chain for batteries. In 2020, we launched the project "Recycling lithium-ion batteries for electric vehicles" (ReLieVe) together with Eramet and SUEZ. The project received €4.7 million in funding from the European Union. The aim is to develop an innovative, large-scale process to recycle batteries along the entire value chain – from collecting end-of-life batteries and recovering mineral raw materials to using these in the production of new battery materials.

For more information on BASF's Circular Economy Program, see page 30

For more information on recycled raw materials, see basf.com/circular-economy

Mineral raw materials

We procure a number of mineral raw materials, which we use to produce mobile and process emissions catalysts or battery materials, among other products. We are continually improving our products and processes to minimize the use of primary mineral raw materials. At the same time, we are driving forward the recycling of mineral raw materials, for example, by recovering platinum metals from mobile and process emissions catalysts and using these as secondary resources (see "Recycled feedstocks").

Sourcing mineral raw materials responsibly is important to BASF. We have selected suppliers confirm to us that they do not source minerals as defined in the Dodd-Frank Act from the Democratic Republic of Congo or its neighboring countries. If there is cause for concern, we reserve the right to audit suppliers and, if necessary, terminate the business relationship. We implemented the E.U. Conflict Minerals Regulation by the deadline in early 2021. This defines supply chain due diligence for importers and processors of certain mineral raw materials originating from conflict regions and high-risk areas.

In addition to responsible procurement of "conflict minerals," BASF is committed to responsible and sustainable global supply chains for other mineral raw materials. These include cobalt, a key component in the production of battery materials for electric vehicles, among other applications. Our cobalt supply chain for battery materials is organized according to special sustainability criteria for cobalt procurement. For example, we do not purchase cobalt from artisanal mines and also aim to exclude this in supply chains through our supply chain management as long as responsible artisanal production cannot be verified. In addition, we have signed a long-term supply agreement with Nornickel for nickel and cobalt from a metal refinery in Finland. The agreement ensures locally sourced and secure supply of raw materials for battery production in Europe.

Together with BMW, Samsung SDI, Samsung Electronics, Volkswagen and the German governmental agency for international cooperation (Gesellschaft für Internationale Zusammenarbeit, GIZ), we have been involved in Cobalt for Development since 2018. The cross-industry initiative aims to identify how to improve working conditions in artisanal mines, as well as living conditions in the surrounding communities in the Democratic Republic of Congo. To achieve this, the initiative offers programs such as training on important environmental, social and governance aspects of responsible mining practices. Training for 12 mining cooperatives in Kolwezi started in October 2020. The initiative aims to train more than 1,500 artisanal cobalt miners on topics such as occupational safety and environmental management by mid-2021. Cobalt for Development also works closely together with local nongovernmental organizations and Bon Pasteur/the Good Shepherd International Foundation to create additional income opportunities for families and improve access to education. For example, a new building for Kisote's public elementary and secondary school was constructed and training was held on topics such as farming.

We are also involved in various international initiatives to strengthen sustainability and innovation in the value chain for batteries. These include the Global Battery Alliance (GBA), which we co-founded in 2017. It brings together business, government and civil society and develops standards and tools to create a socially responsible, ecological and economically sustainable, and innovative value chain for batteries. For instance, BASF is working with the GBA on a battery pass. In the future, this "digital twin" will contain information on the sustainability of a battery to increase transparency in the value chain. The first test version will be developed in 2021 and the battery pass should be ready to be used by the end of 2022. BASF is also an active member of the Responsible Minerals Initiative (RMI).

Another mineral raw material that BASF processes is mica. We use mica to produce pigments, which are used in products such as coatings. For the majority of our demand, we use mica from our own mine in Hartwell, Georgia, and some of our businesses source exclusively from this mine. Third-party suppliers are requested to source mica in accordance with internationally recognized standards which, among other things, exclude child labor. As a member of the cross-industry Responsible Mica Initiative, BASF actively contributes to the eradication of child labor and unacceptable working conditions in the Indian mica supply chain.

For more information on the Cobalt for Development project, see basf.com/cobalt-initiative

Environmental Protection, Health and Safety

Responsible Care Management System

SUPPLIERS → BASF → CUSTOMERS

Protecting people and the environment is our top priority. Our core business – the development, production, processing and transportation of chemicals – demands a responsible approach. We address environmental, health and safety risks with a comprehensive Responsible Care Management System. We expect our employees and contractors to know the risks of working with our products, substances and plants and to handle these responsibly.

Responsible Care Management System

■ Global EHS directives and standards

BASF is actively involved in the International Council of Chemical Associations' (ICCA) Responsible Care® initiative and has endorsed the Responsible Care® Global Charter. Our Responsible Care Management System comprises the global directives, standards and procedures for environmental protection, health and safety (EHS) for the various steps along our value chain. Our regulations cover the transportation of raw materials, activities at our sites and warehouses, and distribution of our products as well as our customers' application of the products. Specifications for implementing these measures are laid out in binding directives that are introduced in consultation with employee representatives. These describe responsibilities, requirements and assessment methods. The Environmental Protection, Health & Safety unit in the Corporate Center defines Group-wide management and control systems and monitors compliance with internal guidelines and legal regulations, while the sites and legal entities implement these requirements locally. Our policies and requirements are continuously updated. This is why we also maintain dialog with government institutions, associations and international organizations.

We set ourselves ambitious goals for environmental protection, health and safety (see page 32) and regularly review our performance and progress with audits. We assess the potential risks and weaknesses of all our activities – from research and production to logistics – and the effects of these on the safety and security of our employees, the environment or our surroundings. We use databases to document accidents, near misses and safety-related incidents at our sites as well as along our transportation routes to learn from these; appropriate measures are derived according to specific cause analyses.

For more information on Responsible Care®, see basf.com/en/responsible-care

Audits

■ 131 audits to monitor performance and progress

Regular audits help ensure that our safety, security, health and environmental protection standards are met. We conduct regular audits every three to six years at all BASF sites and at companies in which BASF is a majority shareholder. We take a risk-based approach and use an audit database to ensure that all sites and plants worldwide are regularly audited. Sites and companies acquired as part of acquisitions are audited in a timely manner to bring these into line with our standards and directives as necessary. After the integration phase is complete, they are generally audited within one to two years, depending on complexity and size. We have defined our regulations for Responsible Care audits in a global Corporate Requirement. During our audits, we create a safety and environmental profile that shows if we are properly addressing the existing hazard potential. If this is not the case, we agree on measures and monitor their implementation, for example, with follow-up audits. Our Responsible Care audit system complies with the ISO 19011 standard and is certified according to ISO 9001. Worldwide, 150 BASF production sites are certified in accordance with ISO 14001 and EMAS (Eco-Management and Audit Scheme) (2019: 183).[1] In addition, 54 sites worldwide are certified in accordance with OHSAS 18001 or ISO 45001 (2019: 53).

In the BASF Group in 2020, 112 environmental and safety audits were conducted at 60 sites (2019: 137 audits at 90 sites). The focus was on auditing sites based on the level of risk. For production plants with a medium and high hazard potential, we additionally conducted 19 short-notice audits at seven sites (2019: 42 audits at 33 sites). The sites of the businesses acquired from Bayer in 2018 were evaluated in 2020 as planned. We aim to audit the sites acquired from Solvay in 2020 from the end of 2021.

Due to the coronavirus pandemic, medical personnel including auditors had to concentrate on monitoring and responding to the pandemic and on global pandemic preparedness. For this reason and due to the travel restrictions, only one site was audited on occupational medicine and health protection in 2020 (2019: 15). All other audits and health performance control visits were postponed to 2021.

For more information on occupational safety and health protection, see page 122 onward

Costs and provisions for environmental protection in the BASF Group

Million €	2020	2019
Operating costs for environmental protection	1,125	1,035
Investments in new and improved environmental protection plants and facilities[a]	231	328
Provisions for environmental protection measures and remediation[b]	693	654

a Investments comprise end-of-pipe measures as well as integrated environmental protection measures.
b Values shown refer to December 31 of the respective year.

For more information, see the Notes to the Consolidated Financial Statements on pages 252 and 289

1 The decrease compared with the previous year is attributable to the sale of the construction chemicals business and the related sites.

Safety and security

SUPPLIERS | BASF | CUSTOMERS

For occupational and process safety as well as health and environmental protection and corporate security, we rely on comprehensive preventive measures and expect the cooperation of all employees and contractors. Our global safety and security concepts serve to protect our employees, contractors and neighbors, to prevent property and environmental damage, and to protect information and company assets.

Strategy

- **Global safety standards**
- **Strengthening risk awareness**
- **Comprehensive incident analyses and global experience and information exchange**

The safety of our employees, contractors and neighbors, and protecting the environment is our top priority. This is why we have set ourselves ambitious goals for occupational and process safety as well as health protection. We stipulate mandatory global standards for safety, security, and environmental and health protection. A worldwide network of experts ensures these are implemented. As part of our continuous improvement process, we regularly monitor progress toward our goals.

We promote risk awareness for every individual with measures such as systematic hazard assessments, specific and ongoing qualification measures and global safety initiatives. We analyze accidents and incidents as well as their causes and consequences in detail at a global level to learn from these. Hazard assessments and the risk minimization measures derived from them are an important prevention tool. We also promote regular dialog across different sites to strengthen risk awareness among our employees and contractors, to learn from examples of good practice and in this way, continually develop our safety culture.

By the end of 2020, we had introduced digital solutions and applications at around 250 plants worldwide to further increase safety, security, planning capability and availability. We plan to implement these at around another 170 plants by 2022. Such solutions include augmented reality: At many sites, our employees already use mobile end devices and special apps for day-to-day tasks such as safety inspections, which continuously improves the efficiency and quality of our processes. Other applications include efficiently simulating maintenance and production processes in digital plant models and predictive maintenance. At the Ludwigshafen site in Germany, for example, over 40 plants already use predictive maintenance models to monitor plant components such as compressors, pumps or heat exchangers.

Leaders are important role models for employees, which is why environmental protection, health, safety and security are discussed with newly appointed senior executives. Senior executives with a particular responsibility for such topics, for example, in production, also receive specific further training to be able to meet their responsibilities. Due to the restrictions caused by the coronavirus pandemic, the seminars for senior executives could only take place to a limited extent in 2020. We will therefore expand our offering with digital formats in 2021.

Global safety initiative

- **First decentralized Global Safety Days**

Our global safety initiative was established in 2008 and plays a key role in the ongoing development of our safety culture. For the first time, decentralized virtual safety days were held around the world in 2020. As a result of the new organizational structure and due to the different regional measures to fight the coronavirus pandemic, each site could decide on the focus and implementation of the safety initiative. In the Asia Pacific region, many sites organized activities under the banner of "Safety, my responsibility!" while numerous events reflecting the motto of "Halt! Safety champions pause for safety" were held at the Ludwigshafen site in Germany. Many events were held online using interactive formats In the interest of our employees' health, giving them the opportunity to find out about safety-related topics and to learn from each other. This involvement and lively discussion, even in times of a pandemic, make a major contribution to our safety culture.

For more information on the global safety initiative, see basf.com/global-safety-initiative

Occupational safety

- **Employees and contractors worldwide instructed on safe behavior**

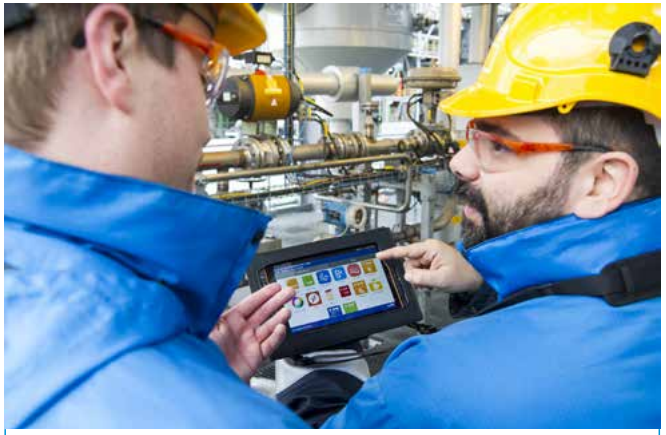
Our aim is to reduce the worldwide lost-time injury rate to no more than 0.1 per 200,000 working hours[1] by 2025. To prevent work-related accidents, we encourage and promote risk-conscious behavior and safe working practices for every individual, learning from incidents and regular discussion. We are constantly refining and enhancing our requirements and training.

2025 target

Reduction of worldwide lost-time injury rate per 200,000 working hours **≤0.1**

In addition to the legally required briefings, BASF requires new employees and contractors to complete compulsory safety training, as well as regular training on the safe handling of chemicals and the correct use of personal protective equipment for employees at our production sites.

1 Hours worked by BASF employees, temporary employees and contractors



Easier with an app

Hazard assessments are the main occupational safety tool for preventing accidents and work-related illness. In the future, a new mobile hazard assessment app can be used at the Ludwigshafen site in Germany to report occupational hazards directly on site using explosion-proof smartphones or tablets. This information can later be edited on a computer. There are many advantages to this approach. Digital processes do not just save time and avoid transcription errors – images and notes also allow more detailed information to be passed on without having to enter this twice. This makes is easier to review the effectiveness of the measures, making the app a valuable, integrated tool that complements the existing backend application. The hazard assessment app was tested at the first plants in 2020 and made more user-friendly based on the findings. We want to expand availability to further plants at the Ludwigshafen site from 2021 and share experiences from the pilot phase in a global network.

In 2020, 0.3 work-related accidents per 200,000 working hours[1] occurred at BASF sites worldwide (2019: 0.3). The share of chemical-related accidents declined slightly to 6% (2019: 7%). Unfortunately, there was one fatal work-related accident in 2020 (2019: 1). At the Gunsan site in South Korea, an employee of a contractor succumbed to injuries sustained from falling after receiving an electric shock during painting work on a high-voltage transmission tower. BASF supported the relevant authorities in their investigation into the circumstances and cause of the accident. We use the findings to take appropriate measures to prevent this from happening again. Such measures include regular information and awareness campaigns.

For more information on occupational safety, see basf.com/occupational_safety

Process safety

- **Regular review of plant safety concepts and performance of implementation checks and safety-related measures**
- **Global initiatives to reduce process safety incidents**
- **Production networks and global training methods foster dialog**

Process safety is a core part of safe, effective and thus sustainable production. We meet high safety standards in the planning, construction and operation of our plants around the world. These meet and, in some cases, go beyond local legal requirements.

Our global standards provide the framework for the safe construction and operation of our plants as well as the protection of people and the environment. Our experts have developed a plant safety concept and implementation check for every plant that considers the key aspects of safety, health and environmental protection – from conception to startup – and stipulates specific protection measures.

In order to maintain the highest level of safety at our plants across their entire life cycles, we verify that our protection concepts, safety reviews and resulting safety measures have been carried out in all our plants at timely intervals based on risk potential. We regularly update our plants' safety and security concepts in line with changing technologies and as necessary.

2025 target

Reduction of worldwide process safety incidents per 200,000 working hours **≤0.1**

We use the number of process safety incidents (PSI) per 200,000 working hours[1] as a reporting indicator. We have set ourselves the goal of reducing process safety incidents to a rate of no more than 0.1 per 200,000 working hours by 2025. In 2020, we recorded 0.3 process safety incidents per 200,000 working hours worldwide (2019: 0.3). We investigate every incident in detail, even under the constraints of the coronavirus pandemic, analyze causes and use the findings to derive suitable measures. We share the findings in our global network in the interest of continuous improvement.

Around the world, we promote the reduction of process safety incidents and improve risk awareness with a culture of dealing openly with mistakes and initiatives to foster dialog around potential safety risks. In reducing plant safety incidents, the main focus is on the implementation of technical measures. Bolstered by a greater risk awareness, avoiding and detecting all leaks was again a key priority in 2020 with the "Zero Loss of Containment Mindset" initiative in North America and the "Zero leakage" initiative in South America.

In addition, we are continually refining and expanding our training methods and offerings to increase risk awareness. Due to the restrictions associated with the coronavirus pandemic, in-person seminars were also held as virtual meetings or taught using web-based applications in 2020.

1 Hours worked by BASF employees, temporary employees and contractors

We play an active role in improving process safety around the world in a global network of internal and external experts, through our involvement in organizations such as the International Council of Chemical Associations (ICCA) or the Center for Chemical Process Safety (CCPS), and by fostering dialog with government institutions.

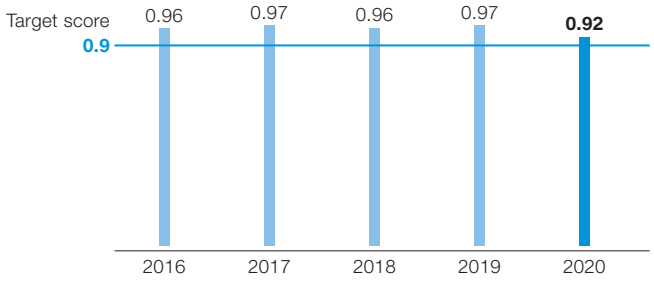
For more information on process safety, see basf.com/process_safety

Health protection

- **Global standards for corporate health management**
- **2020 Global Health Campaign: "Protect yourself and others"**

Our global corporate health management serves to promote and maintain the health and productivity of our employees. Our worldwide standards for occupational health are specified in a requirement. A global network of experts provide implementation support. We monitor compliance with these standards at BASF sites with regular audits.[1] We measure our performance in health protection using the Health Performance Index (HPI). This has five components: recognized occupational diseases, medical emergency drills, first aid, preventive medicine and health promotion. Each component contributes a maximum of 0.2 to the total score, meaning that the highest possible score is 1.0. We aim to reach a value of more than 0.9 every year.

Development of the Health Performance Index (HPI)



With an HPI of 0.92, we once again reached this target in 2020 (2019: 0.97). The figure is slightly lower than in previous years due to the coronavirus pandemic, as a result of which a number of criteria crucial to the HPI could not be fully met. For instance, activities that required physical participation such as emergency drills, examinations or first aider training could not be held on the usual scale.

The coronavirus pandemic also made many health protection measures necessary in 2020. Activating our pandemic plans, which have been mandatory for all sites since 2010, sharing information in our global BASF medical network, and working closely together with the authorities, employee representatives and our partners at BASF sites enabled us to make and successfully implement sound and timely decisions according to the situation. Our actions focused on the health of all of our employees, contractors and third parties. Measures included developing hygiene concepts, tracing and breaking infection chains, and providing information to and raising awareness among employees via the intranet and at the site gates.

In light of the coronavirus pandemic, the annual global health campaign on the theme "Protect yourself and others – stay healthy in 2020" was developed at short notice and offered around the world. The focus was on preventive hygiene measures, vaccinations and preventing infection. There were also special offerings on remote working, such as videos and consultations on nutrition, exercise/ergonomics and psychological stress. Over 450 sites worldwide took part in the health campaign with activities such as workshops, courses, talks and exercises. Another focus in 2020 was on influenza prevention. BASF employees could be vaccinated against the seasonal flu at many sites around the world, an offer that was very well received. At the Ludwigshafen site in Germany, for example, around three times more employees participated in the vaccination campaign than in past years.

We raise employee awareness of health topics with offerings tailored to specific target groups. The BASF health checks form the foundation of our global health promotion program and are offered to employees at regular intervals.

For more information on occupational medicine, health campaigns and the HPI, see basf.com/health

1 In 2020, medical personnel including auditors had to concentrate on monitoring and responding to the pandemic situation and on global pandemic preparedness. For this reason and due to the coronavirus-related travel restrictions, only one site was audited on occupational medicine and health protection in the year under review (see page 121).

Emergency response, corporate security and cybersecurity

- **Regular review of emergency systems and crisis management structures**
- **Comprehensive protection measures against third-party interference**

We are well prepared for crisis situations thanks to our global crisis management system. In the event of a crisis, our global, regional or local emergency response plans and crisis management structures are engaged, depending on the impact scope. We involve situation-related partners and suppliers as well as cities, communities and neighboring companies. An IT system to support emergency response helps us to speed up communication between the relevant players in the event of a crisis and maintain the best possible overview of the situation. This enables the crisis management team to record and process events around the world better and in more detail.

We regularly check our emergency systems, crisis management structures and drill procedures with employees, contractors, local authorities and emergency rescue workers. For example, in 2020 we conducted 176 drills and simulations in Ludwigshafen, Germany, to instruct participants on our emergency response measures.

We analyze the potential safety and security risks associated with investment projects and strategic plans, and define appropriate safety and security concepts. Our guiding principle is to identify risks for the company at an early stage, assess them properly and derive appropriate safeguards.

We inform business travelers and transferees about appropriate protection measures prior to and during travel in countries with elevated security risks. After any major incident, we can use a standardized global travel system to locate and contact employees in the affected regions.

We protect our employees, sites, plants and company know-how against third-party interference. This includes, for example, analyzing potential security risks in the communities surrounding our production sites and addressing in depth the issue of cybersecurity. BASF applies the "security by design" principle. As early as the concept phase, all internet of things applications are critically reviewed from a cybersecurity perspective. We are continually developing our ability to prevent, detect and react to security incidents with various measures and training programs. Our global Cyber Security Defense Center monitors and protects our IT systems against hacker attacks. We cooperate closely with a global network of experts and partners to ensure that we can protect ourselves against cyberattacks as far as possible. Our IT security system is certified according to ISO 27001:2013. This also includes ISO 27019:2018 for critical infrastructure.

Around the world, we work to sensitize our employees about protecting information and know-how. For example, we further strengthened our employees' awareness of risks in 2020 with mandatory online training for all employees and other offerings such as seminars, case studies and interactive training. We have defined mandatory information protection requirements to ensure compliance with our processes for protecting sensitive information and perform audits to monitor this.

Our worldwide network of information protection officers comprises around 650 employees. They support the implementation of our uniform requirements and hold events and seminars on secure behaviors. Around 100,000 employees had been trained on the basics of cybersecurity and information protection in 2020. Our standardized Group-wide recommendations for the protection of information and knowledge were expanded to include additional guidance for employees and updated in line with current developments.

For more information on emergency response, see basf.com/emergency_response

Global Be Secure month

Cyberattacks have become commonplace. Social engineering calls in particular have risen sharply in recent times. Alongside technical security, every individual's conduct plays an important role in protecting companies against information theft and cybercrime.

We want to raise employee awareness around cybersecurity and give them the tools to effectively defend themselves. As well as online training, which is compulsory for all employees, we hold a Be Secure month every year in October. In 2020, over 16,000 employees participated in around 90 events in nine languages. These ranged from talks on topics such as counter-espionage at BASF to live hacking demonstrations by an external digital forensics expert. In addition, information protection officers around the world organized regional and local events, mainly held online due to the coronavirus pandemic.

Product stewardship

SUPPLIERS → BASF → CUSTOMERS

We review the safety of our products from research and development through production and all the way to our customers' application. We continuously work to ensure that our products pose no risk to people or the environment when they are used responsibly and in the manner intended.

Strategy

■ Global directives with uniformly high standards

Product stewardship is of central importance for us. We want to ensure that our products meet our customers' quality expectations and pose no risk to people, animals or the environment when used in the manner intended. We are committed to continuously minimizing the negative effects of our products on the environment, health and safety along the value chain – from development to disposal – and to the ongoing optimization of our products. This commitment to product stewardship is enshrined in our Responsible Care® charter and the initiatives of the International Council of Chemical Associations (ICCA). Our aim is to comply with all relevant national and international laws and regulations. Our global requirements define rules, processes and responsibilities, for example, to ensure uniformly high product stewardship standards worldwide. In some cases, voluntary initiatives exceed local statutory regulations. We regularly conduct internal audits to monitor compliance with global standards.

We maintain and evaluate environmental, health and safety data for all of our substances and products in a global database. This information is continuously updated. The database forms the basis for our safety data sheets, which we make available to our customers in around 40 languages. These include information on the physical/chemical, toxicological and ecotoxicological properties of products, potential hazards, first aid measures, measures to be taken in the case of accidental release, and disposal. Our global emergency hotline network enables us to provide information around the clock. In order to help users to quickly find out about our products and the risks associated with them, we use the Globally Harmonized System (GHS) to classify and label our products around the world, provided this is legally permissible in the country concerned. We take into account any national or regional modifications within the GHS framework, such as the CLP Regulation in the European Union or HazCom in the United States. We train our employees, customers and logistics partners worldwide on the proper handling and optimal use of selected products with particular hazard potential. In associations and together with other manufacturers, BASF is pushing for the establishment of voluntary global commitments to prevent the misuse of chemicals.

BASF supports the implementation of initiatives such as the Global Product Strategy (GPS) of the ICCA. GPS is establishing worldwide standards and best practices to improve the safety management of chemical substances and to support governments in the introduction of local chemical regulations. We are also involved in initiatives such as workshops and training seminars in emerging markets. In 2020, these included the virtual ASEAN (Association of Southeast Asian Nations) workshop on regulatory cooperation.

For more information on GPS, see basf.com/en/gps

Global chemicals regulations

Most of the products we manufacture are subject to statutory chemicals regulations. We want to ensure compliance with these. We are bound by the relevant regional and national chemicals regulations, which continue to grow in number worldwide. Examples include REACH in the European Union, TSCA in the United States, KKDIK in Turkey or K-REACH in South Korea. BASF Group companies work closely together with a global network of experts to ensure that BASF complies with the applicable regulations. For example, we submitted the relevant substances to the Turkish authorities in 2020 – an important milestone in the pre-SIEF notification process.[1]

After successfully registering all substances in Europe, our REACH activities concentrate on aspects such as dossier evaluation, substance evaluation, authorization and restriction. We are also required to continually update our registration dossiers. To satisfy the complex requirements of REACH, we are in regular contact with suppliers, customers, industry associations and government authorities. For example, BASF is working together with the European Chemicals Agency (ECHA) on a project to improve the quality of REACH dossiers. BASF was one of the first companies to join this industry-wide initiative.

Product stewardship for crop protection products and seeds

Crop protection products and seeds are highly regulated at national and international level, which brings with it strict requirements for registering and re-registering active ingredients and crop systems. Regulatory approval is only granted when extensive documentation can be provided showing that our products are safe for people, animals and the environment. Potential risks are assessed and minimized throughout the research, development and registration process, and on an ongoing basis following successful market registration. We regularly perform a large number of scientific studies and tests to ensure that, as far as possible, our registration dossiers address all questions on potential environmental and health effects.

We adapt our portfolio to the specific regional markets as crops, soils, climate conditions, plant diseases and farming practices vary around the world. Consequently, product approvals differ from country to country.

BASF adheres to the International Code of Conduct issued by the World Health Organization (WHO) and the Food and Agriculture

1 Pre-SIEF notification for KKDIK, Turkish REACH, is similar but not identical to pre-registration under E.U. REACH. It serves to bring together future registrants for the purposes of joint registration and to enable the creation of a SIEF (substance information exchange forum).

Organization (FAO) for the distribution of crop protection products. These are only marketed once they have been approved by the relevant authorities. We want to ensure and meet high safety standards worldwide for our products. This applies in particular to distribution in countries that do not have their own or only low-level regulation for crop protection products, as is the case in many emerging markets. We no longer market WHO Class 1A or 1B products (high acute oral and dermal toxicity). Depending on availability, we offer our customers alternatives.

All of BASF's crop protection products can be used safely under local farming conditions if the information and directions on the label are followed. Customers can contact us directly if they have any questions, complaints or issues, for example, by calling the telephone number printed on product labels, using the contact forms on our websites or by approaching our sales employees directly. We record all products incidents relating to health or the environment in a global database. If necessary, we take appropriate measures in the basis of this information, such as updating the instructions for use on the product label to minimize preventable incidents in the future. We communicate changes to instructions for use through channels such as our Farmer Field School initiatives in Asia and in training programs such as the On-Target Application Academy in the United States or our FarmNetwork Sustainability in Europe.

One of the ways we meet our commitment to product stewardship is by offering a wide range of courses and training on the safe storage and safe use of our products. In India, for example, BASF launched the Suraksha Hamesha program. Suraksha Hamesha means "safety all the time." The program creates a platform for educating farmers and agricultural workers about the nine steps of responsible use of crop protection products and personal protection. Through Suraksha Hamesha, BASF has engaged with around 150,000 agricultural workers and around 29,000 users across India since 2016. BASF also involves government agencies and the central government's farm extension teams in these meetings to support and promote farm safety. We are additionally involved in numerous scientific and public organizations and initiatives. Together, we are working on solutions for sustainable agriculture that meet long-term economic, ecological and social needs.

We also work closely together with associations such as Crop Life International and the European Crop Protection Association (ECPA) to promote the safe and proper use of crop protection products. For example, we support the two associations' safe use initiatives and various programs on the proper disposal and recycling of product containers. Technological innovations developed together with industry partners such as the easyconnect closed transfer system in Europe or the Wisdom system in South America also help to make using crop protection products easier and safer.

For more information on our Agricultural Solutions segment, see page 100 onward
For more information on biodiversity, see page 142 onward

Environmental and toxicological testing

Use of alternative methods for animal studies

Before launching products on the market, we subject them to a variety of environmental and toxicological testing using state-of-the-art knowledge and technology. Animal studies are only conducted when they are required by law, for example as part of REACH, and none of the alternative methods approved by the authorities are available.

We adhere to the specifications laid down by the German Animal Welfare Act as well as the requirements of the Association for Assessment and Accreditation of Laboratory Animal Care – the highest standard for laboratory animals in the world. We develop and are continuously optimizing alternative methods to experimentally assess the safety and tolerance of our products without animal studies. Our aim is to replace, reduce and refine animal studies to minimize the impact on them. We already use alternative methods in more than a third of our toxicological tests. Currently, 35 alternative methods are being used in our labs and another 14 are in the development stage. BASF spent €3.5 million toward this purpose in 2020. The development of alternative methods for testing the potential of substances to induce developmental toxicity has been a focus area of our research since 2017.

Since 2016, BASF SE's Experimental Toxicology and Ecotoxicology department has been working together with a total of 39 partners on one of the largest European collaborative projects for alternative methods. The project, planned to run for six years, aims to develop alternative methods to the point that chemical risk assessments can be efficiently conducted largely without animal testing. We are also involved in initiatives such as the European Partnership for Alternative Approaches to Animal Testing (EPAA) to strengthen the cross-sector development of alternative methods.

Management of new technologies

Continual safety research on nano- and biotechnology

Nanotechnology and biotechnology offer solutions for key societal challenges – such as environmental and climate protection or health and nutrition. For example, nanomaterials can improve battery performance and biocatalytic methods can improve process resource efficiency. We want to harness the potential of both technologies. Using them safely and responsibly is our top priority.

Safe handling of nanomaterials is stipulated in our Nanotechnology Code of Conduct. In recent years, we have conducted over 250 scientific studies and participated in numerous Verbund projects related to the safety of nanomaterials in Germany and around the world. The results were published in more than 150 scientific articles.

Together with partners from academia and government authorities, we are working on E.U.-funded projects to develop and validate methods for evaluating and grouping nanomaterials without the use of animal studies. In particular, grouping nanoforms can reduce

animal testing since individual forms do not have to undergo full toxicological testing – only one or more representative of the entire group. This is why we are developing new methods to group nanomaterials in groups with the same hazard potential in the E.U.'s PATROLS project. In the E.U.'s GRACIOUS project, we are developing concepts for defining and then evaluating the toxicological effects of these groups. In addition, together with the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC), we developed an internet application (NanoApp) and put this online in late November 2020. This makes the concepts developed to date available for the entire industry together with the regulatory requirements. The aim is to simplify the registration of nanomaterial groups under REACH.

Appropriate OECD testing and implementation guidelines must be developed for the new requirements for nanomaterials under REACH, the European chemicals regulation. We support this process by contributing our expertise in various working groups of the European Chemicals Agency (ECHA) and the OECD's Business and Industry Advisory Group (BIAC). Many of the methods developed for nanoparticles could, in our view, also be used to evaluate solid particles in the future, an approach we bring up in regulatory discussions.

BASF makes successful use of biotechnology. We produce a range of products with the help of biotechnological methods. This provides us with extensive experience in their safe use in research and development as well as in production. Biotechnological methods are used to develop and produce products such as natural flavors and fragrances, enzymes and vitamins. Another application is the development of seeds for agriculture. We use both conventional and molecular biological methods to develop plants with improved characteristics, such as greater resistance to drought, pests or the pathogens that cause plant diseases. Tolerance of certain herbicides also secures yields and enables sustainable, no-till crop systems to increase CO_2 retention in the soil. Innovative breeding technologies can play a key role in the sustainable development of agriculture, for example, with varieties that are better adapted to changing environmental conditions or that have higher disease tolerance. In using biotechnology, we want to adhere to all relevant standards and legal regulations governing production and marketing. We are also guided by the code of conduct set out by EuropaBio, the European biotechnology association.

Transportation and storage

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Our regulations and measures for transportation and warehouse safety cover the delivery of raw materials, the storage and distribution of chemical products among BASF sites and customers, and the transportation of waste from our sites to the disposal facilities.

Strategy

■ Risk minimization along the entire transportation chain

We want our products to be safely loaded, transported, handled and stored. This is why we depend on reliable logistics partners, global standards and an effective organization. Our goal is to minimize risks along the entire transportation chain – from loading and transportation to unloading. Some of our guidelines for the transportation of dangerous goods go above and beyond national and international dangerous goods requirements. We have defined global guidelines and requirements for the storage of our products and regularly monitor compliance with these through audits and assessments.

Accident prevention and emergency response

■ Risk assessments for transportation and storage

We regularly assess the safety and environmental risks of transporting and storing raw materials and sales products with high hazard potential using our global requirement. This is based on the Guidance on Safety Risk Assessment for Chemical Transport Operations published by the European Chemical Industry Council (CEFIC). We also have binding global standards for load safety.

We stipulate worldwide requirements for our logistics service providers and assess them in terms of safety and quality. Our experts use our own evaluation and monitoring tools as well as internationally approved schemes such as the ship inspection reports issued by the Chemical Distribution Institute (CDI) and the Oil Companies International Marine Forum (OCIMF).

Transportation incidents

We are systematically implementing our measures to improve transportation safety. We report in particular on goods spillages that could lead to significant environmental impacts such as dangerous goods leaks of BASF products in excess of 200 kilograms on public traffic routes, provided BASF arranged the transport.

We recorded two incidents in 2020 with spillage of more than 200 kilograms of dangerous goods[1] (2019: 3). None of these transportation incidents had a significant impact on the environment (2019: 0).

Securing raw materials supply via the Rhine River

At the Verbund site in Ludwigshafen, Germany, around 50% of incoming volumes are transported to the site by ship under normal conditions. In recent years, hot and dry summers often led to extended low water levels on the Rhine River, temporarily impacting logistics. We are implementing various measures to make the site more resilient to extended low water events in particular. These include a digital early warning system for low water, which was introduced in 2020. This makes it possible to forecast water level trends up to six weeks in advance, which significantly simplifies planning for raw materials supply and alternative transportation routes. We are also working with the German Federal Institute for Hydrology to improve water level forecasts. In addition, we chartered more ships that can navigate low water levels and invested in making loading stations more flexible. Together with partners, we are also developing our own type of ship designed for extreme low-water situations, which should start operation in late 2022. We support the hydraulic engineering measures proposed by the German Federal Ministry of Transport's "Low water on the Rhine" action plan, in particular optimizing fairways on the Middle Rhine to improve long-term shipping conditions on the Rhine. We recorded no extended low water events that significantly restricted our logistics in 2020.

Activities in external networks

We are actively involved in external networks, which quickly provide information and assistance in emergencies. These include the International Chemical Environmental (ICE) initiative and the German Transport Accident Information and Emergency Response System (TUIS), in which BASF plays a coordinating role. In 2020, we provided assistance to public emergency response agencies and other companies in 112 cases (2019: 165). This included information on chemicals and their proper disposal, on-site operational support for transportation accidents involving hazardous goods, or information on human biomonitoring. We apply the experience we have gathered to improve our own processes and set up similar systems in other countries.

For more information on transportation safety, see basf.com/distribution_safety
For more information on emergency response, see basf.com/emergency_response

1 Hazardous goods are classified in accordance with national and international hazardous goods regulations.

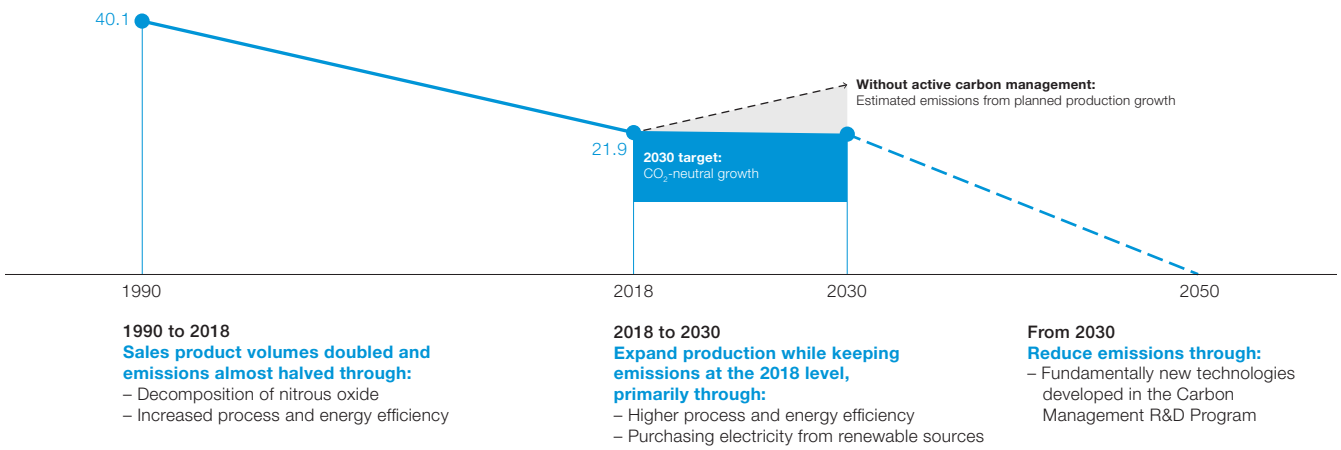
Energy and climate protection

SUPPLIERS → BASF → CUSTOMERS

As an energy-intensive company, we are committed to energy efficiency and global climate protection. We want to further reduce emissions along the value chain. To achieve this, we rely on efficient technologies for generating steam and electricity, for example, and the increased use of renewable energies. We make our production processes as energy efficient as possible with the help of comprehensive energy management. We are researching and developing completely new processes and technologies to reduce our greenhouse gas emissions over the long term. In addition, our climate protection products make an important contribution toward emission reduction and resource efficiency.

Schematic overview: development of the BASF Group's greenhouse gas emissions (Scope 1 and 2)

Million metric tons of CO_2 equivalents



Strategy

- **Climate protection target: CO_2-neutral growth until 2030**
- **Carbon management to reduce emissions**

Climate protection is very important to us and is an important part of our corporate strategy. As a leading chemical company, we want to achieve CO_2-neutral[1] growth until 2030. We aim to keep total greenhouse gas emissions from our production sites and our energy purchases stable at the 2018 level while growing production volumes. Based on our growth plans until 2030, this would mean reducing our specific greenhouse gas emissions by up to one-third compared with 2018. To achieve this, we have adopted comprehensive carbon management (see page 135) with three strategic levers: optimizing our plants, increasingly sourcing low-carbon energy, and developing completely new, low-emission technologies and processes. With these innovations, we want to lay the foundation for significant emissions reductions from 2030 onward. In connection with our climate protection target, we made Group-wide CO_2 emissions one of our most important key performance indicators at the beginning of the 2020 business year (see page 33). This makes emissions even more important to the operational and strategic steering of the BASF Group.

Our climate protection activities are based on a comprehensive analysis of our emissions. We report on greenhouse gas emissions in accordance with the Greenhouse Gas Protocol as well as the sector-specific standard for the chemical industry. Sharp increases in our greenhouse gas emissions, due for example to the startup of large-scale plants, are progressively offset. We assess investments and acquisitions with respect to the impact on our climate protection target. If, for technical or economic reasons, our carbon management activities cannot stabilize emissions at the 2018 level, we will also consider taking short-term external offsetting measures such as purchasing certificates.

Most of our greenhouse gas emissions are from the consumption of energy. At sites with internal supply capabilities, we primarily rely on highly efficient combined heat and power plants with gas and steam turbines, and on the use of heat released by production processes. Furthermore, we are committed to energy management that helps us analyze and further improve the energy efficiency of our plants on an ongoing basis. We continuously analyze potential risks to our business operations arising in connection with the topics of energy and climate protection and derive appropriate measures.

We offer our customers solutions that help prevent greenhouse gas emissions and improve energy and resource efficiency. More than 40% of our annual research and development spending[2] goes toward developing these products and optimizing our processes, as well as toward research projects to make our processes more energy and resource-efficient and to prevent greenhouse gas emissions.

We participate in the program established by the international nonprofit organization CDP for reporting on data relevant to climate

1 The goal includes other greenhouse gases according to the Greenhouse Gas Protocol, which are converted into CO_2 equivalents.
2 Costs not relevant to the calculation of this share include research expenses in early innovation stages of the phase-gate process, patent costs and expenses for supporting services.

protection and have done so since since 2004. BASF achieved a score of A– in CDP's 2020 climate change questionnaire, again attaining Leadership status. Companies on the Leadership level are distinguished by factors such as the completeness and transparency of their reporting. They also pursue comprehensive approaches in managing the opportunities and risks associated with climate change as well as strategies to achieve company-wide emission reduction goals.

Climate protection is a shared global task. This is why we support various international initiatives and are involved in partnerships. For instance, we are committed to an ambitious climate policy as part of the Business 20 (B20) – the central dialog platform between business and politics in the G20 group of countries. In 2020, we helped draft climate protection recommendations for the G20 Summit in Saudi Arabia as a member of the B20's taskforce on Energy, Sustainability & Climate. BASF also supports the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). In 2020, we contributed to the TCFD report on climate-related scenario analyses as a member of a TCFD advisory group. Since the 2019 reporting year, BASF's annual report has included an overview showing the sections and subsections in which TCFD-relevant information can be found (see page 19).

For more information on climate protection, see basf.com/climate_protection

BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol[a]

Million metric tons of CO_2 equivalents

BASF operations	**2020**	**2019**	**2018 (baseline)**
Scope 1[b]			
CO_2 (carbon dioxide)	16.860	15.855	17.025
N_2O (nitrous oxide)	0.609	0.598	0.677
CH_4 (methane)	0.025	0.023[c]	0.027
HFC (hydrofluorocarbons)	0.032	0.082	0.091
Scope 2[d]			
CO_2	3.279	3.519	4.067
Total	20.805	20.077[c]	21.887
Offsetting	0	0	0
Total after offsetting	**20.805**	**20.077[c]**	**21.887**
Sale of energy to third parties (Scope 1)[e]			
CO_2	0.869	0.779[c]	0.773
Total	**21.674**	**20.856[c]**	**22.660**
Use of biomass[f]			
CO_2	0.024	0.004	n/a

a BASF reports separately on direct and indirect emissions from the purchase of energy. Scope 1 emissions encompass both direct emissions from production and generation of steam and electricity, as well as direct emissions from the generation of steam and electricity for sale. Scope 2 emissions comprise indirect emissions from the purchase of energy for BASF's use.
b Emissions of N_2O, CH_4 and HFC have been translated into CO_2 emissions using the Global Warming Potential, or GWP, factor. GWP factors are based on the Intergovernmental Panel on Climate Change (IPCC) 2007, errata table 2012. HFC (hydrofluorocarbons) are calculated using the GWP factors of the individual components.
c The comparative figure for 2019 has been adjusted to reflect updated data.
d Market-based approach. Under the location-based approach, Scope 2 emissions were 3.552 million metric tons of CO_2 in 2019 and 3.362 million metric tons of CO_2 in 2020.
e Includes sales to BASF Group companies; as a result, emissions reported under Scope 2 can be considered twice in some cases.
f Emissions are reported separately from Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol.

Global target and measures

We want to achieve CO_2-neutral growth until 2030. In other words, we aim to maintain total greenhouse gas emissions from our production sites (excluding emissions from sale of energy to third parties) and our energy purchases at the 2018 level (21.9 million metric tons of CO_2 equivalents) while increasing production. In 2020, the emissions reported under this target amounted to 20.8 million metric tons of CO_2 equivalents, an increase of 3.5% compared with the previous year (2019: 20.1 million metric tons of CO_2 equivalents). The decline in emissions due to measures to increase energy efficiency and optimize processes as well as lower production volumes were more than offset by the integration of the polyamide business acquired from Solvay in January 2020 and the fact that there were fewer shutdowns of large-scale, emission-intensive plants.

Despite the global economic recovery and growing demand for chemical products, CO_2 emissions are expected to be at the prior-year level in 2021. We will implement targeted measures to stabilize emission levels. These include the implementation of further projects

2030 target

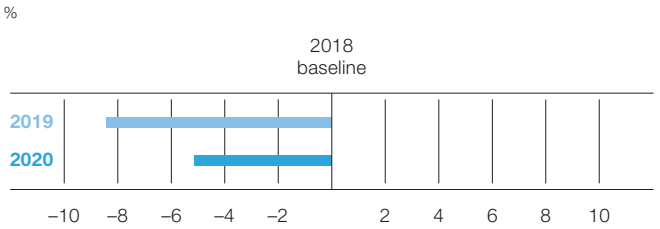
CO_2-neutral growth:
Annual greenhouse gas emissions compared with baseline 2018

(BASF operations excluding sale of energy to third parties, including offsetting)

constant

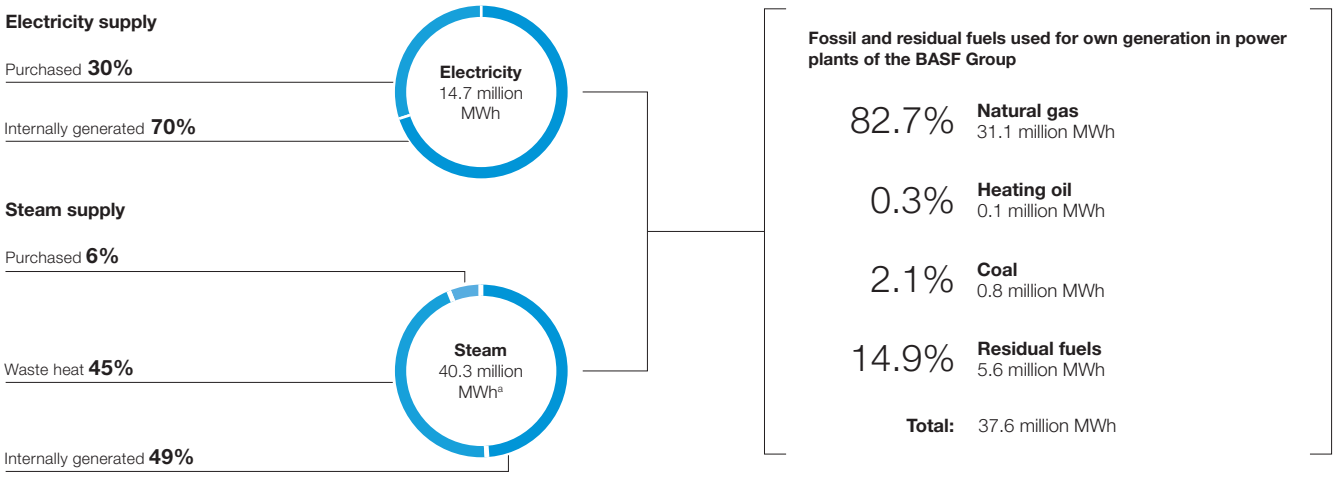
to increase energy efficiency and optimize processes, for example, to significantly reduce nitrous oxide emissions in Ludwigshafen, Germany. In addition, we are switching energy supply agreements to renewable energy sources, for example, in Freeport, Texas, where we have signed long-term supply agreements for wind power. Emissions will also be reduced by the divestiture of BASF's global pigments business in 2021.

Greenhouse gas emissions from BASF operations (excluding sale of energy to third parties) compared with baseline 2018



Specific greenhouse gas emissions in 2020 amounted to 0.639 metric tons of CO_2 equivalents per metric ton of sales product,[1] an increase of 11.3% compared with the previous year (2019: 0.574 metric tons of CO_2 equivalents per metric ton of sales product). This was mainly due to changes in BASF's portfolio from the acquisition of the carbon-intensive polyamide business from Solvay and the sale of the less carbon-intensive construction chemicals business. In addition, some plants could not be run at optimal capacity due to weaker demand as a consequence of the coronavirus pandemic, which led to higher specific emissions. Since 1990, we have been able to lower our overall greenhouse gas emissions from BASF operations by 48.1% and even reduce specific emissions by 72.1%.

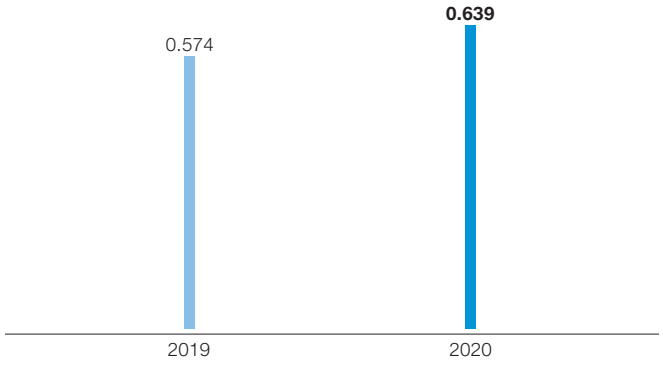
Energy supply of the BASF Group 2020



a Conversion factor: 0.75 MWh per metric ton of steam

Specific greenhouse gas emissions from BASF operations

Metric tons of CO_2 equivalents per metric ton of sales product[1]



We achieved our goal of introducing certified energy management systems according to DIN EN ISO 50001 at all relevant production sites[2] by the end of 2020.

Through the introduction and ongoing maintenance of certified energy management systems, we want to identify and implement further potential for improvement in energy efficiency. This not only reduces greenhouse gas emissions and saves valuable energy resources, but also increases our competitiveness.

A global working group is responsible for steering the introduction of certified energy management systems and providing ongoing implementation support. All energy efficiency measures are recorded in a global database, analyzed and made available to BASF sites as best practices. We are currently pursuing more than 200 technical and organizational measures to reduce energy consumption and increase competitiveness. Further sites across all regions were

1 Sales product volumes include sales between BASF Group companies; merchandise is not taken into account.
2 The selection of relevant sites is determined by the amount of primary energy used and local energy prices; does not yet include the polyamide business acquired from Solvay.

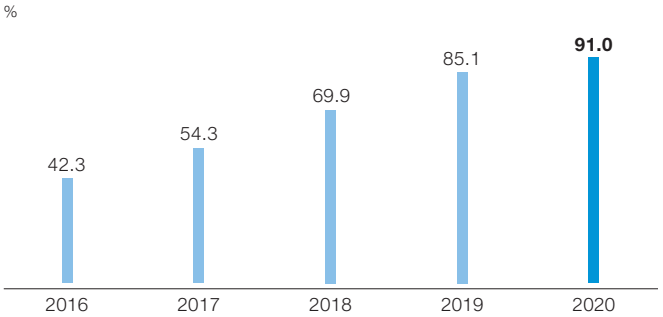
Additional key indicators for energy and climate protection in BASF operations

	2020	2019	2018 (baseline)
Specific greenhouse gas emissions[a] (metric tons of CO_2 equivalents per metric ton of sales product[b])	0.639	0.574	0.577
Primary energy demand[c] (million MWh)	60.256	58.520	60.586
Energy efficiency (kilograms of sales product[b] per MWh)	540	598	626

a Scope 1 and Scope 2 (market-based) according to the GHG Protocol, excluding emissions from the generation of steam and electricity for sale to third parties, including offsetting
b Sales product volumes include sales between BASF Group companies; merchandise is not taken into account.
c Primary energy used in BASF's plants as well as in the plants of our energy suppliers to cover energy demand for production processes

certified in accordance with ISO 50001 in 2020. These include four sites in the United States, three sites in China, and one additional site each in France and Chile. At the end of 2020, 81 sites were certified worldwide, representing 91% of our primary energy demand.

Certified energy management systems (ISO 50001) at BASF Group sites worldwide, in terms of primary energy demand[a]



a Relevant sites are selected based on the amount of primary energy used and local energy prices; does not yet include the polyamide business acquired from Solvay.

Energy supply and efficiency

- **Internal supply and Verbund system as important components of our energy efficiency strategy**

To generate our own steam and power, we mainly use natural gas (82.7%) and what are known as substitute fuels (14.9%). These are residues from chemical production plants that can no longer be reused. We cover more than 70% of the BASF Group's electricity demand with gas and steam turbine plants in highly efficient combined heat and power plants. Compared with separate methods of generating steam and electricity, we saved 12.0 million MWh of fossil fuels and avoided 2.4 million metric tons of carbon emissions in 2020. In 2020, internally generated power in the BASF Group had a carbon footprint of around 0.24 metric tons of CO_2 per MWh of electricity and was below the national grid factor at most BASF Group locations. The figure for purchased electricity in 2020 was around 0.41 metric tons of CO_2 per MWh (market-based approach). As part of our carbon management (see page 135), we therefore initially aim to reduce the carbon footprint of purchased electricity.

The Verbund system is an important component of our energy efficiency strategy: Waste heat from one plant's production process is used as energy in other plants. In this way, the Verbund saved us around 18.7 million MWh in 2020, which translates to 3.8 million metric tons less CO_2 released into the environment. With combined power and steam generation as well as our optimized Energy Verbund, we were thus able to avoid a total of 6.2 million metric tons of carbon emissions in 2020.

We further improved energy and resource consumption in production with numerous projects around the world in 2020. In China, for example, we reduced our steam demand by optimizing steam traps at the Caojing site and installing a steam cooler at the Nanjing site. In the United States, we saved electricity by replacing a cooling tower at the Geismar site and modernizing a chilling unit in Freeport, among other measures. Process improvements at many other sites led to additional savings in steam, electricity and fuel.

We also rely on locally available sources to supply our sites with power. We generally consider the use of renewable energies in our decision-making processes, especially when purchasing electricity. Our research also helps to increase the efficiency of technologies for using renewable energy sources.

Carbon footprint and climate protection products

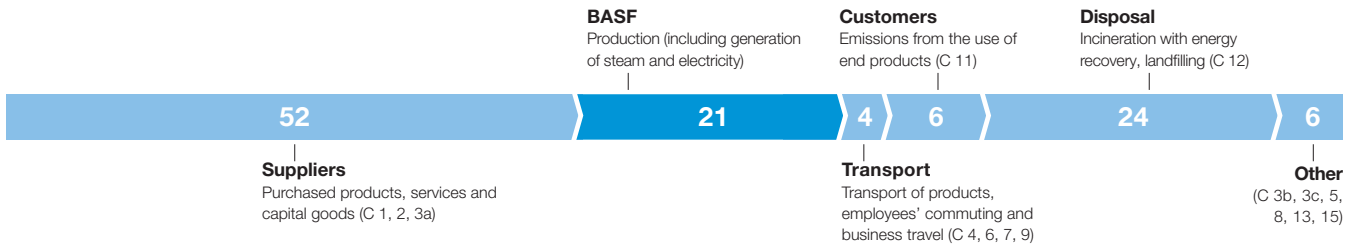
- **Reporting on greenhouse gas emissions along the entire value chain**
- **Customers' use of BASF climate protection products avoids greenhouse gas emissions**
- **Calculation of product carbon footprints to increase transparency for our customers**

BASF has published a comprehensive corporate carbon footprint every year since 2008. This reports on all emissions along the value chain – from raw materials extraction to production and disposal. It also shows, on the basis of selected climate protection products, the emissions avoided through the use of these products.

The greenhouse gas emissions arising before and after BASF's activities in the value chain (Scope 3 in accordance with the Greenhouse Gas Protocol) amounted to around 92 million metric tons of

Greenhouse gas emissions along the BASF value chain in 2020[a, b]

Million metric tons of CO_2 equivalents



a According to Greenhouse Gas Protocol; Scope 1, 2 and 3; categories within Scope 3 are shown in parentheses. For more information on Scope 3 emissions reporting, see basf.com/corporate_carbon_footprint
b Emissions figures do not yet include the polyamide business acquired from Solvay.

CO_2 equivalents in 2020 (2019: 100 million metric tons of CO_2 equivalents). In 2020, BASF implemented a new digital application to calculate transport-related emissions, which evaluated around 68 billion metric ton kilometers for transport within BASF and to BASF customers by distance and transportation mode.

Our climate protection products offer our customers solutions to avoid greenhouse gas emissions over their entire life cycle compared with reference products. The systematic analysis we conduct on our portfolio – Sustainable Solution Steering (see page 45) – rates the use of these Accelerator solutions as particularly good with respect to climate protection and energy.

One example of Accelerator products are our lubricant additives, which give hydraulic fluids long-term lubrication stability combined with wear and corrosion protection. These can be used to design high-quality products with a longer service life. Together with our customer Fuchs Petrolub, we examined the environmental and climate friendliness of different hydraulic fluids. A joint eco-efficiency analysis analyzed three mineral oil-based fluids from Fuchs over their entire life cycle, including over 8,000 hours of use in a crawler excavator.

This showed that a standard hydraulic fluid has the lowest carbon footprint during the production stage. BASF uses more energy to produce the lubricant additives needed for high-performance hydraulic fluids, which means that these have higher carbon emissions. However, these products offer a significant advantage during the use phase: Compared with a standard hydraulic fluid, these reduce friction and increase pump efficiency, which significantly reduces the excavator's fuel consumption. They save 9,600 liters of diesel over 8,000 hours of crawler excavator operation. Viewed over the entire life cycle, the high-performance hydraulic fluids therefore have a much better carbon footprint than standard hydraulic fluids. Overall, the reduction in greenhouse gases corresponds to around 30 metric tons of CO_2 equivalents. In addition, high-performance hydraulic fluids have a much longer service life, which also saves fossil resources.

The findings of the study show that the advantages of high-performance oils first become clear in a holistic cradle-to-grave assessment that also considers the use phase. The product-related greenhouse gases emitted from resource extraction to the production of precursors and the BASF product (cradle to gate) are an important part of this approach.

In the future, we will calculate cradle-to-gate greenhouse gas emissions for almost all of our products to increase carbon transparency for our customers. We use an in-house digital solution to calculate the product carbon footprint (PCF). The methodology follows general standards for life cycle analysis such as ISO 14044 and ISO 14067, as well as the Greenhouse Gas Protocol Product Standard. We used the new method to calculate PCFs for the first products in 2020. We want to make the data for around 45,000 sales products available by the end of 2021. The transparency this creates enables us to target our CO_2 reduction measures to those areas where our customers can later achieve the greatest value added from lower carbon emissions in the value chain.

For more information on the sustainability analysis of our product portfolio, see page 45 onward
For more information on our emissions reporting, see basf.com/corporate_carbon_footprint

「Climate protection with carbon management」

Climate protection is firmly embedded in our corporate purpose, "We create chemistry for a sustainable future," and is a cornerstone of our strategy. We are committed to the Paris Climate Agreement and the goal of limiting global warming to below 2 degrees Celsius. Our innovative climate protection products such as insulation materials for buildings or battery materials for electromobility play a role here. We are also continually working to reduce our own carbon emissions. We have already almost halved our carbon emissions since 1990 through improvements to processes and methods – while simultaneously doubling sales product volumes.

Until 2030, we want to grow our production without adding further CO_2 emissions.[1] Our carbon management bundles our global activities to meet this climate protection target and further reduce our greenhouse gas emissions over the long term. We have adopted a three-pronged approach: We aim to increase production and process efficiency, purchase electricity from renewable sources, and develop completely new low-emission technologies and processes. We want to use these to significantly reduce our CO_2 emissions from 2030 onward.

Further improving process and energy efficiency

We aim to make our plants and processes even more efficient and resource-saving. When investing in our sites, we draw on our expertise and innovative technologies to optimize the use of raw materials and in this way, reduce CO_2 emissions. For example, our gas and steam turbine power plant at the Schwarzheide site in Germany is currently undergoing a €73 million modernization. Once it is started up in 2022, it will produce 10% more electricity and the CO_2 emissions factor of the power generated will be around 10% lower thanks to higher fuel efficiency.

CO_2 avoided by the Verbund and combined heat and power generation in 2020

6.2 million metric tons

BASF's Verbund concept also plays a key role in increasing efficiency. It helps us to realize synergies across all segments and to efficiently steer value chains. Intelligently linking production and energy demand enables us to use fewer resources and reduce our emissions. Together, combined power and steam generation and our continuously enhanced Energy Verbund avoided a total of 6.2 million metric tons of carbon emissions in 2020 (see page 133). That is why we will continue to invest in the creation and optimization of Verbund structures and drive forward the consolidation of production at highly efficient sites.

Increasing use of renewable energy

Our carbon management aims to increase the share of renewables in our energy supply. Nineteen sites in Europe and North America already source partially or fully emission-free electricity from suppliers.

Number of sites partially or fully powered by emission-free electricity in 2020

19

Wherever possible, we incorporate renewable energies when constructing plants and modernizing or establishing new sites. For example, we only used hydropower for the construction of our new battery materials plant in Harjavalta, Finland, in 2020 (planned startup: 2022). We plan to mainly use locally generated renewable electricity in the operational phase as well. This will enable us to offer cathode active materials with a lower carbon footprint. In 2020, we also started up photovoltaic plants with a nameplate capacity of around 1,300 kWp (kilowatt peak), for example at the Caojing and Pudong sites in China.

Developing climate-smart technologies

Most of our production processes and methods are already highly optimized, making further improvements to existing plants an increasingly difficult task. As a result, completely new technologies are needed to reduce greenhouse gas emissions over the long term and on a large scale. BASF researchers are working at full speed on this in our Carbon Management R&D Program, which focuses on the production of basic chemicals. These are the basis for many

1 The goal includes other greenhouse gases according to the Greenhouse Gas Protocol, which are converted into CO_2 equivalents.

value chains and account for around 70% of the chemical industry's greenhouse gas emissions in Europe.

Potential CO_2 avoided
by electrical heating concepts
for steam crackers

up to **90%**

As part of this R&D program, we are developing an innovative, climate-friendly production process for hydrogen (methane pyrolysis) together with partners from academia and industry in a project sponsored by the German Federal Ministry of Education and Research, to name one example. Hydrogen is used as a reactant in many chemical processes, such as ammonia synthesis. However, the processes currently used to produce hydrogen from methane, such as steam reforming, are extremely CO_2 emission-intensive. In methane pyrolysis, by contrast, methane is split directly into hydrogen and carbon. The resulting solid carbon could be used in the future to produce aluminum, for example. Methane pyrolysis requires around 80% less electricity than the alternative method of producing hydrogen using water electrolysis. If this energy comes from renewable sources, the process could be made carbon-free. Following extensive groundwork, including research into the reaction kinetics of the pyrolysis process and technical feasibility studies, we started up a test facility for methane pyrolysis at the Ludwigshafen site in Germany in 2020. It will provide insights into the heating concept, as well as the use of new types of high-temperature materials.

Another focus area of the R&D program is alternative heating concepts for our steam crackers. These large-scale industrial plants are used in the chemical industry to split petroleum into olefins and aromatics. To do this, it needs to reach temperatures of 850°C and higher. The cracker's furnaces are usually operated with natural gas. An interdisciplinary team is working on developing a fundamentally new furnace concept based on an electrical resistance heater (e-furnace). If powered by renewable energy, this could avoid up to 90% of CO_2 emissions.

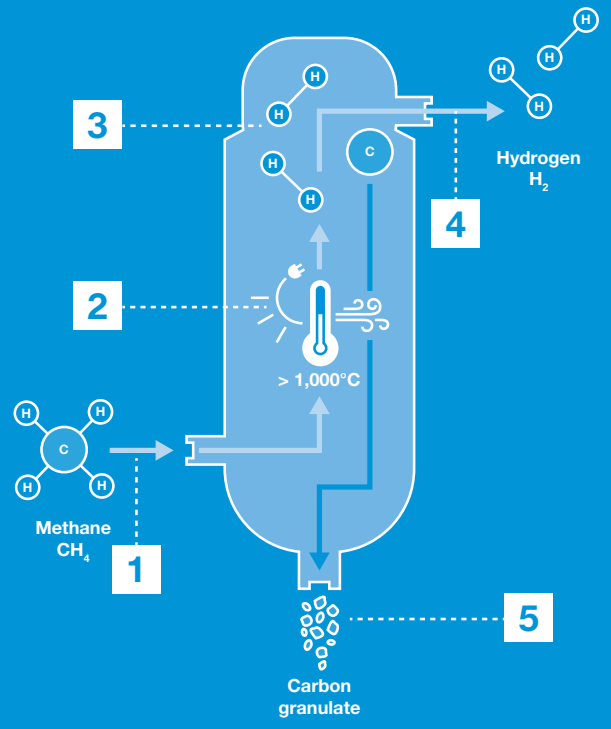
Another example from our Carbon Management R&D Program, which has been marketed since mid-2019 in cooperation with Linde, is a process known as dry reforming to produce syngas from methane and CO_2. Thanks to BASF's newly developed SYNSPIRE™ catalyst in combination with an innovative process technology from Linde, less water vapor is required in syngas production and CO_2 is used in the process as a raw material. In this way, the DRYREF™ technology improves plants' energy and carbon footprint.

The framework for the transformation

The transition toward a climate-friendly society remains a fundamental challenge of the 21st century. There are many ways in which the chemical industry can be part of the solution. The political and regulatory environment is also crucial to the development and industrial application of completely new production processes. Demand for green electricity will increase sharply with innovative, more climate-friendly technologies. At the Ludwigshafen site in Germany alone, we would need to roughly triple or quadruple our current electricity use (2020: 6.0 TWh) to fully implement new, low-carbon electricity-based production processes. As well as its availability, the price of green power is also a critical success factor. High prices are already hindering the more widespread adoption of green power today and impact the economic feasibility of future, new production processes. Sectors like the chemical industry, which compete in an international market, cannot pass on the additional costs caused by low-carbon technologies to their customers until a comparable carbon pricing mechanism exists globally – or at least at G20 level. Until then, governments must implement measures to ensure the competitiveness of climate-friendly processes.

For more information on carbon management, see basf.com/en/carbon-management

Methane pyrolysis



1. Methane flows into the reactor.
2. Methane is heated to over 1,000°C using electricity from renewable sources (such as solar and wind power).
3. The methane is split in the hot center of the reactor. Gaseous hydrogen and solid carbon are formed.
4. The hydrogen rises to the top and can be extracted.
5. The carbon produced is a solid granulate.

Air, waste and soil

SUPPLIERS → BASF → CUSTOMERS

We want to minimize the impact of our activities on people and the environment by further reducing emissions to air, preventing waste and protecting the soil. Our plants are operated responsibly and we use natural resources with respect. We have set ourselves standards in global requirements and are continually improving the resource efficiency of our processes with our Operational Excellence program.

Strategy

- **Minimizing environmental impacts**
- **Maximizing recovery options**

Regular monitoring of our emissions to air is a part of our environmental management. In addition to greenhouse gases (see page 130 onward), we also measure and analyze emissions of air pollutants to avoid potentially harmful substances as best possible.

Our waste management is based on the systematic tracking of material flows and follows a clear hierarchy. We aim to avoid waste as far as possible. If this is not possible, we review the options for recycling or energy recovery in terms of a circular economy. Non-recyclable waste is disposed of properly and in an environmentally responsible manner. BASF's Verbund structure helps us to avoid or reduce waste. We regularly audit external waste disposal companies to ensure that waste is disposed of properly. In this way, we also contribute to preventive soil protection and keep today's waste from becoming tomorrow's contamination. If soil and groundwater contamination occurs at active or former sites, appropriate remediation measures are reviewed and implemented.

Emissions to air

- **Emissions to air slightly lower**

Total emissions of air pollutants from our production plants amounted to 23,791 metric tons in 2020 (2019: 25,040 metric tons[1]). Emissions of ozone-depleting substances as defined by the Montreal Protocol totaled 14 metric tons in 2020 (2019: 26 metric tons[1]). The successive changeover to alternative coolants has significantly reduced these emissions, down from 229 metric tons in 2002. Emissions of heavy metals[2] in 2020 amounted to 4 metric tons (2019: 5 metric tons[1]).

Emissions to air

Metric tons Air pollutants from BASF operations	2020	2019
CO (carbon monoxide)	3,507	3,530
NO_x (total nitrogen oxides)	10,010	10,534
NMVOC (nonmethane volatile organic compounds)	4,702	4,496
SO_x (total sulfur oxides)	1,861	1,982
Dust	2,000	2,320[a]
NH_3 (ammonia) and other inorganic substances	1,711	2,178
Total	**23,791**	**25,040[a]**

a The comparative figure for 2019 has been adjusted to reflect updated data.

We want to further reduce our emissions with various measures. For instance, we use catalysts to reduce nitrogen oxides or feed waste gases back into the production process. One example of this is the production of adipic acid at the Ludwigshafen site in Germany. The nitrous oxide generated in the process is not broken down, but isolated and used in the BASF Verbund as a feedstock for intermediates. This reduces our emissions and simultaneously increases process and resource efficiency.

In addition, our portfolio contains a variety of products to help reduce the emission of air pollutants – from process catalysts for industry applications and plastics additives to catalysts for the automotive industry.

Management of waste and contaminated sites

- **Total waste volume slightly lower**
- **Systematic management of contaminated sites**

We use the BASF Verbund to efficiently manage our material flows. The by-products of one plant often serve as feedstocks for another plant, avoiding waste. At the Antwerp site in Belgium, for example, we re-use a carboxylate solution from the cyclohexanone plant in the production of soda ash. Other material flows can be used to generate steam, which saves fossil fuels.

We are working intensively on solutions for a circular economy (see page 30). We want to further reduce our demand for primary resources and at the same time, help to reduce waste generation through better recycling, for example, of platinum group metals, or the use of recycled feedstocks such as pyrolysis oil from mixed plastic waste or used tires (see see page 119). We are also involved in various initiatives to avoid waste and strengthen the circular economy. For example, as a founding member of the Alliance to End Plastic Waste (AEPW), we cooperate with around 50 other companies along the value chain to put plastic waste to good use and reduce the amount that enters the environment. The AEPW intends to invest up to $1.5 billion in various projects and cooperative ventures to this end, mainly in Asia and Africa (see box on page 138).

1 The comparative figure for 2019 has been adjusted to reflect updated data.
2 Heavy metals are included in the figure for dust (see the table "Emissions to air").

Waste generation in the BASF Group

Million metric tons

	2020	2019
Total waste generation	**2.21**	**2.34**
Waste recovered	**0.96**	**0.99**
Recycled	0.44	0.45
Thermally recovered	0.52	0.54
Waste disposed of	**1.25**	**1.35**
Through incineration	0.74	0.78
In surface landfills	0.35	0.38
Other[a]	0.16	0.19
Classification of waste for disposal[b]		
Nonhazardous waste	0.36	0.43
Hazardous waste	0.89	0.92
of which transported hazardous waste	0.25	0.28

a Physical/chemical and biological treatment, underground disposal
b Waste is classified as hazardous or nonhazardous waste according to local regulations.

We have global standards for managing contaminated sites. A worldwide network of experts ensures these are implemented. We develop remediation solutions that balance nature conservation, climate protection concerns, costs and social responsibility. This means making customized decisions on a case-by-case basis, founded on the legal framework and current technological standards. Contaminated sites are documented in a database. Ongoing remediation work around the world continued on schedule in 2020 and planning was concluded on future remediation projects.

For more information on provisions for environmental protection, see the Notes to the Consolidated Financial Statements on pages 230 and 260

For more information on the Alliance to End Plastic Waste, see basf.com/en/aepw and endplasticwaste.org

Alliance to End Plastic Waste

In 2019, we co-founded the Alliance to End Plastic Waste (AEPW) with other companies from along the value chain – from plastics producers and consumer goods manufacturers to waste disposal companies. The AEPW has around 50 members, who together aim to develop solutions that stop plastic waste from entering the environment, especially the ocean. There are four main focus areas: developing infrastructure for waste collection, promoting innovative recycling methods, education and engagement of various stakeholders, and cleanup of areas heavily impacted by plastic waste. BASF supports the AEPW's goal of establishing a circular economy for plastics with its ChemCycling™ project. BASF is also involved in Alliance initiatives such as cleanup efforts. For instance, almost 300 BASF employees participated in the AEPW's All Together Global Cleanup campaign in Ludwigshafen, Germany, and Shanghai, China, in September 2020.

Water

SUPPLIERS → BASF → CUSTOMERS

Water is of fundamental importance in chemical production. It is used as a coolant, solvent and cleaning agent, to make our products and transport our goods. We are committed to its responsible use along the entire value chain and especially in our production sites' water catchment areas. We have set ourselves a global target for sustainable water management.

Strategy

- **Using water responsibly with sustainable water management**

BASF is committed to the United Nations' Sustainable Development Goals. These cover topics such as the responsible use and sustainable management of water (SDG 6). We have defined global standards and processes in our Responsible Care Management System.

Sustainable water management has been a central element of our strategy to use water responsibly for many years. We aim to introduce sustainable water management at all relevant production sites. These include our Verbund sites and sites in water stress areas.[1] Our sustainable water management aims to protect water as a resource, continuously improve water use efficiency, and consistently reduce emissions. We consider the quantitative, qualitative and social aspects of water use.

We advocate the responsible use of water as a resource along the entire value chain. We audit supplier compliance with environmental standards in our regular supplier assessments (see page 113). In addition, we support a wide range of initiatives to promote sustainability in the supply chain (see page 117). Our Responsible Care Management System (see page 121) and global process and transportation safety standards (see pages 123 and 129) aim to maintain good water quality and minimize the risk of product spillages into water bodies.

We offer our customers solutions that help purify water and use it more efficiently while minimizing pollution. These include high-performance plastics to produce ultrafiltration membranes, seeds with higher drought and heat tolerance, or water-saving thin-film processes for metal pretreatment. Together with other companies from along the value chain, we are also involved in global initiatives such as the Alliance to End Plastic Waste (see page 138), the World Plastics Council and Operation Clean Sweep to prevent plastics from entering the environment, especially water bodies.

We report transparently and comprehensively on water. For instance, we again provided detailed answers to the 2020 water survey from the nonprofit organization CDP. In the final assessment, BASF again achieved the top grade of A and thus Leadership status. CDP evaluates how transparently companies report on their water management activities and how they reduce risks such as water scarcity. The assessment also considers the extent to which product developments – including at the customers of the companies being evaluated – can contribute to sustainable water management.

For more information on the CDP water survey, see basf.com/en/cdp

Global target and measures

Our goal is to introduce sustainable water management at our production sites in water stress areas and at our Verbund sites by 2030, covering 93% of BASF's total water abstraction. We achieved 46.2% of our target in 2020 (2019: 35.8%).[2] Sustainable water management was introduced at six sites in 2020 (2019: 8).

2030 target

Introduction of sustainable water management at our production sites in water stress areas and at our Verbund sites

We pursue our goal by applying the European Water Stewardship standard, which rests on four principles: sustainable water abstraction, maintaining good water quality, preserving conservation areas, and ensuring continuous improvement processes. In addition, we are a member of the global Alliance for Water Stewardship.

We identify and implement potential for improvement as part of sustainable water management. For instance, we use wastewater from municipal wastewater treatment plants to reduce our freshwater demand at our sites in Tarragona, Spain (since 2013) and Freeport, Texas (since 2019). At the Pontecchio site in Italy, our need for river and groundwater is reduced by the use of rainwater and optimized sludge dewatering, which started up in late 2020. At the Ludwigshafen site in Germany, we have continually optimized cooling water needs over the past few years with technical improvements, most recently in the production of higher carboxylic acids, for example. In addition, the startup of a new recooling plant in 2020 makes the site less dependent on changes in water temperature and water levels on the Rhine. We have also taken numerous measures to secure the supply of raw materials to the site and the transportation of our products by ship on the Rhine River, even in the case of extended periods of low water (see page 129).

1 We define water stress areas as regions in which more than 40% of available water is used by industry, households and agriculture. Our definition is based on the Water Risk Atlas (Aqueduct 3.0) published by the World Resources Institute. For more information, see wri.org/aqueduct.
2 Our water target also continues to take into account the sites that we identified as water stress sites in accordance with Pfister et al. (2009) prior to 2019.

Water balance

Optimizing demand and efficient use

Our water abstraction totaled 1,728 million cubic meters in 2020 (2019: 1,717). This demand was covered for the most part by freshwater such as rivers and lakes (87% of water abstraction). At some sites, we use alternative sources such as treated municipal wastewater, brackish water or seawater. A small part of the water we use reaches our sites as part of raw materials and steam, or is released in our production processes. We abstract most of the water we need for cooling and production ourselves. In 2020, 5% of our total water demand was covered by third parties.

We predominantly use water for cooling purposes (87% of water abstraction), after which we discharge it back to our supply sources. We reduce our demand for cooling water by recirculating as much of it as possible. To do this, we use recooling plants that allow water to be reused several times. Around 13% of our total water abstraction is used in production plants, for example, for extraction or dissolution processes or for cleaning. Most of this water is discharged back to our supply sources after being treated in BASF or third party plants.

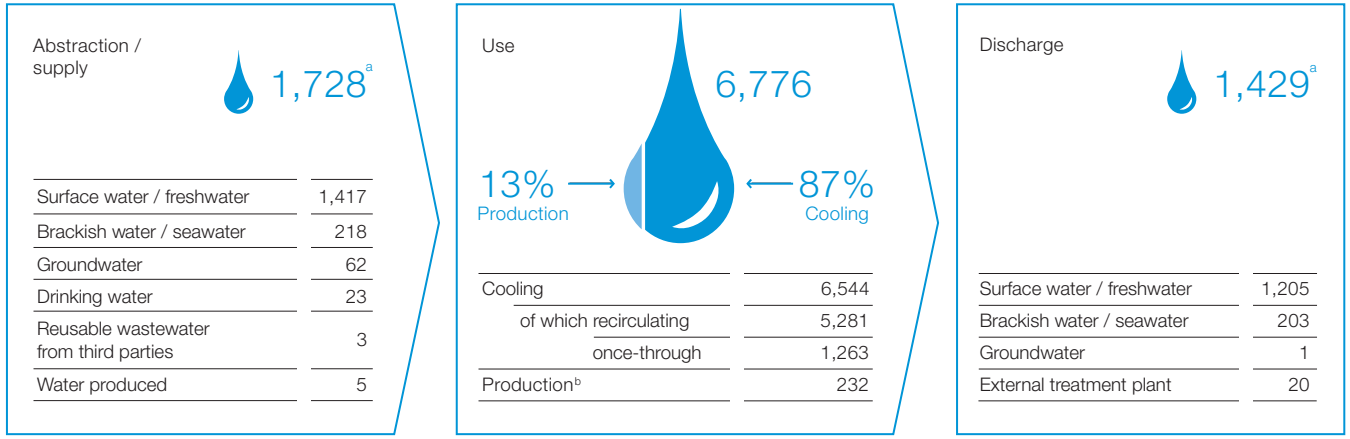
The BASF Group's water consumption describes the amount of water that is not discharged to a supply source, meaning that it is no longer available to other users. Consumption is mainly attributable to the evaporation of water during closed-circuit cooling. A smaller amount is from the water contained in our products. Water consumption in 2020 amounted to around 63 million cubic meters (2019: 61).

In 2020, around 25% of our production sites were located in water stress areas. These sites accounted for 1% of BASF's total water abstraction (2019: 1%).[1] This demand was covered for the most part by freshwater (97%). We mainly source water from third parties (73%). Water consumption in water stress areas accounted for around 11% of our total water consumption (2019: 14%) and was primarily attributable to evaporation in cooling processes.

The supply, treatment, transportation and recooling of water is associated with a considerable energy demand. We are constantly working to optimize our energy consumption and the amount of water we use, and to adapt to the needs of our business and the environment. One example of this is the nitric acid Verbund at the Ludwigshafen site in Germany. Various recooling optimization measures not only significantly reduce the use of cooling water there, but also save 12 gigawatt hours of energy and avoid 3,500 metric tons of CO_2 every year.

Water in the BASF Group 2020

Million cubic meters per year



a The difference between the volume of water abstracted and the volume discharged is primarily attributable to evaporation losses during recirculation of cooling water and limited accuracy in measuring cooling water discharge.
b Total from production processes, graywater, rinsing and cleaning in production

Emissions to water

Emissions slightly lower

A total of 1,429 million cubic meters of water were discharged from BASF production sites in 2020 (2019: 1,509), including 166 million cubic meters of wastewater from production. Total wastewater in water stress areas was less than 1%. As cooling water is recirculated as much as possible there, the share of wastewater from production processes is comparatively higher than at other BASF sites.

BASF carefully assesses the impact of wastewater discharge in accordance with the applicable laws and regulations. The responsible local authorities regularly review our analyses and precautions in accordance with the relevant local requirements to prevent contaminants from entering water bodies.

1 Aqueduct 3.0 was used to identify sites in water stress areas to determine pro rata water abstraction and water consumption.

Emissions of nitrogen to water amounted to 2,900 metric tons in 2020 (2019: 3,000). Around 11,500 metric tons of organic substances were emitted in wastewater (2019: 12,100). Our wastewater contained 22 metric tons of heavy metals (2019: 25). Phosphorus emissions amounted to 270 metric tons (2019: 260).

Our approach is to reduce wastewater volumes and contaminant loads at the source in our production processes, and to reuse wastewater and material flows internally as far as possible. To treat wastewater, we use both central measures in wastewater treatment plants and the selective pretreatment of individual wastewater streams before these are sent to the wastewater treatment plant. Suitable methods are used, depending on the type and degree of contamination – including biological processes, chemical oxidation, membrane technologies, precipitation or adsorption.

In order to avoid unanticipated emissions and the pollution of surface or groundwater, we have water protection concepts for our production sites in place. This is mandatory for all production plants as part of our Responsible Care Management System. The wastewater protection plans involve evaluating wastewater in terms of risk and drawing up suitable monitoring approaches. We use audits to check that these measures are being implemented and complied with.

For more information, see basf.com/water

Biodiversity

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Biodiversity describes the variety of life forms on Earth. Animals and plants fulfill a variety of functions and guarantee the ability of their ecosystem to withstand alterations such as climate change. As a chemical company, we depend on ecosystem services like the availability of renewable resources and air, water and soil quality, while also influencing them. Protecting biodiversity is therefore a key element of our commitment to sustainability.

Thanks to responsible procurement practices, the efficient use of raw materials, our product solutions and involvement in numerous initiatives, our business conduct is consistent with the United Nations' Sustainable Development Goals and we reduce our negative impact on biodiversity. It is currently extremely difficult to measure impacts on biodiversity and thus BASF's impacts in full. At the same time, we help to measure significant impacts on land use in individual steps of the value chain, for example with our Value to Society method. We also initiated a pilot project in 2020 to improve methodological measurement of the impacts of individual product applications on biodiversity.

Our responsibility to our supply chains

The business activities of our raw materials suppliers often involve land use and the associated impact on biodiversity, whether it is in natural gas and crude oil production, mineral extraction or cultivation of crops such as oil palms and castor-oil plants. Our expectations with regard to environmental, labor and social standards in the supply chain are laid down in the Supplier Code of Conduct (see page 113).

We published our Position on Forest Protection in June 2020. In it, we commit to the preservation of areas of High Conservation Value, High Carbon Stock forest areas and peatlands when procuring renewable raw materials. Our aim is to prevent these areas from being developed for intensive economic use. Furthermore, we want any land use development activity to respect the rights of indigenous and local communities. We are working with partners to increase supply chain sustainability, for instance with the Roundtable on Sustainable Palm Oil (RSPO) in our supply chain for palm-based raw materials (see page 117).

BASF procures a variety of renewable raw materials. Particularly palm and palm kernel oil, soy oil and its derivatives as well as lignosulphonates, which are extracted from wood, have been determined to have a high deforestation risk. Based on purchasing volume, palm oil products are the most relevant renewable raw materials for BASF. To achieve greater sustainability in this supply chain, a detailed Palm Commitment went into effect in 2011 and was extended in 2015. It was put into practice through our Palm Sourcing Policy. Furthermore, we are involved in a range of projects in other supply chains promoting responsible use of natural resources and biodiversity (see page 118). BASF was rated for the first time in 2020 in the nonprofit organization CDP's forest assessment (grade: A–). It evaluates companies' management of environmental risks and opportunities. It is based on detailed insights into our palm value chain and the impact of our activities on ecosystems and habitats.

In cooperation with partners, we are also developing innovative solutions to reduce pressure for economic use of forests. For example, the Nutrition & Health division and Isobionics® launched Isobionics® Santalol in 2020, which is a biotechnologically produced fragrance and a convincing alternative to natural sandalwood oil. This oil is extracted from the wood and roots of the sandalwood tree, which is on the Red List of the International Union for Conservation of Nature (IUCN) because it is highly endangered by overexploitation. Our newly developed fragrance addresses customer demand for reliability in the supply of raw materials while conserving natural resources.

Our responsibility to our sites and our production

Preservation of biodiversity is also taken into consideration in the management of our sites. We respect natural resources at all our production sites and have committed to the following measures: We operate our facilities in a responsible manner and minimize negative effects on the environment, including forests, by keeping air, water and soil emissions as low as possible and reducing and avoiding waste (see page 137). Moreover, we conduct systematic assessments of sustainability aspects when making decisions about investments in the construction of new sites or expansion of existing ones, including the potential impact on forests and biodiversity. Our water management (see page 139) and our involvement in organizations such as the Alliance to End Plastic Waste (AEPW) (see page 138) contribute to the preservation of biodiversity in bodies of water.

Our management of our product impact

We want to ensure that our products meet our customers' standards in quality and, through appropriate use, pose no risk to humans, animals or the environment. Our commitment to the objectives set forth by the Responsible Care® charter of the International Council of Chemical Associations (ICCA) obligates us to continuously minimize the negative effects of our products on the environment, health and safety and to optimize our products on an ongoing basis. For example, we evaluate our products and solutions in crop protection and seeds throughout the entire research, development and registration process. After they have been approved for the market, we continue assessing them regularly for potential risks and impact to the ecosystems in which they are used. We have initiated various projects and offer training to prevent inappropriate application of our products (see page 126).

All types of land development, such as agriculture and forestry, play a role in changing biodiversity. Activities such as tillage, drainage, fertilization and the use of crop protection products can affect flora and fauna by influencing their food sources.

We strengthened our commitment to sustainable agriculture in 2020. We focus on four areas to help farmers to find the right balance: climate-smart farming, sustainable solutions, digital farming and smart stewardship (see page 102). In this context, we work with farmers to create balanced agricultural systems which enable productive and efficient farming of high-quality food products and at the same time promote biodiversity in the field. For example, we advise them on soil cultivation and look for suitable ways to improve biodiversity in farmlands. Our many years of experience in sustainability measurement and evaluation in agriculture are particularly useful here. Our AgBalance® method and the biodiversity calculator, which has been available since 2020, enable a scientifically sound assessment of the impact of agricultural practices on biodiversity. Based on these assessments, we issue recommendations for measures such as planting flower strips or establishing nesting places to benefit pollinators, like wild bees, and farmland birds. Our modern seed solutions also enable better yield on existing farmlands and thus help protect natural habitats.

Our biodiversity initiatives

Engaging in an ongoing dialog with a variety of stakeholders is of utmost importance to BASF. For this reason, we will continue to pursue an exchange with partners in the value chain, in government and in civil society to preserve the natural habitats of plants and wild animals and thus play our part in protecting biodiversity. We work with a number of organizations including the Roundtable on Sustainable Palm Oil (RSPO), the Sustainable Palm Oil Forum, the Brazilian Coalition on Climate, Forests and Agriculture and the High Carbon Stock Approach Steering Group. We seek to collaborate with additional relevant stakeholders and organizations to raise and increase awareness and drive the necessary market transformation to make an impact on the ground. To promote biodiversity, we are pursuing various initiatives such as the BASF FarmNetwork Sustainability, the Mata Viva® Initiative and the "Lark's Bread" project (see box on the right).

The BASF FarmNetwork Sustainability was established in 2013 with the goal of developing feasible measures to increase biodiversity across intensively farmed land. The network is composed of farms in Europe, including in Germany, the United Kingdom, France, Italy and Poland. Independent external experts on nature conservation and environmental protection assess the development of biodiversity at some of these farms.

The Mata Viva® Initiative in Brazil is a collaboration between BASF and the Fundação Espaço ECO® organization as well as partners from many facets of society. It was established in 1984 to preserve water quality and soil and create a natural habitat for indigenous animal and plant species. To date, a total of 730 hectares of land have been reforested and 1.2 million seedlings have been planted. A program started in 2020 restores forests in the Mata do Barreiro Rico green reserve. The reserve is one of the last sanctuaries of the southern muriqui monkey (Brachyteles arachnoides), which is classified by the IUCN as critically endangered.

For more information on our responsible management of resources, see page 116
For more information on product stewardship, see page 126
For more information on our commitment to biodiversity, see basf.com/biodiversity
For more information on our position on forest protection, see basf.com/forestprotection

The "Lark's Bread" project to foster biodiversity

With this project, BASF is showing in Germany that striking a balance between productive agriculture and biodiversity is possible. In a pilot project with a local bakery chain and a mill, four farmers from the BASF FarmNetwork Sustainability have created "lark windows" on a total of 40 hectares of winter wheat fields. These "lark windows" are open spaces in fields with an area of about 20 m², which skylarks use as "runways" when they brood in the fields and search for food. The harvested wheat is processed into "lark's bread" and sold at a markup that compensates farmers for their efforts and yield loss as well as supports further biodiversity measures.

Employees

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Our employees make a significant contribution to BASF's success. We want to attract and retain talented people for our company and support them in their development. To do so, we cultivate a working environment that inspires and connects people. It is founded on inclusive leadership based on mutual trust, respect and dedication to top performance.

110,302

Employees around the world

Employee engagement and leadership impact

on center stage

Strategy

- **We are committed to valuing and treating people with respect, and fostering an inspiring working environment**

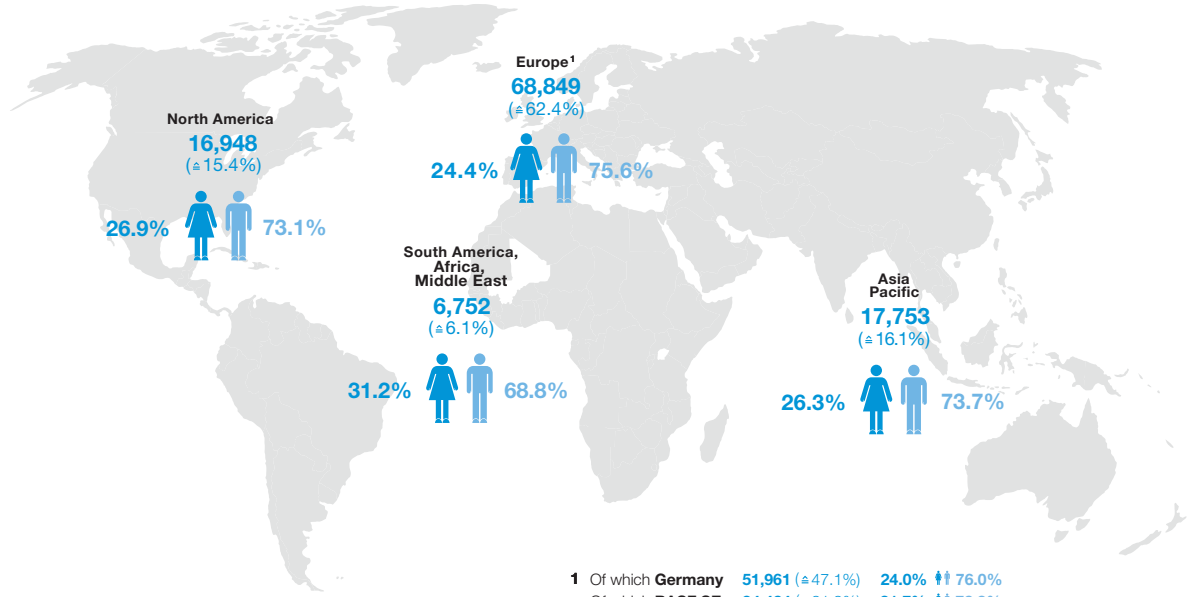
Our employees are key to the successful implementation of BASF's strategy. We are convinced of the value of excellent employees, leaders and working conditions, and strive to give our employees the tools and skills necessary to be able to offer our customers products and services with an even greater level of differentiation and customization. Our corporate strategy promotes a working atmosphere based on mutual trust, in which employees are given the space to optimally develop their individual talents and potential. This positions us to meet the challenges of an increasingly rapidly changing environment, demographic change and the digital workplace. In everything we do, we are committed to complying with internationally recognized labor and social standards. We want our working conditions to be a motor for innovation, and one way of achieving this is through inclusion of diversity. Lifelong learning and individual employee development lay the foundation for this. Compensation and benefits as well as offerings to balance personal and professional life complete our attractive total offer package. We track our employer rankings so that we can continue to attract talented people to the company in the future. Our employees play an important role here as ambassadors for BASF.

Number of employees

As of December 31, 2020, the number of employees decreased to 110,302 employees compared with 117,628 employees as of December 31, 2019. The decrease was due primarily to the sale of the construction chemicals business, which affected around 7,500 employees. An offsetting factor was the acquisition of Solvay's polyamide business due to which around 1,200 employees joined the BASF Group including the employees of the Butachimie SNC and Alsachimie S.A.S. joint operations, both in Chalampé, France, which were counted on a pro rata basis. We employed 3,120 apprentices[1] (2019: 3,161). 2,128 employees were on temporary contracts (of which 44.0% were women).

BASF Group employees by region

(Total: 110,302, of which 25.5% women, as of December 31, 2020)



1 Of which **Germany** **51,961** (≙47.1%) **24.0%** 76.0%
Of which **BASF SE** **34,484** (≙31.3%) **21.7%** 78.3%

1 At BASF, the apprenticeship program trains students for technical, scientific and business vocations as well as for trade and craft professions.

Employee engagement

- **Own employee engagement target met**
- **Engagement index of 82%**

BASF can rely on the engagement of its employees. Employee engagement is shown by, for example, a passion for the job, a dedication to top performance and a commitment to BASF. Global employee surveys and pulse checks are an established feedback tool in the BASF Group, and are used to actively involve employees in shaping their working environment. The results are communicated to employees, the Board of Executive Directors, the Supervisory Board and stakeholders. We have performed regular global employee surveys since 2008. We aim to keep the employee engagement determined by these surveys at a high level and increase it even further as far as possible. As part of the BASF strategy, we therefore set ourselves the following goal in 2018: More than 80% of our employees feel that at BASF, they can thrive and perform at their best. We regularly calculate the employee engagement level as an index score based on five questions on set topics in our employee surveys. Overall, more than 72,000 employees worldwide participated in this year's survey, representing 66% of survey recipients.[1]

The 2020 survey revealed an engagement index of 82% (2019: 79%). This result reinforces our existing approach taken by our corporate strategy, even in a difficult environment. It also shows that we can rely on our engaged employees, even in a challenging year dominated by the coronavirus pandemic.

Our aim is to keep this score above 80%. We support our leaders with a range of follow-up measures to decentrally address individual action areas and in this way, help to further strengthen employee engagement together with their employees.

What we expect from our leaders

- **Leaders as role models**
- **CORE Leadership Values as the basis for our leadership culture**

Our leaders and their teams should make a sustainable contribution to BASF's success. This is why we promote high-quality leadership and measure its impact. We understand impactful leadership as leaders that serve as role models by having a positive influence on the engagement and development of their employees, and developing and implementing business strategies in line with our corporate values. These expectations are part of the standard global nomination criteria for leadership positions. Our leadership culture is based on BASF's corporate values: creative, open, responsible and entrepreneurial – CORE. Our specific expectations of leaders' conduct are derived from these: the CORE Leadership Values (see box on the right).

We offer our leaders a wide variety of learning and development opportunities for each phase of their career, as well as various formats that enable them to learn from one another and external experts. Global, regional and local offerings are optimally coordinated. We aim to develop leaders who lead their teams with optimism, empathy and trust, and in this way, create a competitive advantage for BASF. Regular feedback plays an important role in the development of leaders. This is why we implemented the comprehensive FEEDback&forward program for all leaders Group-wide in 2020, in which employees provide regular feedback on their managers' leadership skills. The questionnaire focuses on behaviors like empathy or the ability to make difficult decisions and approach change positively. Employees can also report back to their leaders which leadership behaviors they want in the future. In this way, FEEDback&forward promotes regular and open dialog between employees and leaders, and encourages them to reflect on themselves and their own skills. This enables them to drive forward change together with their teams.

CORE Leadership Values

The CORE Leadership Values serve as the guiding principles for all leaders and set out BASF's expectations of leadership behavior. We have derived specific descriptions of desired leadership skills from each individual CORE corporate value.

Excellent leadership is crucial to our customer focus, growth, value creation, employee performance, sustainable goals and new ways of working. The expectations surrounding specific leadership behaviors are aligned with BASF's strategic goals and reflect our company's leadership vision.

Regular training and company-wide dialog on best practices in implementing the CORE Leadership Values in all relevant processes across the company – such as the recruitment and development of talented employees – are important tools to ensure a consistent global leadership culture.

1 Scope of employees surveyed goes beyond the scope of consolidation presented on page 6. However, there are exceptions for companies that represent joint ventures and joint operations, as well as companies held for sale.

To optimally support our leaders – including during the challenging times of the coronavirus pandemic – existing leadership development tools were converted to virtual formats and our internal toolbox was expanded to include new elements such as a CORE leadership podcast or a website with information on how to handle challenges during the pandemic.

Inclusion of diversity

- **Fostering diversity is part of our company culture**
- **Progress made in increasing the proportion of women in leadership positions**

The global character of our markets translates into different customer requirements. We want to reflect this diversity among our employees, too, because it enables them to better meet our customers' needs. For us, diversity means, among other things, having people from different backgrounds working at our company who can draw on their individual perspectives and skills to grow our business. By valuing and promoting employee diversity, we boost our teams' performance and power of innovation, and increase creativity, motivation and employees' identification with the company.

Promoting and valuing diversity across all hierarchical levels is an integral part of our strategy and is also embedded in our corporate values. BASF strives to foster a working environment based on mutual respect, trust and appreciation. This is enshrined in our global Competency Model, which provides a framework for our employees and leaders. The inclusion of diversity is anchored in this model as one of the behaviors expected of employees and leaders. Our leaders play an important role in its implementation. We support them with various, flexible offerings. For instance, we have provided a toolbox with a wide range of content to enable a change of perspective and on promoting diversity and inclusion. A new podcast series from leaders shows the importance of appreciative, fair and inclusive leadership.

Integrating different perspectives is very important to BASF. There are a large number of Employee Resource Groups around the world dedicated to different aspects of diversity.

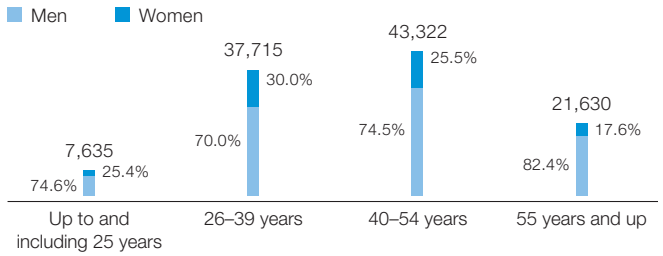
In North America, conversational formats on the inclusion of diversity were developed for employees and leaders. These led to the creation of further action areas, such as promoting talent and training on intercultural communication and leadership, with the aim of further increasing the inclusion of diversity. BASF also took a stand against racism with various internal and external activities in 2020.

BASF is one of approximately 150 companies that support the United Nations Global LGBTI (lesbian, gay, bi, trans and intersex) Standards of Conduct for business and has done so since 2018. The U.N. recommendations show the many opportunities companies have to contribute to positive social change. As part of pride month, employees promoted openness, acceptance and tolerance with campaigns at various sites around the world.

Diversity also relates to the company's demographic profile, which varies widely by region within the BASF Group. Our aim is to create a suitable framework to help maintain the employability of our personnel at all stages of life and ensure the availability of qualified employees over the long term.

BASF Group employee age structure

(Total: 110,302, of which 25.5% women, as of December 31, 2020)



We also promote diversity in leadership development. Since 2015, BASF has set itself global quantitative goals for increasing the percentage of women in leadership positions.

After achieving our original target for women in leadership positions ahead of schedule, BASF set a new, more ambitious target in 2020 to further strengthen diversity. By 2030, we aim to increase the proportion of women in leadership positions to 30%. We have made important progress toward this goal. In the BASF Group, the global proportion of female leaders with disciplinary responsibility was 24.3% at the end of 2020 (2019: 23.0%). We intend to employ various measures to reach our ambitious target.

2030 target

Proportion of women in leadership positions with disciplinary responsibility

30%

We have developed a global dashboard to permanently monitor our progress toward this target.

Another step toward digitalization is the jobsharing app introduced in 2020, which leaders and employees that wish to share a position can use to network with each other. Job sharing is a future-ready working model that offers benefits for both sides and makes it easier for employees to balance their personal and professional lives.

BASF also renewed its commitment to promoting gender equality by endorsing the United Nations' Women's Empowerment Principles (WEPs) in 2020. The WEPs are seven principles providing guidance to business on how to promote gender equality and women's empowerment in the workplace, the labor market and the community.

In the global Business for Inclusive Growth (B4IG) initiative, which we joined in 2019, we campaign together with other companies alongside the G7 and the OECD for inclusive growth, greater gender equality, and the promotion of diversity and inclusion in business. We are also involved in other external initiatives to promote inclusion of diversity at work, such as the *Chefsache* initiative and the European Round Table.

Leaders and professionals in the BASF Group

	December 31, 2020	Of which women (%)
(Senior) executives[a]	8,881	24.3
Professionals[b]	38,484	31.8

a Employees with disciplinary leadership responsibilities
b Specialists without disciplinary leadership responsibilities

For more information on health protection, see page 124

For more information on diversity in the Board of Executive Directors and the Supervisory Board, see page 169 onward

For more information, see basf.com/diversity

Competition for talent

- **Positioning as an attractive employer**
- **Addressing specific target groups, including during the coronavirus pandemic**

Attracting and retaining the best employees is crucial to our success. Having an attractive and compelling total offer package for employees is becoming increasingly important given the strong global competition for the best qualified employees and leaders. This is why we are constantly working on measures to increase BASF's appeal in the global labor markets. Target group-specific campaigns focus on sustainability, digital ways of working and innovation for the future – reflecting our strategic action areas and key labor market trends.

We are increasingly using digital platforms such as our country-specific career websites as well as global and regional social networks to reach potential candidates. This enables us to appropriately address different target groups.

In light of the coronavirus pandemic, we used digital solutions for our talent search activities in 2020. For instance, in order to still be present at career fairs, we participated virtually. As a result, we were able to continue to attract and recruit talented employees. We also offered virtual tours of the Ludwigshafen site for universities in Germany. In addition, we consistently take part in specific career events to directly reach and attract talented female recruits in the natural sciences.

The talent program for external students and former interns was redesigned and expanded to include targeted retention measures. For example, special online events on different career opportunities and an exclusive journal help to maintain contact with talented students who impressed us with their outstanding personal qualities and skills. Mentors at BASF also keep in contact until they have completed their degree and can be recruited.

To combat the shortage of skilled workers in production and technical areas, due among other factors to demographic-related declines in Ludwigshafen, Germany, we have strengthened our social media presence, for example, to alert qualified specialists to new career prospects at BASF.

We once again achieved high scores in a number of employer rankings in 2020. For example, in a study conducted by Universum, engineering and IT students ranked BASF as the 51st most attractive employer in the world (2019: 47th). In North America, DiversityInc named BASF as one of the top 50 companies for diversity in recruiting for the eighth consecutive year. In Asia, Top Employer recognized BASF China as one of the best employers for the eleventh time in succession. In South America, BASF was recognized by Valor Econômico newspaper as one of the employers with the best personnel management in Brazil.

The BASF Group hired 6,340 new employees in 2020. The percentage of employees who resigned during their first three years of employment – the early turnover rate – was 1.0% worldwide in 2020. This turnover rate was 0.7% in Europe, 1.5% in North America, 1.8% in Asia Pacific and 1.8% in South America, Africa, Middle East. Our early turnover rate is therefore at a desirable low level.

BASF Group new hires in 2020

	December 31, 2020	Of which women (%)
Europe	3,163	30.0
North America	1,399	33.0
Asia Pacific	1,234	28.1
South America, Africa, Middle East	544	38.1
Total	**6,340**	**31.0**

As of December 31, 2020, the BASF Group was training 3,120 people in 15 countries and around 50 occupations. We spent a total of around €113 million on vocational training in 2020.

For more information, see basf.com/apprenticeship

Learning and development

- **Lifelong learning concept**
- **Focus on virtual learning and digitalization**

Learning and development are essential success factors for a strong company culture. The skills and competencies of our employees are critical for profitable growth and lasting success. For this reason, we want to further modernize our learning culture and step up our efforts to promote lifelong, self-directed learning. Employee development at BASF is guided by the belief that talent is in everyone. This means that development opportunities and support are open to all employees. In our understanding, there is more to development than a promotion or a job change – it encompasses the development of personal experience and abilities.

In regular development meetings, which are held as part of our annual employee dialogs, employees outline ideas for their individual development together with their leaders and determine specific measures for further training and development, which focus on personal and professional competencies. Our learning activities follow the "70-20-10" philosophy: We apply the elements "learning from experience" (70%), "learning from others" (20%) and "learning through courses and media" (10%). Our learning and development offerings cover a range of learning goals: starting a career, expanding knowledge, personal growth and leadership development.

Digital learning formats play an important role in our development offerings. Even before the coronavirus pandemic, training for leaders and employees was updated to meet the challenges of the digital transformation and modern working life with appropriate learning formats and content. For example, the Digitalization & Me platform was established as a central resource where employees and leaders can find a wide range of online training, learning paths on LinkedIn Learning, or virtual continuous professional development events. Both target groups can also hold joint workshops in an avatar-based 3D working and learning environment.

We enable our employees to take responsibility for their own professional development within the company with digital and novel offerings. To support multidisciplinary teams in the development of products, services or business models, workshops on design thinking empower participants to find creative and innovative solutions to complex problems. This fosters an agile learning and working culture, which will ultimately also help us to master the digital transformation.

To harness the opportunities of the digital transformation for BASF, the #liveitleadit initiative for leaders focused on agility in 2020. Over 3,000 participants discussed methods, best practices and insights into agile working and digital leadership in monthly digital events.

In addition, more and more academies in the divisions and service units, which teach specific professional content, offer virtual training. We have offered virtual presence training since 2018, which gives all employees the opportunity to attend professional development courses via digital communication channels such as virtual meetings.

Compensation and benefits

- **Compensation based on employee's position and individual performance as well as company's success**
- **ROCE determines variable compensation**

We want to attract engaged and qualified employees, retain them and motivate them to achieve top performance with an attractive package including market-oriented compensation, individual development opportunities and a good working environment so that they contribute to the company's long-term success. Our employees' compensation is based on global compensation principles according to position, market and performance. As a rule, compensation comprises fixed and variable components as well as benefits that often exceed legal requirements. In many countries, these benefits include company pension benefits, supplementary health insurance and share programs. We regularly review our compensation systems at local and regional level.

We want our employees to contribute to the company's long-term success. This is why the compensation granted to the vast majority of our employees includes variable compensation components, with which they participate in the success of the BASF Group as a whole and are recognized for their individual performance. The same principles basically apply for all employees worldwide. The amount of the variable component is determined by economic success as well as the employee's individual performance. We use the BASF Group's return on capital employed (ROCE) to measure economic success for the purposes of variable compensation. This links variable compensation to our ROCE target.[1] Individual performance is assessed as part of a globally consistent performance manage-ment process. In numerous Group companies, our "plus" share program ensures employees' long-term participation in the company's success through incentive shares. In 2020, for example, around 27,600 employees worldwide (2019: around 25,400) participated in the "plus" share program.

1 In calculating ROCE, adjustments are made for negative and positive special items resulting from acquisitions and divestitures (for example, integration costs in connection with acquisitions and gains or losses from the divestiture of businesses) when these exceed a corridor of +/–1% of the average cost of capital basis. An adjustment of the ROCE (in the first 12 months after closing) therefore only occurs in cases of exceptionally high special items resulting from acquisitions and divestitures.

BASF offers senior executives[1] the opportunity to participate in a share price-based compensation program, the long-term incentive (LTI) program. The BASF Group's share price-based compensation program (BASF Option Program, BOP), which has existed since 1999, was offered for the last time in 2020. Around 87% of the people eligible to participate in the program around the world did so, investing up to 30% of their actual variable compensation (for the 2019 business year) in BASF shares. From 2020 onward, the previous LTI program for senior executives will be replaced by a new LTI (Strive!) in the form of a performance share plan. The new, four-year program takes into account the development of the total shareholder return and incentivizes the achievement of strategic growth, profitability and sustainability targets. To take part in this new LTI, participants must hold BASF shares, the amount of which is based on their individual fixed compensation. In 2020, around 94% of the people eligible to participate in the new LTI around the world did so, investing between 30% and 70% of their fixed annual compensation in BASF shares.

For more information, see the Notes to the Consolidated Financial Statements from page 307 onward

Personnel expenses

The BASF Group's expenses for wages and salaries, social security contributions and pensions and assistance in 2020 totaled €10,576 million (2019: €10,924 million). This amount included proportional personnel expenses for 2020 from the disposal group for the construction chemicals business in the amount of €291 million. In 2019, personnel expenses from the disposal groups for the construction chemicals business and proportionally for the oil and gas business totaled €557 million. The decrease in personnel expenses was primarily due to lower bonus provisions and the lower average number of employees which resulted, in particular, from the divestiture of the construction chemicals business. A higher wage and salary level as well as higher pension expenses because of increased service costs had an offsetting effect.

BASF Group personnel expenses

Million €	2020	2019	+/–
Wages and salaries	8,416	8,825	–4.6%
Social security contributions and assistance expenses	1,424	1,545	–7.8%
Pension expenses	736	554	32.9%
Total personnel expenses	**10,576**	**10,924**	**–3.2%**

Balancing personal and professional life

- **Wide range of offerings for different phases of life**
- **Flexible working models support employees during the coronavirus pandemic**

Our identity as an employer includes our belief in supporting our employees in balancing their personal and professional lives. We want to strengthen their identification with the company and our position in the global competition for qualified personnel. To achieve this, we have a wide range of offerings aimed at employees in different phases of life that accommodate the growing demand for flexibility in when and where they work. BASF helps employees to adapt working hours and location to their personal circumstances with a wide range of established options, including flexible working hours, part-time employment and remote working. We are constantly working to expand these options and increasingly support the effective use of digital solutions here.

Our flexible tools proved extremely helpful during the coronavirus pandemic. They help our employees to master the increased challenges around work and personal life during the pandemic. One of the tools that increases flexibility is moving larger employee events that were previously held in-person to virtual formats and recording these. We have developed a global policy and framework for the future of work to integrate the positive experiences from the surge in remote working into our working culture. The aim is to further promote and facilitate flexible working models for interested employees.

1 The term "senior executives" refers to leadership levels 1 to 4, whereby level 1 denotes the Board of Executive Directors. In addition, individual employees can attain senior executive status by virtue of special expertise.

Regional initiatives specifically address the needs of our employees at a local level. For example, our startup 1000 Satelites continued to expand the number of flexible co-working spaces in the Rhine-Neckar region in Germany and tested these in pilot projects.

Our Work-Life Management employee center in Ludwigshafen, Germany, (LuMit) offers a number of services under one roof: child-care, fitness and health, and social counseling and coaching offered by BASF Stiftung. We also provide employee assistance programs at other sites in Germany and around the world to help employees overcome difficult life situations and maintain and restore their employability.

Dialog with employee representatives

Trust-based cooperation with employee representatives is an important component of our corporate culture. Our open and ongoing dialog lays the foundation for balancing the interests of the company and its employees, even in challenging situations. In the case of organizational changes or if restructuring leads to staff downsizing, for example, we involve employee representatives to develop socially responsible implementation measures at an early stage. In 2020, this happened in connection with the transformation of the newly created Global Business Services unit, for example. Our actions are aligned with the respective legal regulations and the agreements reached, as well as operational considerations. During the coronavirus pandemic, we developed solutions together with employee representatives to continue our trust-based cooperation, despite the necessary pandemic-related restrictions. This enabled us to sign a new site agreement with the Works Council of BASF SE for the Ludwigshafen site in Germany in May 2020, which contains a clause that excludes forced redundancies until 2025.

By focusing our discussions on the local and regional situations, we aim to find tailored solutions to the different challenges and legal considerations for each site. The BASF Europa Betriebsrat (European Works Council) addresses cross-border matters in Europe. In South America, we foster dialog with the Diálogo Social.

For more information, see basf.com/employeerepresentation

International labor and social standards

- **Alignment with U.N. Guiding Principles on Business and Human Rights**

We act responsibly toward our employees. Part of this is our voluntary commitment to respecting international labor and social standards, which we have embedded in our global Code of Conduct. This encompasses internationally recognized labor norms as stipulated in the United Nations' Universal Declaration of Human Rights, the OECD Guidelines for Multinational Enterprises, and the Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy of the International Labour Organization (ILO). BASF is committed to complying with these standards worldwide. We mainly approach our adherence to international labor and social standards using three elements: the Compliance Program (including external compliance hotlines), close dialog with our stakeholders (such as with employee representatives or international organizations) and the BASF guideline on compliance with international labor norms, which applies Group-wide. This guideline makes concrete what the human rights issues and international labor standards in our global Code of Conduct mean as these relate to our employees.

It forms the basis for our global management process: We regularly monitor changes to the national law of all the countries in which BASF operates and evaluate our adherence to international labor and social standards. If the national law contains no or lower requirements, action plans are drawn up to successively close these gaps in a reasonable time frame. If conflicts with national law or practices arise, we strive to act in accordance with our values and internationally recognized principles without violating the law of the country concerned. As part of the management process, we regularly follow up on and document the results of the comparison between national law and our guideline, as well as measures to implement the guideline. This is our central due diligence system.

We monitor our voluntary commitment to international labor and social standards as part of our management process. As before, individual elements of the guideline are also reviewed as part of internal control processes such as Responsible Care audits at BASF Group companies. In addition to these quality assurance measures, compliance with international labor and social standards is an integral part of the standard questionnaire in the compliance management audit conducted by BASF's Corporate Audit department.

For more information on global standards, see page 31
For more information on our responsibility for human rights, see page 111
For more information on compliance, see page 177 onward
For more information on labor and social standards, see basf.com/labor_social_standards

Forecast

Economic Environment in 2021[1]

We expect the global economy to gradually recover in 2021 after the sharp downturn resulting from the coronavirus pandemic. Gross domestic product (GDP) will return to roughly the pre-crisis level. We assume that global GDP will grow by 4.3% (2020: –3.7%). Consumers and companies in many countries remain restricted in their freedom of actions for the time being due to measures to combat the pandemic. Positive seasonal impulses should start to make themselves felt as the year progresses. We expect that growing immunization of the population – especially risk groups – will increasingly support the economic recovery in the second half of 2021. Regional differences will presumably remain significant: While we assume emerging markets in Asia will experience robust growth, momentum in Europe, the United States and Japan is likely to initially remain sluggish. Uncertainty about future developments is exceptionally high. It is very difficult to predict how the coronavirus pandemic will progress. Furthermore, the aftereffects of the sharp economic decline in the business sector and the labor market from the past year will materialize further.

Trends in the global economy in 2021

- **Moderate growth expected in Europe and the United States**
- **Strong growth likely in Asia**

We anticipate an overall moderate GDP growth rate of 3.0% (2020: –6.4%) in the **European Union** (E.U.). We expect base effects to support growth momentum in countries that were hit especially hard by the pandemic. These include southern European countries with a high percentage of tourism, but also economies in northwestern and eastern Europe where industry is specialized in investment goods and automotive production. It is likely, though, that measures, to contain the coronavirus pandemic, which vary in degree among the different E.U. member countries, will continue to have a significant impact on economic growth. Furthermore, we expect Brexit to have a negative effect on economic growth in the E.U. In the United Kingdom, we are forecasting weak GDP growth of 2.4% due to Brexit and extremely high infection rates at the beginning of the year, after the considerable decline in the previous year (2020: –9.9%).

We expect a GDP growth rate of 4.0% in the **United States**. A further government spending plan is likely to significantly bolster the economy. However, since the 2020 economic decline in the United States was only about half of what the E.U. saw, base effects should have a smaller impact. Private consumption in 2020 was significantly supported by government payments. Consequently, no strong catch-up effects can be expected in the consumption of goods in 2021. Moreover, we expect the labor market to recover more slowly than in the previous year. While the weaker U.S. dollar should have a positive effect on exports, import prices will foreseeably rise year on year. We do not expect tariffs imposed on imported intermediate or consumer goods from China to drop for the time being, and thus no favorable effect on import prices is foreseeable.

The **emerging markets of Asia** will presumably see considerably higher growth rates. In **China**, private consumption will increasingly bolster growth. Global economic recovery should also have a stimulating effect on exports. Overall, growth is likely to slow during the course of the year. Year on year, growth will still be relatively high, at over 7%, and thus above average for recent years. We expect India to see a continuation of the dynamic recovery that began in the second half of 2020. In the other Asian emerging markets, we anticipate a growth rate comparable to the long-year average before the crisis, slightly above 4%.

In **Japan**, we expect moderate GDP growth of just slightly above 2%. Although this country has been able to control the pandemic better than other advanced economies so far, domestic demand for consumer and investment goods will presumably only recover slowly after the sharp decline in the previous year. Exports are likely to see a considerably better upswing, especially due to increasing demand from China.

Growth prospects in **South America** will probably remain subdued. We are forecasting total GDP growth in this region of slightly above 4%. Fiscal impetus in Brazil is likely to weaken over the course of the year and dampen further economic recovery (2021: +3.5%; 2020: –4.6%). Macroeconomic imbalances, primarily rising inflation rates coupled with continued low interest rates and growing national debt, will presumably continue to burden the Brazilian currency. In Argentina, too, the debt and currency crisis are expected to dampen the country's economic recovery following the sharp decline in the previous year (2021: +5.0%; 2020: –10.4%). In the other countries of South America, we anticipate moderate growth in domestic demand and a favorable impact on demand for industrial and agricultural raw materials from the recovering global economy.

1 Our assumptions account for current estimates by external institutions, including economic research institutes, banks, multinational organizations and consulting firms.

Outlook for gross domestic product 2021

Real change compared with previous year	
World	4.3%
European Union	3.0%
United States	4.0%
Emerging markets of Asia	6.9%
Japan	2.3%
South America	4.4%

Trends in gross domestic product 2021–2023

Average annual real change	
World	3.7%
European Union	3.0%
United States	3.2%
Emerging markets of Asia	5.6%
Japan	1.6%
South America	3.3%

Outlook for key customer industries

■ Recovery expected in the automotive industry and for consumer goods

Overall, we anticipate 4.4% (2020: –4.0%) growth in global industrial production. Growth in advanced economies (2021: +3.1%; 2020: –6.5%) is likely to be weaker than growth in emerging markets (2021: +5.5%; 2020: –1.8%).

We are forecasting a considerable recovery in the **transportation industry**[1] as a whole after the sharp decline in the previous year. We expect global automotive production to grow significantly. In China, we anticipate moderate growth momentum in 2021 following the rapid recovery in 2020. By contrast, we expect stronger recovery effects in western and eastern Europe as well as in North America, India and Japan. The percentage of hybrid and electric vehicles should continue to rise due to buying incentives, vehicle tax rebates and the expansion of the charging infrastructure.

In the **energy and raw materials** sector, we expect moderate overall growth in energy demand and demand for industrial raw materials. Production growth should only be small in advanced economies. In the emerging markets by contrast, we are forecasting considerable growth. Approximately half of total global growth is expected to be in Asia.

Production in the **construction industry** will presumably grow moderately in 2021. We anticipate low growth rates in commercial construction but higher growth in housing construction and in the infrastructure segment. While the construction business in Europe is likely to grow moderately, we only foresee a slight increase in the United States. This is because of small base effects after the upswing in the housing market in the previous year and government spending on construction, which is only likely to benefit from the economic stimulus packages after a delay. By contrast, we expect considerably higher growth rates in Asia.

Due to recovery effects, overall **production of consumer goods,** primarily textiles and consumer durables, will foreseeably grow at a somewhat higher rate than global GDP. Production of care products, by contrast, will grow approximately in line with the gross domestic product.

The **electronics industry** should benefit from the ongoing digitalization trend, more frequent use of electronic parts in the automotive industry and the advancement of connectivity and automation. We therefore continue to expect above-average growth.

In line with overall economic recovery, the **health and nutrition** sector should grow markedly in the year to come. We expect above-average growth in the pharmaceutical industry, which will be favorably affected by global vaccine activities. Expansion in the nutrition sector should almost equal that of the global economy.

Under normal weather conditions, **agricultural production** will presumably see similar growth in 2021 to the past few years. In Europe, we expect a slight increase in agricultural production given the low basis for comparison. In the United States, the trade agreement with China is likely to boost agricultural exports again in 2021, and similarly high growth rates are expected to those of 2020. In Brazil, economic recovery and the considerable currency devaluation should be favorable to the sales volumes of agricultural products. For this reason, higher growth in sales volumes can be expected. In Asia, which is by far the largest agricultural market because of the size of its population, we expect solid growth in agricultural production.

1 The transportation industry includes the production of motor vehicles, motor vehicle parts and the construction of other vehicles (especially ships and boats, trains, air and spacecraft, and two-wheelers).

Outlook for the chemical industry

■ Above-average growth expected in the chemical industry

Global chemical production (excluding pharmaceuticals) is expected to grow by 4.4% (2020: –0.4%) in 2021, which is above average for the years prior to the coronavirus pandemic. This growth should be seen predominantly in emerging markets (2021: +5.4%; 2020: +1.8%). In advanced economies, we anticipate a growth rate of 2.5% (2020: –4.2%), which is above average for pre-crisis years. The level of production from 2019 will thus already be surpassed in 2021 in emerging markets. Overall, production in advanced economies will presumably still be considerably lower.

In **China**, the world's largest chemical market, we are forecasting a growth rate in chemical production of 6.3% (2020: 3.4%). Momentum is likely to slow down after the rapid recovery in production in 2020. Nevertheless, we anticipate demand across all customer industries to grow for intermediate inputs from the chemical industry, in particular consumer goods and in the automotive industry.

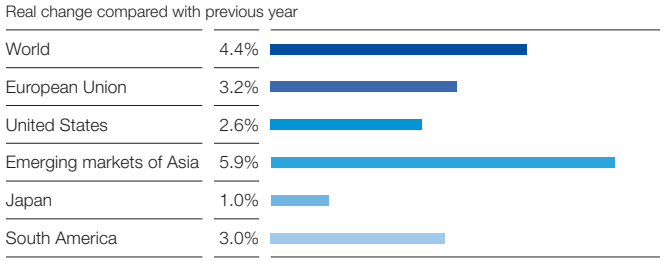
In the **European Union**, we are forecasting an increase in chemical production of 3.2% (2020: –1.9%), roughly in line with GDP growth. The expected marked recovery in the automotive industry along with moderate growth in the construction industry and in consumables in the health and nutrition sector, as well as somewhat stronger growth in consumer durables should bolster domestic chemical demand. We anticipate weaker growth momentum in the United Kingdom. Higher transaction costs are likely to dampen chemical production due to the end of the Brexit transition period and the negative economic impact of the coronavirus pandemic (2021: +2.0%; 2020: +1.0%).

We expect chemical production in the **United States** to grow by 2.6% (2020: –4.3%). Further recovery in automotive production and considerable growth in health and nutrition and in electronics should have positive effects on chemical demand, whereas the construction and oil and gas industries are only expected to provide weak growth stimulus.

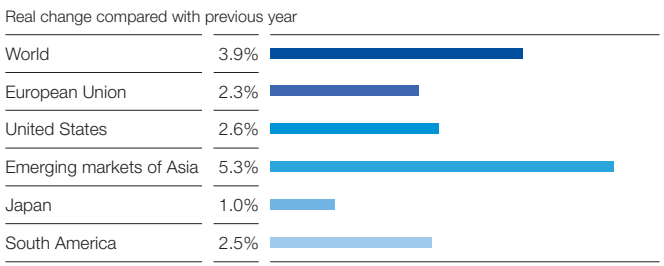
In **Japan**, we anticipate moderate growth in chemical production, analogous to the modest overall economic recovery.

In **South America**, chemical production will presumably lag slightly behind the economy as a whole (2021: +3.0%; 2020: –1.1%). Chemical growth will be buoyed by the recovery in automotive production, as well as in the agriculture, nutrition and industrial raw materials sectors.

Outlook for chemical production 2021 (excluding pharmaceuticals)



Trends in chemical production 2021–2023 (excluding pharmaceuticals)



Outlook 2021

We expect the global economy to recover in 2021 after the sharp downturn resulting from the coronavirus pandemic. However, uncertainty about future developments remains exceptionally high. Our forecast therefore includes wide ranges to account for the possibility of significant disruptions to global supply chains and negative effects on the entire economy. At the same time, we are confident that without such negative impacts, we will be able to achieve earnings at the upper end of the forecast range. Our forecast assumes growth in our customer industries. For the automotive industry in particular, we are forecasting significant production growth compared with 2020. The global economy should see significant growth of 4.3% compared with 2020 (–3.7%). Global chemical production is expected to expand by 4.4%, well above the prior-year level (2020: –0.4%). We anticipate an average oil price of $50 for a barrel of Brent crude and an exchange rate of $1.18 per euro.

Based on these assumptions, we aim to increase our sales to between €61 billion and €64 billion (2020: €59,149 million). The BASF Group's income from operations (EBIT) before special items is expected to be between €4.1 billion and €5.0 billion (2020: €3,560 million). The return on capital employed (ROCE) should be between 8.0% and 9.2% (2020: 1.7%).

For 2021, we anticipate Accelerator sales of between €18 billion and €19 billion (2020: €16.7 billion). Our CO_2 emissions are expected to stabilize at between 20.5 million metric tons and 21.5 million metric tons in 2021 (2020: 20.8 million metric tons).

For more information on our expectations for the economic environment in 2021, see page 152 onward
For more information on our opportunities and risks, see page 158 onward

Sales, earnings and ROCE forecast for the BASF Group[1]

- **Sales growth to between €61 billion and €64 billion**
- **EBIT before special items of between €4.1 billion and €5.0 billion**
- **ROCE of between 8.0% and 9.2%**

In 2021, we expect the BASF Group as a whole to increase sales to between €61 billion and €64 billion (2020: €59,149 million). The main drivers should be volume growth and higher prices. By contrast, currency and portfolio effects will have a negative impact. The Materials segment and Other are expected to see considerable sales growth. We are forecasting slightly higher sales in the Surface Technologies, Chemicals, Agricultural Solutions and Nutrition & Care segments, and a slight year-on-year decline in the Industrial Solutions segment.

The BASF Group's EBIT before special items is expected to increase to between €4.1 billion and €5.0 billion (2020: €3,560 million). We anticipate considerably higher contributions from the Materials and Chemicals segments, Other and the Surface Technologies segment. The Agricultural Solutions and Nutrition & Care segments should record slightly higher EBIT before special items. By contrast, we are forecasting slightly lower EBIT before special items in the Industrial Solutions segment.

Based on the expected recovery in the global economy, a positive business trajectory and a lower cost of capital basis in 2021, we expect the BASF Group's ROCE to be between 8.0% and 9.2% (2020: 1.7%). We expect a considerable increase in ROCE in all segments compared with the previous year.

Our forecast for 2021 takes into account the agreement between BASF and DIC on the sale of the global pigments business. The transaction is expected to close in the first half of 2021, subject to the approval of the U.S. competition authorities, which is still outstanding. Until closing, the assets and liabilities to be divested will be presented in a disposal group in the Dispersions & Pigments division.

Accelerator sales and CO_2 emissions forecast for the BASF Group

We expect Accelerator sales to increase to between €18 billion and €19 billion in 2021 (2020: €16.7 billion), in line with the global economic recovery and growing demand for chemical products. The divestiture of BASF's global pigments business will also reduce sales of Accelerator products in BASF's portfolio. Compensating factors will include the expected increase in Accelerator products from the initial portfolio segmentation of the businesses acquired from Solvay.

Despite the global economic recovery and growing demand for chemical products, CO_2 emissions are expected to stabilize at between 20.5 million metric tons and 21.5 million metric tons in 2021. We will keep emissions roughly at the prior-year level (2020: 20.8 million metric tons) with targeted measures. These include the implementation of further projects to increase energy efficiency and optimize processes, for example, to significantly reduce nitrous oxide emissions in Ludwigshafen, Germany. In addition, we are switching energy supply agreements to renewable energy sources, for example in Freeport, Texas, where we have signed long-term supply agreements for wind power. Emissions will also be reduced by the divestiture of BASF's global pigments business in 2021.

The significant opportunities and risks that could affect our forecast are described under Opportunities and Risks on pages 158 to 166.

1 For sales, "slight" represents a change of 1%–5%, while "considerable" applies to changes of 6% and higher. "At prior-year level" indicates no change (+/–0%). For earnings, "slight" means a change of 1%–10%, while "considerable" is used for changes of 11% and higher. "At prior-year level" indicates no change (+/–0%). At a cost of capital percentage of 9% for 2021, we define a change in ROCE of 0.1 to 1.0 percentage points as "slight," a change of more than 1.0 percentage points as "considerable" and no change (+/–0 percentage points) as "at prior-year level."

Forecast by segment[a]

Million €

	Sales		EBIT before special items		ROCE	
	2020	**Forecast 2021**	**2020**	**Forecast 2021**	**2020**	**Forecast 2021**
Chemicals	8,071	slight increase	445	considerable increase	–2.2%	considerable increase
Materials	10,736	considerable increase	835	considerable increase	–1.1%	considerable increase
Industrial Solutions	7,644	slight decline	822	slight decline	9.3%	considerable increase
Surface Technologies	16,659	slight increase	484	considerable increase	–4.8%	considerable increase
Nutrition & Care	6,019	slight increase	773	slight increase	10.6%	considerable increase
Agricultural Solutions	7,660	slight increase	970	slight increase	3.6%	considerable increase
Other	2,360	considerable increase	–769	considerable increase	–	–
BASF Group	**59,149**	**€61 billion–€64 billion**	**3,560**	**€4.1 billion–€5.0 billion**	**1.7%**	**8.0%–9.2%**

a For sales, "slight" represents a change of 1%–5%, while "considerable" applies to changes of 6% and higher. "At prior-year level" indicates no change (+/–0%). For earnings, "slight" means a change of 1%–10%, while "considerable" is used for changes of 11% and higher. "At prior-year level" indicates no change (+/–0%). At a cost of capital percentage of 9% for 2021, we define a change in ROCE of 0.1 to 1.0 percentage points as "slight," a change of more than 1.0 percentage points as "considerable" and no change (+/–0 percentage points) as "at prior-year level."

Sales and earnings forecast for the segments

For the **Chemicals** segment in 2021, we expect a slight increase in sales, mainly driven by growth in volumes in line with a market recovery and higher prices. In the Petrochemicals division, we expect an improved availability of steam cracker products following the unplanned outage at the steam cracker in Port Arthur, Texas, in 2020. In the Intermediates division, we anticipate higher sales volumes in all business areas. Price levels will likely rise, primarily due to higher raw materials prices in both divisions and from a favorable product mix in the Petrochemicals division. Currency effects are expected to dampen sales performance. We expect considerable growth in EBIT before special items, mainly through higher sales volumes, due in part to improved availability of steam cracker products, and a recovery in margins.

For the **Materials** segment, we expect sales to be considerably above the previous year in 2021 due to higher volumes. In the Performance Materials division, we expect higher demand from all customer industries. For the Monomers division, we anticipate higher volumes, specifically for isocyanates and polyamides. Currency effects should reduce sales performance. We want to considerably increase EBIT before special items through the increase in volumes and a recovery in margins, especially in the Monomers division.

Sales in the **Industrial Solutions** segment will likely decline slightly in 2021, mainly as a result of the agreement to divest BASF's global pigments business to DIC. This should be partially offset by higher volumes in both divisions. We anticipate slightly lower EBIT before special items, due in particular to the sale of BASF's global pigments business and higher fixed costs. This will not be completely offset by the expected growth in volumes.

In the **Surface Technologies** segment, we are forecasting slight sales growth in 2021, primarily from higher precious metal prices in the Catalysts division and higher volumes in both divisions. We aim to considerably improve the segment's EBIT before special items compared with 2020, mainly through volume growth. We anticipate considerably higher EBIT before special items in the Coatings division but a slight year-on-year decrease in EBIT before special items in the Catalysts division due to lower contributions from precious metal trading.

For the **Nutrition & Care** segment, we expect slightly higher sales than in 2020. Higher volumes in both divisions will likely be partially offset by negative price and currency effects. Our planning assumes improved product availability, especially in the Nutrition & Health division. We expect the segment's EBIT before special items to be slightly above the previous year, due to a higher contribution from the Nutrition & Health division, driven by volume growth. For the Care Chemicals division, we are forecasting a slight year-on-year decrease in EBIT before special items as a result of slightly higher fixed costs due to costs for the startup of new plants.

We expect sales to be slightly above the prior-year level in the **Agricultural Solutions** segment. We aim to increase our sales volumes and prices, which should more than offset negative currency effects. Overall, we expect a slight increase in EBIT before special items. Alongside higher sales, this will be driven by stringent fixed cost management. In addition, we will benefit from the measures to increase efficiency initiated in 2020. We will continue to invest in research and development and digitalization at a high level in 2021. Currency effects will presumably have a significantly negative impact on EBIT before special items in 2021.

Sales in **Other** are expected to be considerably above the 2020 level in 2021. This will be driven by sales growth in commodity trading. We anticipate a considerable improvement in EBIT before special items compared with the previous year. This should mainly reflect lower research expenses and higher contributions from other businesses.

Capital expenditures (capex)

■ Capex of around €3.6 billion planned for 2021

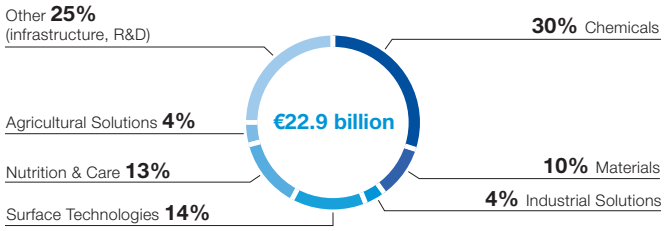
We are planning capital expenditures (additions to property, plant and equipment excluding acquisitions, IT investments, restoration obligations and right-of-use assets arising from leases) of around €3.6 billion for the BASF Group in 2021. For the period from 2021 to 2025, we have planned capital expenditures totaling €22.9 billion. The investment volume in the next five years will thus be below that of the planning period 2020 to 2024 (€23.6 billion). A focus area is our investment project in Zhanjiang, China, to expand our businesses in Asia.

Projects currently being planned or underway include:

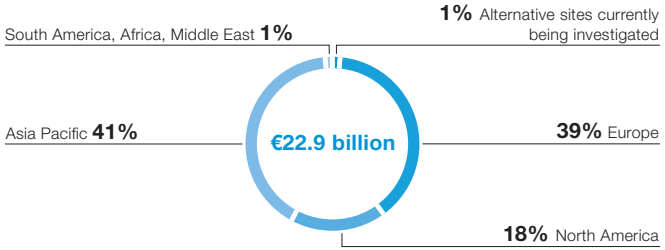
Capex: selected projects

Location	Project
Antwerp, Belgium	Capacity expansion: integrated ethylene oxide complex Gradual capacity expansion: alkoxylates
Geismar, Louisiana	Capacity expansion: MDI plant
Harjavalta, Finland, and Schwarzheide, Germany	Investment: battery materials
Ludwigshafen, Germany	Construction: production plant for vitamin A
Zhanjiang, China	Planned construction: integrated Verbund site

Capex by segment 2021–2025



Capex by region 2021–2025



Dividend

We have an ambitious dividend policy and offer our shareholders an attractive dividend yield. We aim to increase our per-share dividend each year.

Information on the proposed dividend can be found on page 13

Financing

In 2021, we expect cash outflows in the equivalent amount of around €1.0 billion from the scheduled repayment of bonds. To refinance maturing bonds and to optimize our maturity profile, we continue to have medium to long-term corporate bonds and our global commercial paper program at our disposal.

Information on our financing policies can be found on page 64

Events after the reporting period

There have been no significant changes in the company's situation or market environment since the beginning of the 2021 business year.

Opportunities and Risks

The goal of BASF's risk management is to identify and evaluate opportunities and risks as early as possible and to take appropriate measures in order to seize opportunities and limit risks. The aim is to avoid risks that pose a threat to BASF's continued existence and to make improved managerial decisions to create value. We define opportunities as potential successes that exceed our defined goals. We understand risk to be any event that can negatively impact the achievement of our short-term operational or long-term strategic goals.

Opportunities

Potential successes that exceed our defined goals

Risks

Events that can negatively impact the achievement of our goals

In order to effectively measure and manage identified opportunities and risks, we quantify these where appropriate in terms of probability and economic impact in the event they occur. Where possible, we use statistical methods to aggregate opportunities and risks into risk factors. This way, we achieve an overall view of opportunities and risks at a portfolio level, allowing us to take effective measures for risk management.

Overall assessment

- **Significant opportunities and risks arise from overall economic developments, margin and exchange rate volatility**
- **No threat to continued existence of BASF**

For 2021, we anticipate a considerable global economic recovery after the downturn in the previous year due to the coronavirus pandemic. General economic uncertainty will nevertheless remain high until widespread immunization of the population has been achieved. Specifically, production stoppages due to official orders or high infection rates can lead to disruptions in the supply chains of our customer industries, with our suppliers and in our own production plants. Moreover, restricted economic activity resulting from further lockdowns can have a significant negative impact on aggregate demand. An escalation of geopolitical conflicts as well as the ongoing trade conflicts between the United States and China and the associated slowdown of the economy also pose significant risks. These developments could have a negative impact on demand for intermediate and investment goods worldwide. Opportunities arise from continued strong demand, supported by earlier and better availability and broader acceptance of the coronavirus vaccine than is assumed in our forecasts. In addition to the uncertainties surrounding market growth and the development of key customer industries, material opportunities and risks for our earnings arise from margin volatility. From today's perspective, Brexit does not give rise to any material opportunities or risks for the BASF Group due to the trade agreement reached between the European Union and the United Kingdom.

According to our assessment, there continue to be no significant individual risks that pose a threat to the continued existence of the BASF Group. The same applies to the sum of individual risks, even in the case of a global economic crisis, such as the intensification of the coronavirus crisis.

Ultimately, however, residual risks (net risks) remain in all entrepreneurial activities that cannot be ruled out, even by comprehensive risk management.

Potential short-term effects on EBIT of key opportunity and risk factors subsequent to measures taken[a]

Possible variations related to:	Outlook – 2021	Outlook + 2021
Business environment and sector		
Market growth	□□■■■	■■■□□
Margins	□■■■■	■■■■□
Competition	□□□■■	■□□□□
Regulation/policy	□□□□■	■□□□□
Company-specific opportunities and risks		
Procurement	□□□□■	■□□□□
Supply chain	□□□□■	■□□□□
Investments/production	□□□■■	□□□□□
Personnel	□□□□■	■□□□□
Acquisitions/divestitures/cooperations	□□□□■	■□□□□
Information technology	□□□□■	□□□□□
Law	□□□■■	□□□□□
Financial		
Exchange rate volatility	□□■■■	■■□□□
Other financial opportunities and risks	□□□□■	■□□□□

□□□□■ < €100 million
□□□■■ ≥ €100 million < €500 million
□□■■■ ≥ €500 million < €1,000 million
□■■■■ ≥ €1,000 million < €1,500 million
■■■■■ ≥ €1,500 million ≤ €2,000 million

a Using a 95% confidence interval per risk factor based on planned values; summation is not permissible

As a non-integral shareholding, income from Wintershall Dea is reported in net income from shareholdings. The opportunities and risks resulting from the shareholding in Wintershall Dea are therefore not included in the outlook for the EBIT of the BASF Group. Opportunities and risks that have an impact on net income from shareholdings and cash flow from the shares in Wintershall Dea are monitored and tracked through BASF's involvement in the relevant governing bodies.

Risk management process

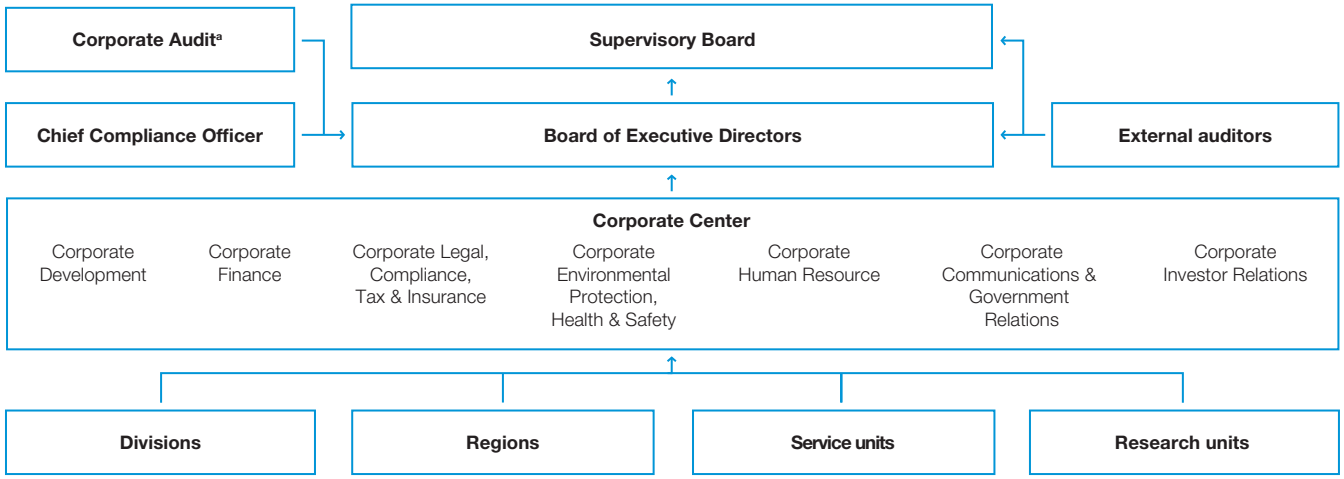
- **Integrated process for identification, assessment and reporting**
- **Decentralized management of specific opportunities and risks**
- **Aggregation at a Group level**

The BASF Group's risk management process is based on the international risk management standard, COSO II Enterprise Risk Management – Integrated Framework, and has the following key features:

Organization and responsibilities

– Risk management is the responsibility of the Board of Executive Directors, which also determines the processes for approving investments, acquisitions and divestitures.
– The Board of Executive Directors is supported by the Corporate Center. Corporate Finance and Corporate Development, which are units within the Corporate Center, and the Chief Compliance Officer coordinate the risk management process at a Group level, examine financial and sustainability-related opportunities and risks, and provide the structure and appropriate methodology. Opportunity and risk management is thus integrated into the strategy, planning and budgeting processes.
– BASF's risk committee reviews the BASF Group's risk portfolio at least twice a year to evaluate any adjustments to risk-management measures and informs the Board of Executive Directors of these.

Organization of BASF Group's risk management since January 1, 2020



a The Corporate Audit unit is part of the Corporate Center.

Members of the risk committee are the head of Corporate Finance (president), the head of Corporate Development, the head of Corporate Legal, Compliance, Tax & Insurance and representatives of the Corporate Audit and Corporate Environmental Protection, Health & Safety units.
– The management of specific opportunities and risks is largely delegated to the divisions, the service and research units and the regions, and is steered at a regional or local level. This also applies to sustainability-related topics relevant to BASF including the impact of climate change on BASF. Financial risks are an exception. The management of liquidity, currency and interest rate risks is conducted in the Corporate Finance unit. The management of commodity price risks takes place in the Global Procurement unit or in authorized Group companies.
– A network of risk managers in the divisions, service and research units as well as in the regions advances the implementation of appropriate risk management practices in daily operations.
– The BASF Group's management is informed of short-term operational opportunities and risks that fall within an observation period of up to one year in the monthly management report produced by the Corporate Finance department. In addition, Corporate Finance provides information twice a year on the aggregated opportunity/risk exposure of the BASF Group. Furthermore, if a new individual risk is identified which has a more than €10 million impact on earnings or bears reputational risks, it must be immediately reported.
– As part of strategy development, the Corporate Development unit conducts strategic opportunity/risk analyses for long-term opportunities and risks with a 10-year assessment period. These analyses are annually reviewed as part of strategic controlling and are adapted if necessary.
– BASF's Chief Compliance Officer (CCO) manages the implementation of our Compliance Management System, supported by additional compliance officers worldwide. He regularly reports to the Board of Executive Directors on the status of implementation

as well as on any significant results. He also provides a status report to the Supervisory Board's Audit Committee at least once a year, including any major developments. The Board of Executive Directors immediately informs the Audit Committee about significant incidents.
- The internal audit unit (Corporate Audit) is responsible for regularly auditing the risk management system established by the Board of Executive Directors in accordance with section 91(2) of the German Stock Corporation Act. Furthermore, as part of its monitoring of the Board of Executive Directors, the Supervisory Board considers the effectiveness of the risk management system. The suitability of the early detection system we set up for risks is evaluated by our external auditor.

Tools
- The Governance, Risk Management, Compliance (GRC) Policy, applicable throughout the Group, forms the framework for risk management and is implemented by the operating divisions, the service and research units and the regions according to their specific business conditions.
- A catalog of opportunity and risk categories helps to identify all relevant financial and sustainability-related opportunities and risks as comprehensively as possible. We also systematically assess opportunities and risks with effects that cannot yet be measured in monetary terms, such as reputational and climate risks. To reflect these, risks for companies in connection with the transition to a low-carbon economy (transition risks) as well as physical risks as defined by the Task Force on Climate-related Financial Disclosures (TCFD) were added to the catalog in 2020.
- We use standardized evaluation and reporting tools for the identification and assessment of risks. The aggregation of opportunities, risks and sensitivities at division and Group level using a Monte Carlo simulation helps us to identify effects and trends across the Group.

For more information on our sustainability management processes, see page 42 onward

- Our Group-wide Compliance Program aims to ensure adherence to legal regulations and the company's internal guidelines. Our global employee Code of Conduct firmly embeds these mandatory standards into everyday business. Members of the Board of Executive Directors are also expressly obligated to follow these principles.

For more information on our Group-wide Compliance Program, see page 177 onward

Significant features of the internal control and risk management system with regard to the Group financial reporting process

- **Conducted in accordance with standardized Group guidelines**
- **Segregation of duties, principle of dual control and clearly regulated access rights**
- **Annual evaluation of the control environment and relevant processes at significant companies**

The Consolidated Financial Statements are prepared by a unit in the Corporate Finance department. BASF Group's accounting process is based on a uniform accounting guideline that sets out accounting policies and the significant processes and deadlines on a Group-wide basis. There are binding directives for the internal reconciliations and other accounting operations within the Group. Standard software is used to carry out the accounting processes for the preparation of the individual financial statements as well as for the Consolidated Financial Statements. There are clear rules for the access rights of each participant in these processes.

Employees involved in the accounting and reporting process meet the qualitative requirements and participate in training on a regular basis. There is a clear assignment of responsibilities between the specialist units, companies and regional service units involved. We strictly adhere to the principles of segregation of duties and dual control, or the "four-eyes principle." Complex actuarial reports and evaluations are produced by specialized service providers or specially qualified employees.

An internal control system for financial reporting continuously monitors these principles. To this end, methods are provided to ensure that evaluation of the internal control system in financial reporting is structured and uniform across the BASF Group.

The significant risks for the BASF Group regarding a reliable control environment for proper financial reporting are reviewed and updated on an annual basis. Risks are compiled into a central risk catalog.

Moreover, a centralized selection process identifies companies that are exposed to particular risks, that are material to the Consolidated Financial Statements of the BASF Group, or that provide service processes. The selection process is conducted annually. Persons responsible for implementing the requirements for an effective control system in financial reporting are appointed at the relevant companies.

In these companies, the process comprises the following steps:
- **Evaluation of the control environment**
  Adherence to internal and external guidelines that are relevant for the maintenance of a reliable control environment is checked by means of a standardized questionnaire.
- **Identification and documentation of control activities**
  In order to mitigate the risks to the financial reporting processes listed in our central risk catalog, critical processes and control activities are documented.
- **Assessment of control activities**
  After documentation, a review is performed to verify whether the described controls are capable of adequately covering the risks. In the subsequent test phase, samples are taken to test whether, in practice, the controls were executed as described and effective.
- **Monitoring of control weaknesses**
  The managers responsible receive reports on any control weaknesses identified and their resolution, and an interdisciplinary committee

investigates their relevance for the BASF Group. The Board of Executive Directors and the Audit Committee are informed if control weaknesses with a considerable impact on financial reporting are identified. Only after material control weaknesses have been resolved does the company's managing director confirm the effectiveness of the internal control system.

– **Internal confirmation of the internal control system**
All managing directors and chief financial officers of each consolidated Group company must confirm to the Board of Executive Directors of BASF SE every half-year and at the end of the annual cycle, in writing, that the internal control system is effective with regard to accounting and reporting.

Short-term opportunities and risks

Market growth

The development of our sales markets is one of the strongest sources of opportunities and risks. More details on our assumptions regarding short-term growth rates for the global economy, regions and key customer industries, such as the chemicals, automotive and construction sectors, can be found under Economic Environment in 2021 on pages 152 to 154.

We also consider risks from deviations in assumptions. Stronger demand caused by an accelerated lifting of lockdowns, for example as a result of high efficacy and acceptance of coronavirus vaccines, give rise to macroeconomic opportunities. A significant macroeconomic risk arises from the possibility that measures to contain the coronavirus are kept in place for a longer period of time or expanded, and that global economic growth slows as a result. Additional macroeconomic risks result from the escalation of geopolitical conflicts and the ongoing trade conflict between the United States and China. Both can have a considerable impact on global demand for intermediate goods for industrial production and demand for investment goods.

Weather-related influences can result in positive or negative effects on our business, particularly in the Agricultural Solutions segment.

Margin volatility

Opportunities and risks for the BASF Group primarily result from higher or lower margins in the Chemicals and Materials segments. Opportunities arise here if the positive margin trend driven by the supply side continues for longer than expected. However, new capacities or raw materials shortages could increase margin pressure on a number of products and value chains. This would have a negative effect on our EBIT.

Moreover, if oil and gas prices rise, Wintershall Dea does not have a compensating effect on the BASF Group's EBIT because this shareholding is no longer reported in EBIT, but in net income from shareholdings.

The year's average oil price for Brent crude was $42 per barrel in 2020, compared with $64 per barrel in the previous year. For 2021, we anticipate an average oil price of $50 per barrel. We therefore expect price levels for the raw materials and petrochemical basic products that are important to our business to rise slightly.

Competition

We continuously enhance our products and solutions in order to maintain competitive ability. We monitor the market and the competition, and try to take targeted advantage of opportunities and counter emerging risks with suitable measures. Aside from innovation, key components of our competitiveness are our ongoing cost management and continuous process optimization.

Regulation and political risks

Risks for us can arise from intensified geopolitical tensions, new trade sanctions, stricter emissions limits for plants, changes in chemical regulations and energy and climate laws.

In addition, risks to the BASF Group can be posed by further regulations in key customer industries or on the use or registration of agricultural and other chemicals.

Political measures could also give rise to opportunities. For example, we view measures around the world to increase energy efficiency and reduce greenhouse gas emissions as an opportunity for increased demand for our products, such as our insulation foams for buildings, catalysts, battery materials for electromobility, or our solutions for wind turbines. Our broad product portfolio enables us to offer alternatives if new chemicals have to be developed as a result of restrictions in connection with the REACH chemicals regulation or new standards in our customers' industries.

Purchasing and supply chain

We minimize procurement risks through our broad portfolio, global purchasing activities and the purchase of raw materials on spot markets. If possible, we avoid procuring raw materials from a single supplier. When this cannot be avoided, we try to foster competition or we knowingly enter into this relationship and assess the consequences of potential nondelivery. We continuously monitor the credit risk of important business partners.

Around the world, the frequency and intensity of extreme weather conditions (such as high/low water levels on rivers or hurricanes) are subject to change as a result of climate change. We address the risk of supply interruptions on the procurement and sales side caused by extreme weather conditions by switching to alternative logistics carriers and the possibility of falling back on unaffected sites within our global Verbund.

In 2019/2020, we implemented a package of climate resilience measures at our Verbund site in Ludwigshafen, Germany: We developed an early warning system for low water, created multimodal transportation concepts, chartered more ships that can navigate low water levels and, in cooperation with partners, are currently developing our own type of ship designed for extreme low-water

situations. These measures are already making long periods of low water on the Rhine River, like in 2018, more manageable.

Investments and production

We try to prevent unscheduled plant shutdowns by adhering to high technical standards and by continuously improving our plants. We reduce the effects of an unscheduled shutdown on the supply of intermediate and end products through diversification within our global production Verbund.

In the event of a production outage – caused by an accident, for example – our global, regional or local emergency response plans and crisis management structures are engaged, depending on the impact scope. Every region has crisis management teams on a local and regional level. They not only coordinate the necessary emergency response measures, they also initiate the immediate measures for damage control and resumption of normal operations as quickly as possible.

Crisis management also includes dealing with extreme weather conditions such as hurricanes (for example, at the sites on the Gulf of Mexico in Freeport, Texas, and Geismar, Louisiana) or significantly elevated water temperatures in rivers due to extended heat waves, which limit the available cooling capacity (for example, at the Ludwigshafen site in Germany). Appropriate precautions are taken at the sites in the case of a potential change in risk in connection with climate change. For example, over the past few years, the Verbund site in Ludwigshafen, Germany, has implemented a package of measures to increase cooling capacity, including expanding and optimizing the central recooling plants and optimizing cooling water flows. These are capable of avoiding production outages due to extreme heatwaves like the one in 2018.

Short-term risks from investments can result from, for example, technical malfunctions or schedule and budget overruns. We counter these risks with highly experienced project management and controlling.

Acquisitions, divestitures and cooperations

We constantly monitor the market in order to identify possible acquisition targets and develop our portfolio appropriately. In addition, we work together in collaborations with customers and partners to jointly develop new, competitive products and applications.

Opportunities and risks arise in connection with acquisitions and divestitures from the conclusion of a transaction, or it being completed earlier or later than expected. They relate to the regular earnings contributions gained or lost as well as the realization of gains or losses from divestitures if these deviate from our planning assumptions.

For more information on opportunities and risks from acquisitions and divestitures in 2020, see page 51

Personnel

Due to BASF's worldwide compensation principles, the development of personnel expenses is partly dependent on the amount of variable compensation, which is linked to the company's success, among other factors. The correlation between variable compensation and the success of the company has the effect of minimizing risk. Another factor is the development of interest rates for discounting pension obligations. Furthermore, changes to the legal environment of a particular country can have an impact on the development of personnel expenses for the BASF Group. For countries in which BASF is active, relevant developments are therefore constantly monitored in order to recognize risks at an early stage and enable BASF to carry out suitable measures.

For more information on our compensation system, see page 149
For more information on risks from pension obligations, see page 164

Information technology risks

BASF relies on a large number of IT systems. Their nonavailability, violation of confidentiality or the manipulation of data in critical IT systems and applications can all have a direct impact on production and logistics processes. The threat environment has changed in recent years, as attackers have become better organized, use more sophisticated technology, and have far more resources available. If data are lost or manipulated, this can, for example, negatively affect plant availability, delivery quality or the accuracy of our financial reporting. Unauthorized access to sensitive data, such as personnel records or customer data, competition-related information or research results, can result in legal consequences or jeopardize our competitive position. This would also be accompanied by the associated loss of reputation.

To minimize such risks, BASF uses globally uniform processes and systems to ensure IT availability and IT security, such as stable and redundantly designed IT systems, backup processes, virus and access protection, encryption systems as well as integrated, Group-wide standardized IT infrastructure and applications. The systems used for information security are constantly tested, continuously updated, and expanded if necessary. In addition, our employees receive regular training on information and data protection. IT-related risk management is conducted using Group-wide regulations for organization and application, as well as an internal control system based on these regulations.

BASF also established the Cyber Defense Center in 2015, is a member of Cyber Security Sharing and Analytics e.V. (CSSA), and a founding member of the German Cybersecurity Organization (DCSO) together with Allianz SE, Bayer AG and Volkswagen AG. BASF has also established an information security management system and is certified according to ISO/IEC 27001:2013.

Legal disputes and proceedings

We constantly monitor current and potential legal disputes and proceedings, and regularly report on these to the Board of Executive Directors and Supervisory Board. In order to assess the risks from current legal disputes and proceedings and any potential need to recognize provisions, we prepare our own analyses and assessments of the circumstances and claims considered. In addition, in individual cases, we consider the results of comparable proceedings and, if needed, independent legal opinions. Risk assessment is

particularly based on estimates as to the probability of occurrence and the range of possible claims. These estimates are the result of close cooperation between the relevant operating and service units together with Corporate Finance and Corporate Legal. If sufficient probability of occurrence is identified, a provision is recognized accordingly for each proceeding. Should a provision be unnecessary, general risk management continues to assess whether these litigations nevertheless represent a risk for the EBIT of the BASF Group.

We use our internal control system to limit risks from potential infringements of rights or laws. For example, we try to avoid patent and licensing disputes whenever possible through extensive clearance research. As part of our Group-wide Compliance Program, our employees receive regular training.

Financial opportunities and risks

Detailed guidelines and procedures exist for dealing with financial risks. Among other things, they provide for the segregation of trading and back office functions.

As a part of risk management, activities in countries with transfer restrictions are continuously monitored. This includes, for example, regular analysis of the macroeconomic and legal environment, shareholders' equity and the business models of the operating units. The chief aim is the management of counterparty, transfer and currency risks for the BASF Group.

Exchange rate volatility

Our competitiveness on global markets is influenced by fluctuations in exchange rates. For BASF's sales, opportunities and risks arise in particular when the U.S. dollar exchange rate fluctuates. A full-year appreciation of the U.S. dollar against the euro by $0.01, which could result from a macroeconomic slowdown, would increase the BASF Group's EBIT by around €30 million, assuming other conditions remain the same. On the production side, we counter exchange rate risks by producing in the respective currency zones.

Financial currency risks result from the translation of receivables, liabilities and other monetary items in accordance with IAS 21 at the closing rate into the functional currency of the respective Group company. In addition, we incorporate planned purchase and sales transactions in foreign currencies in our financial foreign currency risk management. These risks are hedged using derivative instruments, if necessary.

Interest rate risks

Interest rate risks result from potential changes in prevailing market interest rates. These can cause a change in the fair value of fixed-rate instruments and fluctuations in the interest payments for variable-rate financial instruments, which would positively or negatively affect earnings. To hedge these risks, interest rate swaps and combined interest rate and currency derivatives are used in individual cases.

In addition to market interest rates, BASF's financing costs are determined by the credit risk premiums to be paid. These are mainly influenced by our credit rating and the market conditions at the time of issue. In the short to medium term, BASF is largely protected from the possible effects on its interest result thanks to the balanced maturity profile of its financial indebtedness.

Risks from metal and raw materials trading

In the catalysts business, BASF employs commodity derivatives for precious metals and trades precious metals on behalf of third parties and on its own account. Appropriate commodity derivatives are also traded to optimize BASF's supply of refinery products, gas and other petrochemical raw materials. To address specific risks associated with these non-operating trades, we set and continuously monitor limits with regard to the type and volume of the deals concluded.

Liquidity risks

Risks from fluctuating cash flows are recognized in a timely manner as part of our liquidity planning. We have access to extensive liquidity at any time thanks to our good ratings, our unrestricted access to the commercial paper market and committed bank credit lines. In the short to medium term, BASF is largely protected against potential refinancing risks by the balanced maturity profile of its financial indebtedness as well as through diversification in various financial markets.

Risk of asset losses

We limit country-specific risks with measures based on internally determined country ratings, which are continuously updated to reflect changing environment conditions. We selectively use investment guarantees to limit specific country-related risks. We lower credit risks for our financial investments by engaging in transactions only with banks with good credit ratings and by adhering to fixed limits. Creditworthiness is continuously monitored and the limits are adjusted accordingly. We reduce the risk of default on receivables by continuously monitoring the creditworthiness and payment behavior of our customers and by setting appropriate credit limits. Risks are also limited through the use of credit insurance and bank guarantees. Due to the global activities and diversified customer structure of the BASF Group, there are no major concentrations of credit default risk.

Impairment risks

Asset impairment risk arises if the assumed interest rate in an impairment test increases, the predicted cash flows decline, or investment projects are suspended. Following the impairments recognized in the third quarter of 2020, we currently consider the risk of further impairment for assets such as property, plant and equipment, goodwill, technologies and trademarks to be immaterial. The same applies to investments accounted for using the equity method, with the exception of Wintershall Dea, which was revalued in 2019. As the value of the shareholding is dependent on expected

oil and gas price developments, impairments of the shareholding and of the assets held by the company are possible.

Long-term incentive program for senior executives
BASF offers leaders the opportunity to participate in a share price-based compensation program. The need for provisions for this program varies according to the development of the BASF share price and the MSCI World Chemicals Index; this leads to a corresponding increase or decrease in personnel costs.

From 2020 onward, the previous long-term incentive (LTI) program for senior executives will be replaced by a new LTI program in the form of a performance share plan. The new LTI plan incentivizes the achievement of strategic growth, profitability and sustainability targets and takes into account the development of the BASF share price and the dividend. The need for provisions for this program varies according to assumptions on the degree of strategic target achievement, the development of the BASF share price and the dividend. This leads to a corresponding increase or decrease in personnel costs.

Risks from pension obligations
Most employees are granted company pension benefits from either defined contribution or defined benefit plans. We predominantly finance company pension obligations externally through separate plan assets. This particularly includes BASF Pensionskasse VVaG and BASF Pensionstreuhand e.V. in Germany, in addition to the large pension plans of our Group companies in North America, the United Kingdom and Switzerland. To address the risk of underfunding due to market-related fluctuations in plan assets, we have investment strategies that align return and risk optimization to the structure of the pension obligations. Stress scenarios are also simulated regularly by means of portfolio analyses. An adjustment to the interest rates used in discounting pension obligations leads immediately to changes in equity. To limit the risks of changing financial market conditions as well as demographic developments, employees have, for a number of years now, been almost exclusively offered defined contribution plans for future years of service. Some of these contribution plans include minimum interest guarantees. If the pension fund cannot generate this, it must be provided by the employer. A permanent continuation of the low interest rate environment could make it necessary to recognize pension obligations and plan assets for these plans as well.

Long-term opportunities and risks

Long-term demand development
We assume that growth in chemical production (excluding pharmaceuticals) will be slightly stronger than global gross domestic product over the next five years and will be considerably stronger than the previous five-year average. Through our market-oriented and broad portfolio, which we will continue to strengthen in the years ahead through investments in new production capacities, research and development activities and acquisitions, we aim to achieve volume growth that slightly exceeds this market growth. Should global economic growth see unexpected, considerable deceleration because of prolonged restrictions due to the coronavirus pandemic, an ongoing weak period in the emerging markets, protectionist tendencies or geopolitical crises, the expected growth rates could prove too ambitious.

For more information on the corporate strategy, see page 26 onward

Development of competitive and customer landscape
We expect competitors from Asia and the Middle East in particular to gain increasing significance in the years ahead. Furthermore, we predict that many producers in countries rich in raw materials will expand their value chains. We counter this risk through active portfolio management.

We continuously improve our processes in order to remain competitive through our operational excellence. We are streamlining our administration, sharpening the roles of services and regions, and simplifying procedures and processes as part of our ongoing Excellence Program.

In order to achieve lasting profitable growth, tap into new market segments and make our customers more successful, our research and business focus is on highly innovative business areas, some of which we enter into through strategic cooperative partnerships.

For more information on the Excellence Program, see page 21

Innovation
The central research areas Process Research & Chemical Engineering, Advanced Materials & Systems Research and Bioscience Research serve as global platforms headquartered in our regions: Europe, Asia Pacific and North America. Together with the development units in our operating divisions, they form the core of the global Know-How Verbund. Our strong regional presence opens up opportunities to participate in local innovation processes and gain access to local talent. We optimize the effectiveness and efficiency of our research activities through our global Know-How Verbund.

Research activities funded by the BASF Group promote the targeted development and enhancement of key technologies as well as the establishment of new business areas. Focus areas in research are determined based on their strategic relevance for BASF, above and beyond existing business areas.

We also address the risk of the technical or economic failure of research and development projects by maintaining a balanced and comprehensive project portfolio, as well as through professional, milestone-based project management.

Potential applications of digital technologies and solutions along the entire value chain are evaluated and implemented in the divisions and service units as well as by cross-divisional teams. They are supported here by the Global Digital Services unit. We analyze the opportunities and risks of digitalization in Production, Logistics, Research & Development and for business models as well as in corporate functions such as Finance, Human Resources, Procure-

ment & Supply Chain Services, Legal, Taxes, Insurance and Intellectual Property.

The opportunities and risks of digitalization are steered by the divisions and service units.

The trust of customers and consumers is essential for the successful introduction of new technologies. That is why we enter into dialog with our stakeholders at an early stage of development. The trend toward increased sustainability requirements in our customer industries continues. Our aim is to leverage the resulting opportunities in a growing market even more effectively in the future with innovations. This is why we applied the Sustainable Solution Steering method, which is used to evaluate the sustainability of our product portfolio, to assessments of innovation projects, and integrated it into an early stage of our research and development processes as well as the development of our business strategies. In this way, we want to benefit from the higher profitability of our Accelerator products compared with the rest of our evaluated portfolio. At the same time, we reduce reputational and financial risks by phasing out products for which we have identified substantial sustainability concerns ("Challenged" products) within five years of initial classification as such at the latest. We develop action plans for these products at an early stage to minimize any potential financial risks. These can include research projects, reformulations or even replacing one product with another.

For more information on innovation, see page 35 onward

Portfolio development through investments

Our decisions on the type, scope and locations of our investment projects are based on assumptions related to the long-term development of markets, margins and costs, as well as raw material availability and country, currency and technology risks. Opportunities and risks arise from potential deviations in actual developments from our assumptions. We expect the increase in chemical production in emerging markets in the coming years to remain above the global average. This will create opportunities that we want to exploit by expanding our local presence.

For more information on our investment projects, see page 157 onward

Acquisitions, divestitures and cooperations

In the future, we will continue to expand and refine our portfolio through acquisitions that promise above-average profitable growth, are innovation-driven or offer a technological differentiation and help achieve a relevant market position, and make new, sustainable business models possible.

The evaluation of opportunities and risks plays a significant role during the assessment of acquisition targets. A detailed analysis and quantification is conducted as part of due diligence. Examples of risks include increased staff turnover, delayed realization of synergies, or the assumption of obligations that were not precisely quantifiable in advance. If our expectations in this regard are not met, risks could arise, such as the need to impair intangible assets; however, there could also be opportunities, for example, from additional synergies.

Divestitures also play a key role in the development of our portfolio. Risks could arise from divestitures as a result of potential warranty claims or other contractual obligations, such as long-term supply agreements.

For more information on our acquisitions and divestitures, see page 51 onward

Recruitment and long-term retention of qualified employees

BASF anticipates growing challenges in attracting qualified employees in the medium and long term due to demographic change, especially in North America and Europe. As a result, there is an increased risk that job vacancies may not be filled with suitable applicants, or only after a delay. We address these risks with measures to integrate diversity, employee and leadership development, and intensified employer branding. At local level, demographic management includes succession planning, knowledge management and offerings to improve the balance between personal and professional life and promote healthy living. This increases BASF's appeal as an employer and retains our employees in the long term.

For more information on the individual initiatives and our goals, see page 144 onward

Sustainability

Opportunities and risks that could arise from material sustainability topics can only rarely be measured in specific financial terms and have an impact on business activities, especially in the medium to long term.

We reduce potential risks in the areas of environmental protection, safety and security, health protection, product stewardship, compliance, supplier relationships and labor and social standards by setting ourselves globally uniform requirements. These often go beyond local legal requirements.

We verify compliance with these standards through internal monitoring systems such as global surveys or audits. In 2020, for example, suppliers were audited for sustainability at a number of sites. Our global Code of Conduct was revised in 2020 to which all employees, managers and Board members are required to adhere. It defines a binding framework for our activities. The monitoring systems are complemented by grievance mechanisms such as our compliance hotlines.

Furthermore, ongoing climate change poses both opportunities and risks for BASF. As an energy-intensive company, climate-related risks arise particularly from regulatory changes, such as in carbon prices through emissions trading systems, taxes or energy legislation. In addition, BASF's emissions footprint and intensity could lead to a negative perception and reduced appeal among external stakeholders such as customers or investors. We counter these risks with our carbon management measures and by transparently disclosing our positions on and contributions to climate protection (such as political demands, progress in the implementation of our climate strategy and how our products help

to protect the environment) in publicly accessible sources (such as this annual report or on the BASF website) and in direct dialog with external stakeholders.

Risks to our production and our supply chain resulting from greater weather extremes (e.g. storms), highly fluctuating water levels and increased water temperatures are addressed by our risk management in production and in procurement. For example, we can no longer rule out extreme low-water situations or heat waves caused by climate change at our Verbund site in Ludwigshafen, Germany. In 2019/2020, we therefore implemented a package of climate resilience measures.

In addition to climate-related risks, there are also opportunities. Our broad product portfolio includes, among other things, solutions for the circular economy and climate protection (such as insulation foams for buildings, materials for electromobility and bio-based products). Increased social awareness offers additional market opportunities for these products. We are working with numerous scientific and public organizations and initiatives on solutions for sustainable agriculture that meet economic, ecological, and social demands over the long term.

Our decentralized specialists use a central decision tree to document reportable sustainability risks within the meaning of section 289b et seq. of the German Commercial Code. No reportable residual net risks within the meaning of section 289b et seq. of the German Commercial Code were identified for 2020.

For more information on sustainability management, see page 42 onward
For more information on energy and climate protection, see page 130 onward
For more information on opportunities and risks from energy policies, see page 161
For more information on our positions on and contributions to climate protection, see basf.com/climate_protection