Chapter 2 pages 15–130

2

Management's Report

Overview

The Management's Report comprises the chapter of the same name on pages 15 to 130, 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 audit of the annual financial statements, the external auditor 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 substantive audit with limited assurance of the NFS. A report on this substantive audit can be found online at basf.com/nfs-audit-2018 and is part of the BASF Report 2018. The audit 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 auditing standards for sustainability reporting.

Compensation Report and disclosures in accordance with section 315a HGB

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 146 onward, and the disclosures in accordance with section 315a(1) HGB (takeover-related disclosures) from page 137 onward. They form part of the Management's Report, which is audited as part of the audit of the annual financial statements.

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

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 131 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
- 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.

Further information

The following symbols indicate important information:

You can find more information in this report.

You can find more information online.

The content of this section is not part of the statutory audit of the annual financial statements 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.

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

NFS disclosure	Topics	Concepts and results
Business model	The BASF Group	Pages 18–21
Environmental matters	Process safety	Page 24 (goals) Pages 95 and 97–98 (goals, measures, results)
	Emergency response and corporate security	Pages 95 and 98–99 (goals, measures, results)
	Product stewardship	Page 24 (goals) Pages 95 and 100–101 (goals, measures, results)
	Transportation and storage	Pages 95 and 102 (goals, measures, results)
	Energy and climate protection	Page 24 (goals) Pages 95 and 103–106 (goals, measures, results)
	Emissions to air	Pages 95 and 107 (goals, measures, results)
	Management of waste and contaminated sites	Pages 95 and 107 (goals, measures, results)
	Water	Page 24 (goals) Pages 95 and 108–109 (goals, measures, results)
	Portfolio management	Page 24 (goals) Pages 37–38 (goals, measures, results)
	Supplier management	Page 23 (goals) Pages 90–91 (goals, measures, results)
Employee-related matters	Occupational safety	Page 24 (goals) Pages 95 and 96–97 (goals, measures, results)
	Health protection	Page 24 (goals) Pages 95 and 98 (goals, measures, results)
	Employee engagement	Page 111 (goals, measures, results)
	What we expect from our leaders	Page 111 (goals, measures, results)
	Inclusion of diversity	Page 23 (goals) Page 112 (goals, measures, results)
	Competition for talent	Page 113 (goals, measures, results)
	Learning and development	Pages 113–114 (goals, measures, results)
	Compensation and benefits	Page 114 (goals, measures, results)
	Dialog with employee representatives	Page 115 (goals, measures, results)
	Global labor and social standards	Page 115 (goals, measures, results)
	Supplier management	Page 23 (goals) Pages 90–91 (goals, measures, results)
Social matters	Social commitment	Page 40 (goals, measures, results)
Respect for human rights	Responsibility for human rights	Page 39 (goals, measures, results)
	Global labor and social standards	Page 115 (goals, measures, results)
	Supplier management	Page 23 (goals) Pages 90–91 (goals, measures, results)
Anti-corruption and bribery matters	Compliance	Pages 140–141 (goals, measures, results)
	Supplier management	Page 23 (goals) Pages 90–91 (goals, measures, results)

The BASF Group

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 122,000 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. Until December 31, 2018, our portfolio was arranged into four segments: Chemicals, Performance Products, Functional Materials & Solutions and Agricultural Solutions.[1] Since January 1, 2019, BASF's activities have been grouped into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions.

Intelligent Verbund concept

Production, technology, market, digitalization

In 90+ countries

employees contribute to our success and that of our customers worldwide

New organization

since January 1, 2019

Closer to customers

by embedding business-critical parts of the functional units into the divisions

Organization of the BASF Group until December 31, 2018

- **Twelve divisions grouped into four segments**
- **Regional divisions, functional units and corporate and research units support our business**

Until December 31, 2018, our 12 divisions[1] were grouped into four segments based on their business models: Chemicals, Performance Products, Functional Materials & Solutions and Agricultural Solutions. On September 27, 2018, BASF and LetterOne signed a definitive agreement to merge their oil and gas businesses in a joint venture. The new joint venture will operate under the name Wintershall DEA. Since the agreement was signed, we have no longer reported on BASF's oil and gas business as a separate Oil & Gas segment. Until closing, its earnings will be presented as a separate item, income after taxes from discontinued operations. Closing of the transaction is expected in the first half of 2019, subject to the approvals of merger control and foreign investment authorities as well as mining authorities and the German Federal Network Agency. In the Agricultural Solutions segment, we renamed the division from Crop Protection to Agricultural Solutions after the acquisition of significant businesses from Bayer was closed in August 2018, especially for seeds.

Our divisions bear operational responsibility and are organized according to sectors or products. They manage our 54 global and regional business units and develop strategies for the 86 strategic business units.[1]

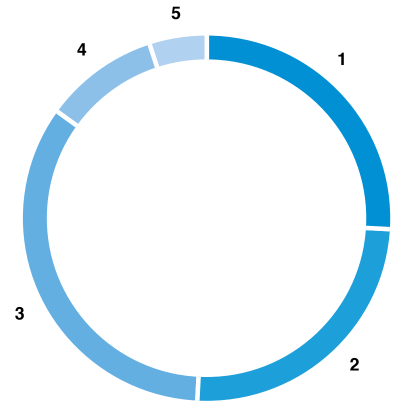
Our regional units are responsible for optimizing local infrastructure, and contribute to tapping our market potential. For financial reporting purposes, we organize the regional divisions into four regions: Europe; North America; Asia Pacific; South America, Africa, Middle East.

Seven functional units and eight corporate units support the BASF Group's business activities. The functional and corporate units provide services in areas such as finance, human resources, engineering and site management, environmental protection, health and

BASF structure until December 31, 2018[1]

Percentage of total sales in 2018

1	Chemicals	– Petrochemicals – Monomers – Intermediates	26%
2	Performance Products	– Dispersions & Pigments – Care Chemicals – Nutrition & Health – Performance Chemicals	25%
3	Functional Materials & Solutions	– Catalysts – Construction Chemicals – Coatings – Performance Materials	34%
4	Agricultural Solutions	– Agricultural Solutions	10%
5	Other		5%



1 Excluding the oil and gas activities presented as discontinued operations

safety, investor relations, and communications. Our global research units safeguard our innovative capacity and competitiveness.

Business processes such as the procurement of raw materials and services, production and transport to customers are the shared responsibility of the divisions and the functional units.

For more information on the products and services offered by the segments, see from pages 61, 68, 75 and 81 onward

For more information on the effects of the agreement with LetterOne, see page 86

New organization of the BASF Group as of January 1, 2019

As of January 1, 2019, we have twelve divisions grouped into six segments as follows:

- **Chemicals:** Petrochemicals and Intermediates
- **Materials:** Performance Materials and Monomers
- **Industrial Solutions:** Dispersions & Pigments and Performance Chemicals
- **Surface Technologies:** Catalysts, Coatings and Construction Chemicals
- **Nutrition & Care:** Care Chemicals and Nutrition & Health
- **Agricultural Solutions:** Agricultural Solutions

We are considering the possibility of merging our construction chemicals business with a strong partner, as well as the option of divesting this business. The outcome of this review is open. The Construction Chemicals division will be reported under the Surface Technologies segment until signing of a transaction agreement.

BASF's new segment structure will allow a more differentiated steering of our businesses according to their market-specific competitive environment. It will increase transparency regarding the results of our segments and divisions and highlight the importance of the Verbund and value chains to our business success. BASF aims to clearly position its businesses against their relevant competitors and establish a high-performance organization to enable BASF to be successful in an increasingly competitive market environment.

The **Chemicals** segment will remain the cornerstone of our Verbund structure. It supplies the other segments with basic chemicals and intermediates, contributing to the organic growth of our key value chains. Alongside internal accounts, our customers include the chemical and plastics industries. We aim to increase our competitiveness through technological leadership and operational excellence.

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 aim to grow organically through differentiation via specific technological expertise, industry know-how and customer proximity to maximize value in the isocyanate and polyamide value chains.

The **Industrial Solutions** segment develops and markets ingredients and additives for industrial applications such as polymer dispersions, pigments, resins, electronic materials, antioxidants and admixtures. We aim to drive organic growth in key industries such as automotive, plastics or electronics and expand our position in value-enhancing ingredients and solutions by leveraging our comprehensive industry expertise and application know-how.

The **Surface Technologies** segment comprises our businesses that offer chemical solutions on and for surfaces. Its portfolio includes coatings, rust protection products, catalysts and battery materials for the automotive and chemical industries. The aim is to drive organic growth by leveraging our portfolio of technologies and know-how, and to establish BASF as a leading and innovative provider of battery materials as well.

In the **Nutrition & Care** segment, we strive to expand our position as a leading provider of nutrition and care ingredients for consumer products in the area of nutrition, home and personal care. Customers include food and feed producers as well as the pharmaceutical, cosmetics, detergent and cleaner industries. We aim to enhance and broaden our product and technology portfolio. 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.

The **Agricultural Solutions** segment aims to further strengthen our market position as an integrated provider of crop protection products and seeds. Its portfolio comprises fungicides, herbicides, insecticides and biological crop protection products, as well as seeds and seed treatment products. We also offer farmers digital solutions combined with practical advice. Our main focus is on innovation-driven organic growth, targeted portfolio expansion as well as leveraging synergies from the acquired businesses.

In addition to the new segment structure, the composition of a number of divisions will also change. The propylene oxide and propylene glycol business will be transferred from the Petrochemicals division to the Monomers division. The superabsorbents business will be allocated to the Petrochemicals division rather than the Care Chemicals division in the future. The styrene, polystyrene and styrene-based foams business, which previously mainly fell under the Performance Materials division and a small part under Other, will be bundled in the Petrochemicals division.

In addition, BASF will embed business-critical parts of its functional units – such as engineering services, procurement and logistics – into the divisions to bring its employees closer to its customers and improve customer-specific agility. We will create leaner structures in our functional units, research and development and in governance functions.

For more information on the new segment structure as of January 1, 2019, see the Notes to the Consolidated Financial Statements from page 211 onward

Sites and Verbund

- Six Verbund sites with intelligent plant networking
- 355 additional production sites worldwide

BASF has companies in more than 90 countries. We operate six Verbund sites and 355 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 before being implemented at additional sites.

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 feedstock elsewhere. This not only saves us raw materials and energy, it also avoids emissions, lowers logistics costs and leverages synergies.

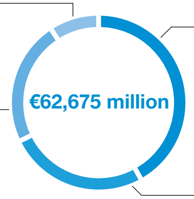
We also make use of the intelligent Verbund principle for more than production, applying it for technologies, the market and digitalization as well. Expert knowledge is pooled in our global research platforms.

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

BASF sites

BASF sales by region 2018

Location of customer



BASF sales by industry 2018

Direct customers

>20%	Chemicals and plastics
10–20%	Consumer goods | Transportation
5–10%	Agriculture | Construction | Energy and resources
<5%	Health and nutrition | Electronics

Corporate legal structure

As the publicly traded parent company, BASF SE takes a central position: Directly or indirectly, it holds the shares in the companies belonging to the BASF Group, and is also the largest operating company. The majority of Group companies cover a broad spectrum of our business. In the BASF Group Consolidated Financial Statements, 323 companies including BASF SE are fully consolidated. We consolidate eight joint operations on a proportional basis, and account for 35 companies using the equity method.

For more information, see the Notes to the Consolidated Financial Statements from page 202 onward

Procurement and sales markets

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

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

We work with over 70,000 Tier 1 suppliers from different sectors worldwide. They supply us with important raw materials, chemicals, investment goods and consumables, and perform a range of services. Some of our most important raw materials are naphtha, natural gas, methanol, ammonia and benzene.

For more information on customers, see page 116; for more information on suppliers, see page 90 onward

Business and competitive environment

BASF's global presence means that it operates in the context of local, regional and global developments and is bound by various 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 75% of the business areas in which it is active. Our most important global competitors include Arkema, Clariant, Covestro, DowDuPont, DSM, Evonik, Formosa Plastics, Huntsman, Lanxess, SABIC, Sinopec, Solvay, 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.

1 The method used to calculate customers in the previous year has been adjusted to "sold-to" parties of our consolidated companies. The updated figure for 2017 is over 80,000 customers.

How We Create Value

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

Our inputs

Financial
- Total assets of **€86.6 billion**
- **€36.1 billion** in equity

Innovation
- More than **11,000** employees in research and development
- Research and development expenses of **€2.0 billion**

Environment
- **15.1 million MWh** of electricity demand
- **39.4 million MWh** of steam demand
- **€277 million** invested in environmental protection

Operations
- **€10.7 billion** invested in property, plant and equipment and intangible assets
- **148** safety, security, health and environmental protection audits
- Over **70,000** suppliers

Employees
- **122,404** employees worldwide, of which **3,174** apprentices
- **Development opportunities** for all employees

Partnerships
- **>50** external compliance hotlines
- **100** raw material supplier sites audited on sustainability standards

Our business model

We create chemistry for a sustainable future

- We offer our **90,000+** customers innovative solutions for a sustainable future
- **6 action areas** help us to sharpen our customer focus
- **4** segments
- **12** operating divisions
- **86** strategic business units

Intelligent Verbund system

- **6** Verbund sites
- **355** additional production sites worldwide
- BASF Group companies in more than **90** countries

Our outputs

Financial
- **€62.7 billion in sales**
- Net income of **€4.7 billion**
- **€1.1 billion** in income taxes

Innovation
- **Sales of around €9 billion** from innovations that we have launched in the past five years
- Around **3,000** projects in research pipeline
- Around **900** patents filed worldwide

Environment
- **31.6 million MWh energy** saved by the Verbund and combined heat and power generation
- **6.3 million metric tons of CO_2** saved by energy efficiency

Operations
- **60,000+** product applications assessed and rated for aspects of sustainability
- Number of lost-time injuries per 200,000 working hours: **0.3**
- **0 transportation incidents** with significant impact on the environment

Employees
- **21.7%** Proportion of women in leadership positions
- **Early turnover rate of 1.3%**

Partnerships
- Involved in **U.N. Global Compact** since 2000
- **8** Academic Research Alliances bundle partnerships with university research groups

1 The figures in this graphic have been audited within the scope of the relevant sections of the Management's Report in which they appear.

Goal Achievement in 2018

We carry out our corporate purpose, "We create chemistry for a sustainable future," by pursuing ambitious goals along our entire value chain. In this way, we aim to achieve profitable growth and take on social and environmental responsibility. This also helps to achieve the United Nations' Sustainable Development Goals (SDGs).[1] We are focusing on issues where we as a company can make a significant contribution, such as sustainable consumption and production, climate protection or fighting hunger.

Goal areas along the value chain

SUPPLIERS	BASF	CUSTOMERS
Procurement	Growth and profitability; employees; safety in production; product stewardship; energy and climate protection; water	Products and solutions

Procurement

	2020 goal	Status at end of 2018	SDGs	More on
Assessment of sustainability performance of relevant suppliers[2]; development of action plans where improvement is necessary	70%	60%	SDG 8, 12, 16, 17	Page 90

2 Our suppliers are evaluated based on risk due to the size and scale of our supplier portfolio. We define relevant suppliers as Tier 1 suppliers showing an elevated sustainability risk potential as identified by our risk matrices and our purchasers' assessments. We also use further sources of information to identify relevant suppliers such as evaluations from Together for Sustainability (TfS), a joint initiative of chemical companies for sustainable supply chains.

1 Sustainable Development Goals (SDGs): SDG 1 – No poverty, SDG 2 – Zero hunger, SDG 3 – Good health and well-being, SDG 4 – Quality education, SDG 5 – Gender equality, SDG 6 – Clean water and sanitation, SDG 7 – Affordable and clean energy, SDG 8 – Decent work and economic growth, SDG 9 – Industry, innovation and infrastructure, SDG 10 – Reduced inequalities, SDG 11 – Sustainable cities and communities, SDG 12 – Responsible consumption and production, SDG 13 – Climate action, SDG 14 – Life below water, SDG 15 – Life on land, SDG 16 – Peace, justice and strong institutions, SDG 17 – Partnerships for the goals

For more information on the SDGs, see sustainabledevelopment.un.org

Growth and profitability

As determined in 2015, our aim was, on average, to grow sales slightly faster and EBITDA considerably faster than global chemical production (excluding pharmaceuticals; 2018: 2.7%; average change since 2015: 3.3%), and to earn a significant premium on our cost of capital. Another goal was to achieve a high level of free cash flow each year, either raising or at least maintaining the dividend at the prior-year level.

For more information on our results of operations in 2018, see pages 46 to 50
For more information on our financial position in 2018, see pages 53 to 56
For a definition of "slight" and "considerable," see Actual Development Compared with Outlook for 2018 on page 57

	2018	Change since 2017	Average change since 2015[4]
Sales[3]	€62.7 billion	2.4%	3.3%
EBITDA[3]	€9.2 billion	(14.9%)	3.8%
Dividends per share paid out	€3.10	€0.10	
Premium on cost of capital	€0.8 billion		
Free cash flow	€4.0 billion		

3 The average change was calculated using the changes in the non-adjusted figures from 2015 to 2017 and the change in the adjusted figures from 2018 to 2017. This gives an approximate average change on a comparable basis in each case. However, the figures does not take into account the structural decline in sales and EBITDA due to the classification of the oil and gas business as a discontinued operation.
4 Baseline 2015: excluding the gas trading and storage business transferred to Gazprom

Employees

	2021 goal	Status at end of 2018	SDGs	More on
Proportion of women in leadership positions with disciplinary responsibility	22–24%	21.7%	SDG 5, 16	Page 112
	Long-term goals			
International representation among senior executives[5]	Increase in proportion of non-German senior executives (baseline 2003: 30%)	40.4%		Page 112
Senior executives with international experience	Proportion of senior executives with international experience over 80%	85.4%		Page 112

5 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.

Safety in production

	2025 goal	Status at end of 2018	SDGs	More on
Reduction of worldwide lost-time injury rate per 200,000 working hours	≤0.1	0.3	SDG 3, 8	Page 96
Reduction of worldwide process safety incidents per 200,000 working hours	≤0.1	0.3	SDG 3, 12, 15	Page 97
	Annual goal			
Health Performance Index	>0.9	0.96	SDG 3, 8	Page 98

Product stewardship

	2020 goal	Status at end of 2018	SDGs	More on
Risk assessment of products that we sell in quantities of more than one metric ton per year worldwide	>99%	91%	SDG 3, 12	Page 100

Energy and climate protection

	2020 goal	Status at end of 2018	SDGs	More on
Coverage of our primary energy demand by certified energy management systems (ISO 50001) at all relevant sites[1]	90%	73.0%	SDG 7, 12, 13, 14, 15	Page 105
Reduction of greenhouse gas emissions per metric ton of sales product (excluding the oil and gas business, baseline 2002)	(40%)	(34.2%)	SDG 12, 13, 14, 15	Page 104

1 The selection of relevant sites is determined by the amount of primary energy used and local energy prices; figures relate to BASF operations including the discontinued oil and gas business.

Water

	2025 goal	Status at end of 2018	SDGs	More on
Introduction of sustainable water management at all production sites in water stress areas and at all Verbund sites (excluding the oil and gas business)	100%	50.0%	SDG 3, 6, 12, 14, 15	Page 108

Products and solutions

	2020 goal	Status at end of 2018	SDGs	More on
Increase the proportion of sales generated by products that make a substantial contribution to sustainable development (Accelerator products)	28%	27.7%	SDG 3, 8, 9, 12, 13	Page 37

Business expansion in emerging markets

Sales[2] in emerging markets

	Emerging markets	Industrialized countries
2018	35%	65%
2008	29%	71%

■ Emerging markets ■ Industrialized countries

2 Percentage of BASF Group sales by location of customer

Overall, growth in the emerging markets declined slightly in 2018. We define the emerging markets as Greater China, the ASEAN countries,[3] India, Pakistan and Bangladesh; Central and South America; eastern Europe; the Middle East, Turkey and Africa. Momentum eased slightly in eastern Europe. The eastern E.U. countries continued to post dynamic growth, albeit slower than in the previous year. Russia's output rose faster than in the previous year, buoyed by the comparatively high oil price and strong growth in the construction sector. In the emerging markets of Asia, which account for over 60% of the gross domestic product (GDP) of all emerging economies, growth declined slightly. The Chinese economy noticeably cooled, while India and Thailand saw stronger increases in economic output compared with the previous year. In South America, the economy darkened significantly as Argentina fell back into recession. Brazil continued its moderate recovery despite political uncertainty ahead of the presidential elections and production outages caused by strikes in the spring. Although growth slowed significantly in Turkey, the Middle East as a whole only recorded a slight decline. The oil-producing states benefited from rising oil prices. Growth remained more or less stable in Africa, too. The weaker trend in South Africa was offset by a marked upturn in Nigeria.

Compared with 2017, sales at our companies located in emerging markets rose by 2% to €17,144 million, largely as a result of higher sales prices and volumes. Measured by location of customer, we increased sales in the emerging markets by 1% to €21,799 million. This brought sales to customers in emerging markets to around 35% of total sales in 2018.

3 Brunei, Indonesia, Malaysia, Myanmar, Cambodia, Laos, the Philippines, Singapore, Thailand, Vietnam

Our Strategy

Corporate Strategy

At BASF, we are passionate about chemistry and our customers. Thanks to our expertise, our innovative and entrepreneurial spirit, and the power of our Verbund integration, our innovations have decisively contributed to changing the world we live in for the better for more than 150 years. To be the world’s leading chemical company for our customers, we will grow profitably and add value to society. This is how we create chemistry for a sustainable future.

Today, the world is changing more rapidly than ever before, driven by demographic change and new digital technologies. Our customers in different industries and regions face diverse social and environmental challenges due to limited natural resources and increasing consumer demands. Chemistry is key to solving many of these challenges. By combining our unique expertise with our customers’ competence, we will jointly develop profitable, innovative and responsible solutions for these global trends.

Our purpose reflects what we do and why we do it: We create chemistry for a sustainable future. We pursue this purpose with our corporate strategy, which was updated in 2018. We want to contribute to a world that provides a viable future with enhanced quality of life for everyone. This is why we offer products and solutions that make the best use of available resources.

Corporate purpose

We create chemistry for a sustainable future

Global trends provide opportunities for growth in the chemical industry

Demographic change:
Share of population aged 60 and over by 2050
+130%

Digitalization:
Rapid growth in volume of data
50 zettabytes by 2020

Population growth:
Driven by the emerging markets by 2050
+32%

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

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

Electromobility:
Growing demand for battery materials by 2025
+300%

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

Our aspiration is to be the world’s leading chemical company. With our updated corporate strategy, which was announced in November 2018, we are targeting profitable growth. We aim to grow organically and thus will strengthen our customer focus. The Asian market plays an important role in our growth strategy. With a share of more than 40%, China is already the largest chemical market and drives the growth of global chemical production. By 2030, China’s share will increase to nearly 50%, and we want to participate in this growth. To drive forward our growth in this dynamic market, we plan to build an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong. We also want to expand our existing joint venture with Sinopec in Nanjing.

As part of our aspiration to be the world’s leading chemical company for our customers, we want to strengthen our passion for customers throughout the entire organization. We want to grow profitably and create value for society. To achieve this, we have set ourselves ambitious financial and nonfinancial targets.

New targets from 2019 onward

Business success tomorrow means creating value for the environment, society and business. We have set ourselves new financial and nonfinancial targets so that our customers, investors, employees and other stakeholders can track our progress.

We want to grow faster than the market and thus be economically successful and profitable. Furthermore, we want to provide answers to the most pressing challenges of our time. To combat climate change and global warming, we have committed ourselves to growing production volumes without adding further CO_2 emissions until 2030. This means we will decouple greenhouse gas emissions from organic growth. We have also defined targets for a sustainable product portfolio, responsible procurement and engaged employees. Safety for people and the environment, inclusion of diversity and water management will remain a top priority.

The new targets will apply from 2019 onward and will replace our previous goals. In this way, we want 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).

Financial targets

Grow **sales volumes faster** than **global chemical production** every year

Increase **EBITDA before special items** by **3% to 5%** per year

Achieve a **return on capital employed (ROCE)**[1] considerably **above the cost of capital percentage** every year

Increase the **dividend per share** every year based on a **strong free cash flow**

Nonfinancial targets

Grow **CO_2-neutrally** until 2030

For more information, see pages 103 to 106

Achieve **€22 billion** in **Accelerator sales**[2] by 2025

For more information, see pages 37 to 38

Cover **90%** of our relevant spend[3] with **sustainability evaluations** by 2025, and have **80%** of our suppliers improve their **sustainability performance** upon re-evaluation

For more information, see pages 90 to 91

More than **80%** of our **employees** feel that at BASF, they can **thrive** and **perform at their best**

For more information, see pages 110 to 115

Existing nonfinancial targets

Reduce the worldwide **lost-time injury rate** per 200,000 working hours to **≤0.1** by 2025

For more information, see pages 96 to 97

Reduce worldwide **process safety incidents** per 200,000 working hours to **≤0.1** by 2025

For more information, see pages 97 to 98

Introduce sustainable **water management** at all production sites **in water stress areas** and at all **Verbund sites** by 2030

For more information, see pages 108 to 109

Increase the proportion of **women in leadership positions** with disciplinary responsibility to **22–24%** by 2021

For more information, see pages 110 to 115

1 Return on capital employed (ROCE) is a measure of the profitability of our operations. We calculate this indicator as the EBIT generated by the segments as a percentage of the average cost of capital basis.
2 Accelerator products are products that make a substantial sustainability contribution in the value chain.
3 We understand relevant spend as procurement volumes with suppliers defined as relevant. For more information, see page 90.

Our strategic action areas

To reach our goals and be the leading company in the chemical industry for our customers, we want to strengthen our performance in innovation and in operations as the leading chemical producer and plant operator, leverage digital ways of working across the entire company, and integrate sustainability more deeply into our business decisions. We want to strengthen our passion for our customers in all employees. We aim to strengthen our portfolio and further develop our organization to better meet customer needs using the power of our Verbund integration. We have defined six strategic action areas through which we will sharpen our customer focus.[1]

Innovation

Our ambition is to be the most attractive partner for our customers whenever they are confronted with challenges that can be approached with chemistry. Our research and development competences are unique in the chemical industry. We aim to build on and leverage our position as a leading innovator to jointly develop innovations for our customers. We will design our innovation chain to be as seamless as possible so that we can bring products to the market more quickly. This means fostering a higher level of excellence throughout the entire innovation process, starting from the lab all the way to the customer.

For more information on innovation, see page 31 onward

Sustainability

We are successful in the long term when our products, solutions and technologies add value to the environment, society and the economy. We want to be a thought leader in sustainability and increase the relevance of sustainability in our decision-making processes and business models. This secures the long-term success of our company, creates business opportunities and establishes us as a key partner supporting our customers.

For more information on the integration of sustainability, see page 36 onward

Action areas sharpen customer focus

Operations

We are committed to running our production safely, efficiently and reliably so that we can deliver products to our customers on spec and on time. We aim to further improve the reliability and availability of our plants, as well as our agility. Above and beyond this, continuous process improvements and effective debottlenecking of our existing asset base are paramount to ensure our competitiveness.

For more information on operations, see page 96 onward

Digitalization

We want to make digitalization an integral part of BASF's business. This will create additional value for our customers, grow our business and improve efficiency. By promoting comprehensive digital skills among our future leaders and our entire workforce, we will ensure that the necessary resources are available.

For more information on digitalization, see pages 33 and 111

Portfolio

We will sharpen our portfolio and focus our capital allocation more towards growing business areas. We will focus primarily on organic growth through capital expenditures and innovation, but also make targeted acquisitions where this makes strategic sense and creates value. The new segment structure will create a higher transparency regarding the steering of our businesses, the importance of value chains and the role of our Verbund. The physical, technological, market and digital integration of the Verbund continues to be at the core of our portfolio and our unique strength.

For more information on our organization and the Verbund, see page 18 onward

Employees

We aim to clearly position each business against its relevant competitors and establish a high-performance organization to enable us to be successful in an increasingly competitive market environment. We will adapt our business models and organizational structures so that each business unit can optimally serve its market segment. Our people are what will make the implementation of our updated strategy successful. We rely on the engagement of our employees and give them the tools and skills necessary to be able to offer our customers differentiated and customized products and services.

For more information on employees, see page 110 onward

1 We defined six strategic action areas in our updated corporate strategy, which was announced in November 2018. They build on the four strategic principles of the "We create chemistry" strategy – we add value as one company; we innovate to make our customers more successful; we drive sustainable solutions; we form the best team – according to global trends and challenges as well as their implications for BASF.

Corporate values

guide our conduct and actions

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

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 our 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.

Global standards

- **We act according to our values and internationally recognized standards of conduct and review our performance with audits**

Our standards fulfill or 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. In terms of labor and social standards, this takes place using three elements: the Compliance Program (including the compliance hotlines, which can be used for internal and external questions or complaints), close dialog with our stakeholders (such as with employee representatives or international organizations), 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 labor and social standards, see page 115
For more information on the Responsible Care Management System, see page 95
For more information on supplier standards, see page 90 onward
For more information on corporate governance and compliance, see page 132 onward

The BASF brand

BASF's success as an integrated global chemical company relies on having a strong brand. Our brand and mission are manifested in our strategy and our corporate purpose – "We create chemistry for a sustainable future" – as well as our values. "Connected" describes the essence of the BASF brand. Connectedness is one of BASF's great strengths. Our Verbund concept – realized in production, technologies, the market and digitalization – enables innovative solutions for a sustainable future. The claim that "We create chemistry," as stated in the BASF logo, helps us embed this solution-oriented strategy in the public perception. Our brand creates value by helping communicate its benefits for our stakeholders as well as our values.

Wherever our stakeholders encounter our brand, we want to convince them that BASF stands for connectedness, intelligent solutions, value-adding partnerships, an attractive working environment and sustainability. This contributes to our customers' confidence and to our company value.

We are constantly developing our brand image. We regularly measure awareness of and trust in our brand, and therefore in our company. A global study conducted by an independent market research institution every two years again showed in 2018 that, in terms of awareness and trust, BASF is above the industry average in numerous countries. Our goal is to continue increasing awareness of BASF in all of our relevant markets.

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. From the 2019 business year onward, the return on capital employed (ROCE) will replace EBIT after cost of capital as the most important key performance indicator for steering the BASF Group. ROCE already replaced the return on assets as the metric for variable compensation in 2018.

The BASF Group's steering concept

We follow a value-oriented steering concept with our financial targets. We previously used income from operations (EBIT) after cost of capital for operational steering as a key target and management indicator for the BASF Group, its operating divisions and business units. This figure combines the company's economic performance as summarized in EBIT with the costs for the capital made available to us by shareholders and creditors. When EBIT exceeds cost of capital, we earn a premium on our cost of capital and exceed the return expected by our shareholders.

From the 2019 business year onward, EBIT after cost of capital will be replaced by the return on capital employed (ROCE). This is calculated as the EBIT generated by the segments as a percentage of the average cost of capital basis. As stated in our strategic goals, we aim to achieve a ROCE considerably above the cost of capital percentage every year.

The change to ROCE means that the same logic and data will be 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.

Calculating EBIT after cost of capital and ROCE

To calculate **EBIT after cost of capital**, we take the BASF Group's EBIT and deduct the EBIT of activities recognized under Other – not allocated to the divisions – and subtract the cost of capital of the BASF Group from the resulting figure. Cost of capital is determined by applying the cost of capital percentage before taxes to the value of the cost of capital basis at each month-end. Monthly cost of capital is then added up over the course of the year.

The **cost of capital percentage** 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. As in 2017 and 2018, we anticipate a cost of capital percentage of 10% in 2019.

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, 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.

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

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. Until the end of the 2018 business year, the most important financial performance indicator in the operating units was EBIT after cost of capital. This will be replaced by ROCE from 2019 onward. By contrast, the functional units' contribution to value is assessed according to effectiveness and efficiency on the basis of quality and cost targets.

Until the end of the 2018 business year, the most important key performance indicators for measuring economic success as well as for steering the BASF Group and its operating units were **EBIT after cost of capital**, **EBIT** and **EBIT before special items**.

From 2019 onward, we will use **ROCE** as the most important key performance indicator for steering the BASF Group. 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. As in the past, this is calculated by adjusting the EBIT reported in the Consolidated Financial Statements for special items, making it especially suitable for assessing economic 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)** comprises additions to property, plant and equipment excluding additions from acquisitions, IT investments, capitalized exploration, 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 to increase our dividend each year based on a strong free cash flow.

Furthermore, we will continue to 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.

BASF's nonfinancial targets are focused more on the long term. As part of the implementation of our strategy, we are investigating the possibility of establishing short-term steering mechanisms for our nonfinancial targets as well.

For more information on the development of these indicators, see Results of Operations from page 46 onward

Innovation

A growing need for food, energy and clean water for a booming world population, limited resources and protecting the climate – reconciling all these factors is the greatest challenge of our time. Innovations based on chemistry play a key role here, as they contribute decisively to new solutions. Effective and efficient research and development is a prerequisite for innovation as well as an important growth engine for BASF. We develop innovative processes, technologies and products for a sustainable future and drive forward digitalization in research worldwide. This is how we ensure our long-term business success with chemistry-based solutions for our customers in almost all industry sectors.

Innovation has made BASF the leading chemical company worldwide. This has always been the key to BASF's success, especially in a challenging market environment. Our innovative strength is based on a global team of highly qualified employees with various specializations. We had more than 11,000 employees involved in research and development in 2018. Our team grew by around 1,600 research and development employees at 17 sites around the world in 2018 as a result of the acquisition of a range of businesses and assets from Bayer. The businesses acquired include research and development activities for soybean, cotton, canola and vegetable seeds, which optimally complement our crop protection and biotechnology activities.

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 using new technologies to tap into attractive markets and new business models for BASF.

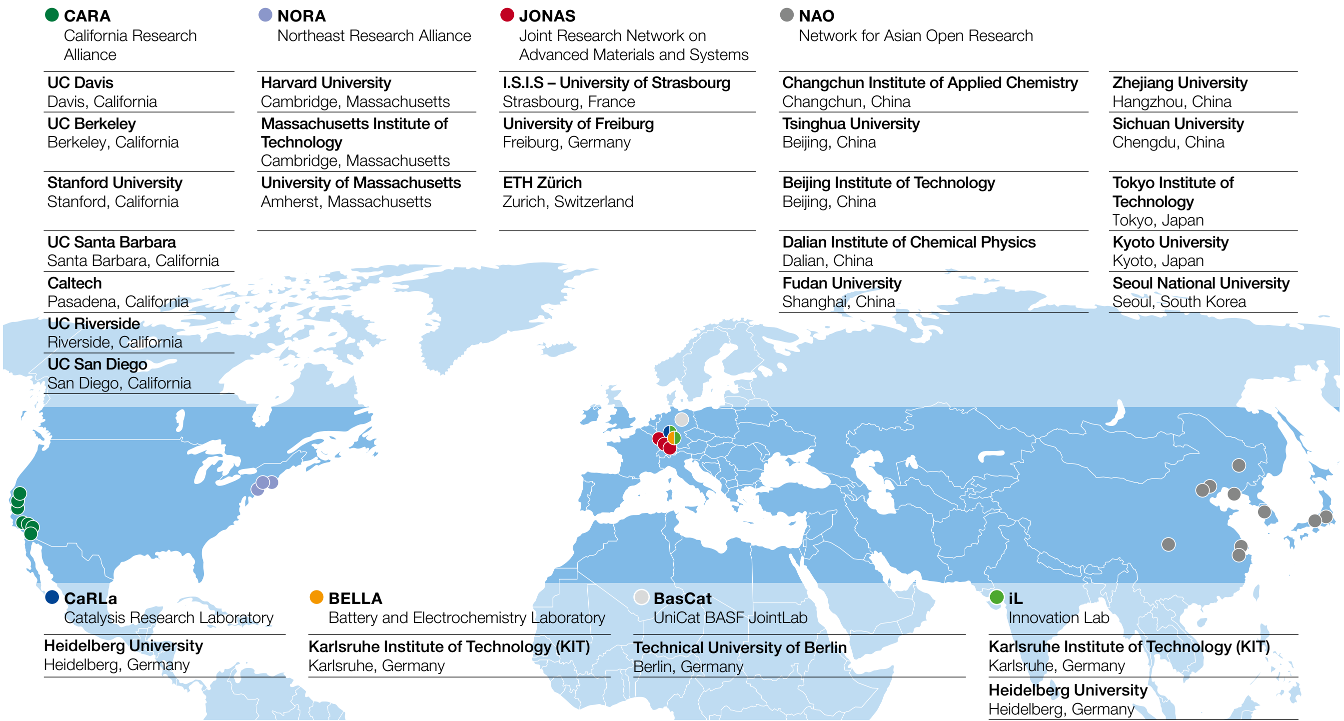
In 2018, we generated sales of around €9 billion with products launched on the market in the past five years that stemmed from research and development activities. In the long term, we aim to continue significantly increasing sales and earnings with new and improved products.

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 and efficiently develop marketable innovations,

Global network: eight Academic Research Alliances



strengthen our portfolio with creative new projects and in this way, reach our long-term growth goals. Our eight academic research alliances bundle partnerships with several research groups in a geographic region or with a specific research focus.

The Northeast Research Alliance (NORA, previously the North American Center for Research on Advanced Materials) 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, while the interdisciplinary CARA research center works on new functional materials and in the area of biosciences. The Joint Research Network on Advanced Materials and Systems (JONAS) research center is active in Europe. Research here concentrates on supramolecular chemistry as well as nanotechnology and polymer chemistry. At the Network for Asian Open Research (NAO) in the Asia Pacific region, research focuses on polymer and colloid chemistry, catalysis and machine learning.

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. 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 300 universities and research institutes as well as collaborations with a large number of companies. These academic research alliances and bilateral cooperations have been integrated into our excellence program, UNIQUE – The BASF Academic Partnership Program.

Strategic focus

- **Research units closer aligned with business and customer needs**
- **Further development of our innovation strategies**

In 2018, our **research pipeline** comprised around 3,000 projects. **Expenses** for research and development amounted to €2,028 million, above the prior-year level (€1,888 million). The increase was primarily attributable to the acquisition of the seed business from Bayer in August 2018. The operating divisions accounted for 80% of total research and development expenses in 2018. The remaining 20% related to cross-divisional corporate research focusing on long-term topics of strategic importance to the BASF Group. In the coming year, we anticipate significantly higher research and development expenses due to the acquisition of the research-intensive seed business.

We will continue to focus on developing attractive innovations for our customers. Under our updated strategy, research and development will be more closely connected organizationally in the future and thus more focused on customer needs. Our aim is to shorten the time to market and accelerate the company's organic growth. 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 align our focus areas accordingly.

The aim of our **innovation approach** is to increase our company's power of innovation and to secure our long-term competitiveness. We aim to achieve this by concentrating our research focus on topics that are strategically relevant for our business, strengthening our existing scientific processes as well as increasingly using new scientific methods and digital tools, as well as optimizing our organizational structures.

Our cross-divisional corporate research will remain closely aligned with the requirements of our operating divisions and allows space to quickly review creative research approaches. 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 breakthrough innovation, as well as of process, product and business model innovation. One of the steps taken in 2018 to further promote breakthrough innovation was the establishment of BASF-Inkubator Chemovator GmbH, based in Mannheim, Germany. This actively nurtures promising business ideas with the help of external experts, who act as consultants, coaches, mentors or intermediaries, and quickly bring these to market readiness. 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 exploit new business opportunities within the next few years. Above and beyond this, we are working on overarching projects with a high technological, social or regulatory relevance. For instance, one global research and development program is focusing on the energy-intensive underlying production processes for basic chemicals. These basic chemicals account for more than half of the CO_2 emissions produced by the European chemical industry. The program covers topics such as the development of new catalysts for methane pyrolysis and the direct conversion of syngas, as well as research into materials and safety for the electrification of steam cracker heating.

We believe that the businesses acquired from Bayer offer tremendous innovation potential. The research and breeding capabilities of the new seed businesses, for instance, provide the opportunity to further develop and market high-yielding wheat hybrids. In addition, a breeding project improving the oil quality of Brassica juncea (Indian mustard) to canola grade and certain non-selective herbicide and nematicide research projects perfectly complement our existing R&D activities.

We continued to work on harnessing the enormous opportunities of digitalization for research and development in 2018. In the years ahead, we will continue to consistently expand our expertise in fields like scientific modeling and simulation and to develop new digital applications.

Our global research and development presence is vital to our success. We want to continue advancing our research and development activities, particularly in Asia as well as in North America, and are adapting this to 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 number and quality of our patents also attest to our power of innovation and long-term competitiveness. We filed around 900 new patents worldwide in 2018. In 2018, we once again ranked among the leading companies in the Patent Asset Index, a method that compares patent portfolios industry-wide.

For a multiyear overview of research and development expenditures, see the Ten-Year Summary on page 280

Research focus areas – examples

- **Increased use of digital technologies**
- **Innovative battery materials for electromobility**
- **Expansion of business activities in 3D printing**

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

Our supercomputer Quriosity in Ludwigshafen, Germany, was started up in the fall of 2017. It is mainly used in product development and enables us to calculate much more complex models with significantly greater variation in parameters. Previously unknown correlations can also be identified and used to advance new research approaches. In 2018, for example, we simulated detergent formulations to determine how existing and potential new BASF products work at a molecular level. Such simulations enable us to better identify and exploit correlations in formulations. Another application is a large database calculated by Quriosity with over 8,000 molecular properties such as solubility or compatibility with metal surfaces. Machine learning can be used to establish the link between these properties and the mode of action of BASF products. This enables us to identify promising molecules for innovative, customer-centric products.

Around the world, experts in the research area Process Research & Chemical Engineering are working on innovative cathode materials for lithium-ion batteries to meet the growing demand for powerful, reliable and low-cost electric vehicles. They aim to create the highest-density cathode materials on the market by making selective changes to the chemical composition, structure and the manufacturing process. The ultimate goal is to double the on-road range of a mid-size vehicle from 300 to 600 kilometers on a single battery charge, halve battery size and reduce charging time to 15 minutes by 2025. In 2018, the focus was on creating pilot-scale customer models as well as research into materials with a nickel content of over 80%, which is needed to reach our range and cost targets.

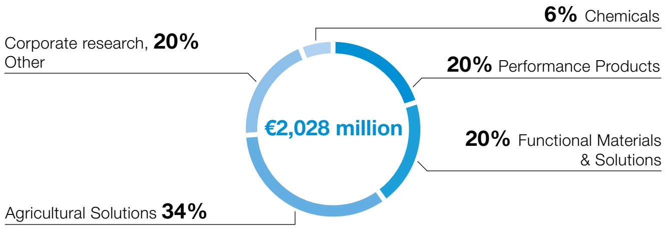
For more information on research and development, see basf.com/innovations

3D printing

BASF is developing new, innovative materials for 3D printing. In the chemical industry, BASF already has a broad portfolio with materials, system solutions, components and services. Focus areas in new materials development are polyamide-based polymers, thermoplastic polyurethanes and polypropylene, as well as new photopolymers and filaments with custom attributes. At our laboratories – in Heidelberg and Ludwigshafen, Germany; Basel, Switzerland; Shanghai, China; and Wyandotte, Michigan – we refine and enhance products such as our thermoplastic and light-curing plastics, optimize processes and develop customer applications. In 2018, BASF New Business GmbH acquired shares in Advanc3D Materials GmbH, Hamburg, Germany, and in Setup Performance SAS, Lyon, France, to continue the targeted expansion of the business.

Innovations in the segments – examples

Research and development expenses by segment 2018



Chemicals: BASF's **ChemCycling project** focuses on reusing plastic waste in chemical production rather than disposing of it. Thermochemical processes are used to transform plastic waste into new raw materials, which are then fed into the BASF Verbund instead of fossil resources. In October 2018, the first pyrolysis oil derived from plastic waste by our partners was used in Ludwigshafen, Germany. The new chemical products manufactured from this pyrolysis oil have the same quality as products made from fossil feedstock. The Eco-Efficiency Analysis developed by BASF ensures that the innovative approach also creates value for the environment. Many of our customers already aim to increase the proportion of recycled materials in their products. We are currently working with customers to produce the first prototypes for customer products with chemically recycled material.

For more information on our ChemCycling project, see Raw Materials on page 92

In 2016, we consolidated marketing activities for our established binders for the woodworking industry – amino resins (such as Kaurit®) and isocyanates (such as Lupranat®). With **Kauranat® MS 1001**, a modified isocyanate, BASF has now developed a new product that enables the optimal combination of both binder types. When Kauranat® MS 1001 is used in a hybrid binder system together with an amino resin to produce chipboard, for example, the binder system starts to cure in the press at lower temperatures than usual. This increases production speed by up to 20%, saving process energy and significantly increasing total production capacity.

We constantly renew our specialty chemicals portfolio, also for the pharmaceutical industry. Based on its own technology, BASF has developed **optically active key components** that are used by our customers in advanced active ingredients. Optically active substances comprise mirror-image molecules with different physiological properties and thus different effects. Thanks to our expertise, we can selectively produce either the "left-handed" or "right-handed" forms of these molecules. By isolating these chemical building blocks for our customers, we help them to significantly improve the quality of life of people living with HIV, for example, with innovative medications that reduce the number of HIV viruses in the body and keep this at a low level.

Performance Products: Designers in the furniture industry now have access to innovative wood fiberboards based on BASF's new binder technology, **acForm®**. Unlike standard wood fiberboards, those novel panels can be 3D-molded and their surfaces can be structured on standard furniture molding equipment. This opens up new, cost-efficient design options for large-scale production. Since acForm® works without formaldehyde, this technology also enables the woodworking industry to set new standards in workplace health and safety.

Euperlan® OP White is a wax-based opacifier that gives personal care products such as shampoos or shower gels a creamy milky-white appearance. It is readily biodegradable and cold processable. These unique properties make Euperlan® OP White particularly suitable for eco-label conforming skin and hair cleansing formulations. As an alternative to conventional opacifiers, the product meets the growing demand for environmentally friendly ingredients.

BASF launched **Lucantin® NXT**, the next generation of carotenoid formulations, which are nature-identical color pigments used as feed additives. The new formulations provide markedly improved product stability to meet various requirements for feed production, along with excellent bioavailability, enabling the carotenoids to be efficiently absorbed by the animal. Extensive trials have shown that Lucantin® NXT delivers high homogeneity and a long shelf life while maintaining egg yolk and broiler skin coloring efficacy. The new formulations replace the previously used stabilizer ethoxyquin (EQ) with antioxidants such as propyl gallate, butylhydroxytoluene or tocopherol. Lucantin® NXT complies with the latest E.U. regulation, which requires the suspension of EQ as a feed additive.

The water that accumulates in aircraft fuel tanks leads to high costs for airlines, who have to regularly extract this water and address the potential dangers of ice formation and corrosion in wing tanks. The performance additive **Kerojet® Aquarius** disperses the water contained in jet fuel, removing it during the normal combustion process in the turbine. In this way, BASF's water scavenger makes a significant contribution to improving safety and maintenance parameters by reducing the frequency of cost-intensive water extraction measures and inhibiting ice formation in wing tanks.

Functional Materials & Solutions: O4-115 Quattro is a new sulfuric acid catalyst from BASF with a unique quattro-shaped geometry – a combination of four strands. It was developed digitally using fluid dynamics and strength simulations. The catalyst not only offers excellent mechanical properties, but also provides a 30% greater active surface area than previous catalysts based on its geometry. For sulfuric acid producers, this translates into increased capacity and improved performance in plants with limited catalyst volumes. SO_2 off-gas emissions are also reduced, resulting in a significant decrease in SO_2 emissions per metric ton of sulfuric acid produced and providing our customers with a comparative advantage in a very competitive market.

MasterTop TC 941 is a non-solvent-based, UV-stable topcoat with low emissions that offers exceptional cleanability and scratch resistance properties for resin floor systems. Targeted for use in retail and light industry spaces, MasterTop TC 941 has excellent aesthetic durability, which reduces cleaning and maintenance bills and leads to a lower cost of ownership for the customer over the life of the floor.

BASF created the **Auroom®** online platform to visualize automotive paints virtually. The colors available in the database can be mapped onto any 3D surface online, showing the characteristics and effects of the automotive coating in photographic quality. Painted samples are photographed from different angles and under different lighting, and processed using a special mathematical model. Digitalization speeds up the design process for original equipment manufacturers (OEMs), as they no longer have to wait for all samples to be painted and shipped. The effect of the color on the entire car body can be simulated in real time and projected onto manufacturers' own models.

BASF's Ultrasim® simulation tool has long been used to determine the direction of fibers in injection-molded plastics components after manufacturing (anisotropic mechanical behavior). The new **Ultrasim® thermomechanics module** also enables thermal deformation to be detected at an early stage of development of components like these. It takes into account the complex thermomechanical material behavior, the impact of the anisotropic fiber orientation as well as temperature distribution and temperature changes in the component. The tool can be used to simulate the typical temperature load from minus 40°C to 150°C for various applications. This saves our customers time and money in the development process as they are able to identify and avoid component faults at an early stage before going into serial production. This is crucial for electrical and electronic equipment used in the automotive industry.

Agricultural Solutions: We are working with farmers around the globe to improve the quality and yield of their agricultural production while taking societal expectations and requirements into consideration. To achieve this, we invest continually in developing our pipeline in order to expand our portfolio in conventional crop protection, seeds, traits and beyond – such as in biological solutions. In 2018, we invested €679 million in research and development in the Agricultural Solutions division, representing around 11% of sales for the segment.

Our well-stocked innovation pipeline comprises products with a launch date between 2018 and 2028. With a peak sales potential[1] of more than €6 billion, the pipeline includes innovations from all business areas. This positive development is the result of continual investment and early consideration of sustainability criteria as part of our research and development strategy. The first market launches of **Revysol®**, our new fungicide, are scheduled for the 2019 growing season following registration with the relevant authorities. **Luximo®** and **Tirexor®**, our new herbicides to manage a broad range of difficult-to-control grasses and broadleaf weeds, are expected to enter the market from 2020 onward. We launched the new insecticide **Inscalis®** in 2018. Another new insecticide, **Broflanilide**, to help farmers protect specialty and field crops from insects such as potato beetles and caterpillars, is planned to be on the market from 2020. In 2018, the Functional Crop Care business launched **Velondis®**, for example, a biological fungicide for seed treatment.

For seeds and traits, the acquired businesses open up new opportunities that contribute to our innovation pipeline. The market launch of the new herbicide-tolerant soybean seed with the **LibertyLink® GT27™** trait platform[2] is planned for 2020. This new soybean technology will be available to growers under the **Credenz®** brand as well as licensee's brands, and will allow farmers to apply **Liberty®** herbicide and two other herbicide active ingredients. Registration for one of these active ingredients is expected for the 2020 growing season. New cotton technology with herbicide tolerance will also be launched under our **Fibermax®** and **Stoneville®** brands with a new mode of action. We want to expand the acquired **InVigor®** canola seed business with yellow seed canola, which can be grown under more challenging conditions such as arid environments. Our vegetable seeds business, mainly marketed under the **Nunhems®** brand, develops vegetable and hybrid varieties adapted to different growing conditions and that meet the needs of consumers and the global food value chain for novel vegetable varieties.

Digital innovation will also contribute to the profitable growth of the Agricultural Solutions segment. The digital farming activities and associated pipeline developments under the **xarvio®** brand complement our existing portfolio with additional products and functionalities as well as access to the latest technologies. This additional expertise to optimize yields, including scientific data, predictive modeling for seasonal planning and needs-based recommendations on the application of crop inputs, will accelerate our digital plans and improve our overall digital offer. This enables us to offer our customers even better agronomic support and assistance in optimizing the cultivation of their crops.

1 Peak sales describes the highest sales value to be expected in one year. For more information, see the Glossary on page 288.
2 GT27™ traits are developed and marketed in cooperation with MS Technologies LLC, West Point, Iowa.

Integration of Sustainability

Business success tomorrow means creating value for the environment, society and business. This is why sustainability has been reinforced as a cornerstone of our updated corporate strategy. Using the various tools of our sustainability management, we carry out our company purpose: "We create chemistry for a sustainable future." We systematically incorporate sustainability into our business. We understand future sustainability trends and derive appropriate measures for our business to seize business opportunities and minimize risks along the value chain.

Strategy

- **Ensuring business success tomorrow by creating value for the environment, society and business**
- **Taking advantage of business opportunities and minimizing risks**

We achieve long-term business success by creating value for the economy, the environment and society. Sustainability is at the core of what we do, a driver for growth as well as an element of our risk management. That is why sustainability is firmly anchored into the organization, governance and our business models. We support our customers in being more sustainable and create new business opportunities that grow our customer relationships. Conducting our business in a responsible, safe, efficient and respectful way promotes societal acceptance of our business activities.

Our products, solutions and technologies contribute to achieving the United Nations' Sustainable Development Goals (SDGs), for example, on sustainable consumption and production, climate action or fighting hunger. In this way, we want to make a lasting contribution to a viable future.

We have defined sustainability focus areas in our corporate strategy to position ourselves in the market and at the same time, meet the growing challenges along the value chain:

- We source responsibly
- We produce safely for people and the environment
- We produce efficiently
- We value people and treat them with respect
- We drive sustainable products and solutions

Relevant topics resulting from these commitments – such as energy and climate protection, portfolio management, supply chain responsibility, employee engagement, resource efficiency, responsible production and water – form the focal points of our reporting. We integrate these topics into our long-term steering processes to increase societal acceptance and take advantage of business opportunities. Here, we consider three dimensions of materiality: The relevance of sustainability topics to our business, the impacts of our business activities along the value chain on sustainability topics, and how important these topics are to our stakeholders.

We identify relevant topics and trends as well as potential opportunities and risks along our value chain through dialog with stakeholders, supported by continuous, worldwide big data analysis. In 2018, we also co-published a study identifying long-term sustainability trends between now and 2030, based on an analysis of more than 900 studies from academia, think tanks and market analyses.

Business success tomorrow means creating value for the environment and society, not just making a profit. This is why, in addition to our new financial targets, we have also set ourselves new nonfinancial targets on climate protection, a sustainable product portfolio, responsible procurement and engaged employees to steer our business into a sustainable future.

The Corporate Sustainability Board is BASF's central steering committee for sustainable development. It is composed of the heads of our business, corporate and functional units, and regions. A member of the Board of Executive Directors serves as chair. We have also established an external, independent Stakeholder Advisory Council. Here, international experts from academia and society contribute their perspectives to discussions with BASF's Board of Executive Directors, helping us expand our strengths and identify potential for improvement.

Our sustainability management helps to minimize risks and opens up new opportunities to market more sustainable products. We reduce potential risks in the areas of environmental protection, safety and security, health protection, product stewardship, compliance, and labor and social standards by setting ourselves globally uniform requirements. These often go beyond local legal requirements. Internal monitoring systems and grievance mechanisms enable us to check compliance with these standards: they include, for example, global surveys, audits and compliance hotlines. All employees, managers and Board members are required to adhere to our global Code of Conduct, which defines a binding framework for our business activities.

We systematically evaluate sustainability criteria as an integral part of our assessment processes when deciding whether to acquire or invest in property, plant and equipment or financial assets. These assess the economic implications and potential impacts on areas such as the environment, human rights or local communities.

For more information on our financial and sustainability targets, see pages 23 to 24 and 26

For more information on our materiality analysis, see basf.com/materiality

For more information on our study on long-term sustainability trends, see basf.com/sustainability-trends

For more information on the organization of our sustainability management, see basf.com/sustainabilitymanagement

Measuring value added by sustainability and harnessing business opportunities

- **Value to Society: Method for assessing economic, environmental and social impact of business activities along the value chain**

We take advantage of business opportunities by offering our customers innovative products and solutions that contribute to sustainable development. We ensure that sustainability criteria are automatically integrated into our business units' development and implementation of strategies, research projects and innovation processes. For example, we analyze sustainability-related market trends in customer industries to systematically seize new business opportunities.

We want to measure the value proposition of our actions along the entire value chain, aware that our business activities are connected to both positive and negative impacts on the environment and society. We strive to increase our positive contribution to society and minimize the negative impacts of our business activities.

To achieve this, we need to even better understand 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 Analysis, the Sustainable Solution Steering portfolio analysis, or BASF's corporate carbon footprint. We have completely revised our SEEbalance® method with respect to how social aspects are assessed. In a new, qualitative assessment, we analyze and evaluate relevant social issues along the value chain. Our assessment is guided by standards such as those issued by the World Business Council for Sustainable Development (WBCSD) or the Roundtable for Product Social Metrics.

BASF has also developed a method with external experts to perform a monetary assessment of the economic, ecological, and social impacts of its business activities along the value chain – the Value to Society approach. It enables a direct comparison between financial and nonfinancial effects of our business activities on society and illustrates interdependencies.

We also evaluate the usefulness of this method as a basis for strategic assessments and decisions in various projects, for example, by analyzing the impacts of alternative sites, business units, plants or forecasts. The results of these assessments are also helpful in our discussions with stakeholders.

We contribute our approach and expertise to current debates on the monetary value of the economic, environmental and social impact of business decisions. We share our experiences in networks and initiatives such as the Impact Valuation Roundtable or the Embankment Project for Inclusive Capitalism. As part of this project to promote sustainable governance, financial market participants, companies and other stakeholders developed metrics and methods to measure the long-term value created by companies more comprehensively. A reporting framework was published in late 2018. We are also involved in the corresponding standardization processes within the International Organization for Standardization (ISO).

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 instruments, see basf.com/en/measurement-methods

Portfolio management based on sustainability performance

- **New goal to manage our product portfolio with the Sustainable Solution Steering method from 2019 onward**
- **As of 2018, Challenged products will be phased out within five years of initial classification**

A significant steering tool for our product portfolio, based on the sustainability performance of our products, is the Sustainable Solution Steering method (see box on page 38).

By the end of the 2018 business year, BASF had conducted sustainability assessments and ratings for 96.5% of its entire relevant portfolio[1] of more than 60,000 specific product applications – which account for €56.2 billion in sales. These consider the products' application in various markets and industries. Because of increasing sustainability requirements on the market, we regularly conduct reassessments of existing product categories as well as of the relevant portfolio.

Accelerator products make a substantial sustainability contribution in the value chain. This is why we will pursue a new, ambitious goal from 2019 onward: We aim to make sustainability an even greater part of our innovation power and achieve €22 billion in Accelerator sales by 2025.

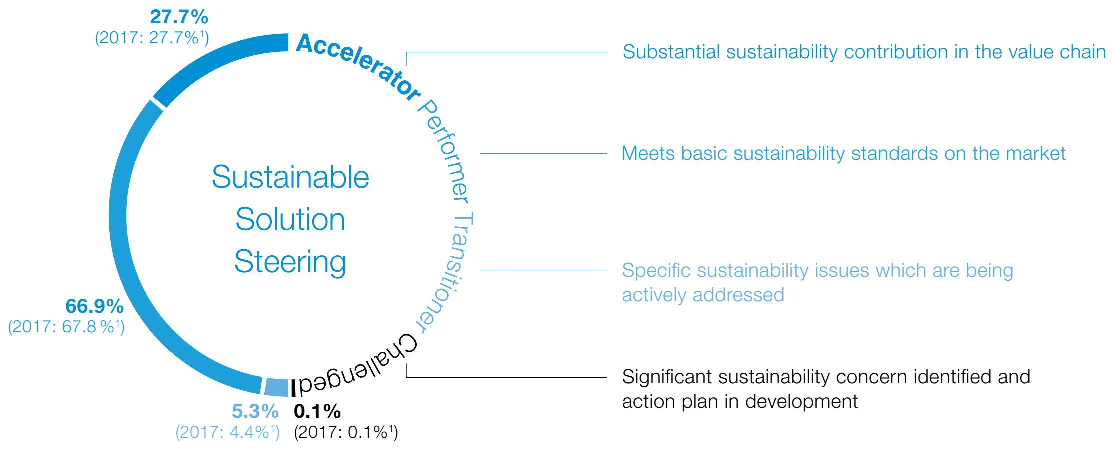
To achieve this goal, we will deeply integrate Sustainable Solution Steering into the research and development pipeline, in business strategies as well as in merger and acquisition projects.

We largely achieved our previous goal of increasing the proportion of sales from Accelerator products to 28% by 2020 at the end of 2018 (proportion of sales in 2018: 27.7%).

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

1 Not included in the portfolio are primarily the sales reported under Other (see page 85 for more information on the composition of Other) or not allocated to the operating business (such as licenses).

Portfolio management: increase Accelerator sales and phase out Challenged products



Evaluating and transparently classifying our products enables us to systematically improve these in cooperation with our customers and at the same time, steer our product portfolio. Our aim is to increase sales from Accelerator products to €22 billion in 2025. We have identified substantial sustainability concerns for our Challenged products and are developing action plans. These action plans include research projects, reformulations or even replacing one product with an alternative product. At the end of 2018, action plans had been created for 100% of Challenged products. 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.

Stakeholder dialog

- **Continuous dialog with our stakeholders**
- **Circular economy: chemical recycling of plastic waste**

Our stakeholders include customers, employees, suppliers and shareholders, as well as representatives from academia, industry, politics and society. Parts of our business activities, such as the use of new technologies, are often viewed by some stakeholders with a critical eye. In order to increase societal acceptance for our business activities, we address our stakeholders' questions, assess our business activities in terms of sustainability aspects, and communicate transparently. Such dialogs help us to even better understand what society expects of us and which measures we need to pursue in order to establish and maintain trust and build partnerships.

We use a custom model to identify key stakeholders and involve them more effectively. When selecting our stakeholders, we assess factors such as their topic-specific expertise and willingness to engage in constructive dialog, for instance. We draw on the competence of global initiatives and networks, and contribute our own expertise.

That is why we are active in worldwide initiatives with various stakeholder groups. We have been a member of the U.N. Global Compact since 2000. As a recognized LEAD company, we also support the implementation of the Agenda 2030 and its Sustainable Development Goals. We are involved in projects such as the U.N. Global Compact's Action Platforms on Decent Work in Global Supply Chains (SDG 8) and on Good Health and Well-being (SDG 3), and are a member of the U.N. Global Compact Expert Network. BASF is also active in 14 local Global Compact networks, including – for the first time – the United States and Tanzania since 2018.

1 Figures for 2017 have been restated due to the agreement between BASF and LetterOne to merge their oil and gas businesses.

Recognized in 2018 as an
SDG Pioneer
for innovative solutions and initiatives driving sustainable water and climate action

We once again met with the Stakeholder Advisory Council in 2018 to discuss important aspects of sustainability. The main topics were strengthening sustainability in the corporate strategy, such as the discussion on the new sustainability goals. We received and implemented recommendations for our thematic focus areas. For example, the Stakeholder Advisory Council encouraged us to push forward with the circular economy as a strategic focus, where BASF developed a chemical recycling method for plastic waste. As part of the ChemCycling pilot project, the first pyrolysis oil derived from plastic waste by our partners was fed into the BASF Verbund in 2018.

Our lobbying and political communications are conducted in accordance with transparent guidelines and our publicly stated positions. 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 a voluntary, 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 at our sites 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, which was further expanded in the regions in 2018.

For more information on stakeholder dialog, see basf.com/en/dialog
For more information on the Stakeholder Advisory Council, see basf.com/en/stakeholder-advisory-council
For more information on our guidelines for responsible lobbying, see basf.com/guidelines_political_communication
For more information on the ChemCycling project, see pages 34 and 92

Responsibility for human rights

■ Human rights criteria integrated into existing due diligence processes

BASF acknowledges its responsibility to respect human rights. We have embedded this into our Code of Conduct and our human rights position. In our own business activities, our aim is to prevent human rights abuses. As a participant in numerous global value chains, we are dependent on partners and demand that they likewise respect human rights and the associated standards. We offer to help our partners in their efforts to meet their human rights responsibilities.

Criteria for monitoring and complying with human rights standards are integrated into processes at our Group companies around the world: in supplier evaluation processes, in evaluating investment, acquisition and divestiture projects, in product assessments along the product lifecycle, in training for security personnel at our sites, for example, on response appropriateness, as well as in systems to monitor labor and social standards.

Employees and third parties can report potential violations of laws or company guidelines to our complaint hotlines. 231 human rights-related complaints were received by the hotline as well as by post and e-mail in 2018. All complaints received are reviewed and forwarded to the relevant departments for in-depth investigation. If justified, suitable measures are taken to address the issue.

BASF is part of the Global Business Initiative on Human Rights (GBI). This group of globally operating companies from various sectors aims to ensure implementation of the U.N. Guiding Principles on Business and Human Rights. In 2018, we again consulted with representatives of civil society at an international and national level on an ongoing basis, which provided valuable input for our measures.

BASF has been actively involved in the U.N. Global Compact's Action Platform on Decent Work in Global Supply Chains since 2018. This cross-industry working group aims to improve working conditions in global supply chains as these relate to labor and human rights. The companies involved have developed a voluntary commitment to more effectively implement the main international standards – the ILO core labor standards, the 10 principles of the U.N. Global Compact and the U.N. Guiding Principles on Business and Human Rights – in their respective supply chains through specific measures such as supplier training, collaboration with partners or greater transparency. BASF was one of the first companies worldwide to adopt this voluntary commitment in late 2018.

For more information on our fundamental principles, see our human rights position at basf.com/humanrights
For more information on labor and social standards, see page 115 onward
For more information on our production standards, see page 96 onward
For more information on standards in our supply chain, see page 90 onward
For more information on compliance, see page 140 onward

Social commitment

BASF as a responsible neighbor

We support the implementation of the United Nations' Sustainable Development Goals with our social commitment around the world.

We promote social, educational, cultural, academic and sports projects as part of our social engagement strategy. We focus on projects that will have a lasting impact on specific target groups and offer learning opportunities for participating cooperation partners and BASF. Projects are developed, and impact-related targets defined together with partners from civil society.

As a responsible neighbor, BASF strives to create a livable community for our sites' neighbors, employees and their families. In Germany, we support regional focus areas in Ludwigshafen and the Rhine-Neckar metropolitan region such as strengthening participation and integration among disadvantaged groups or promoting research and discovery. Examples include the *Gemeinsam Neues schaffen* program to foster cooperation between nonprofit organizations, a new approach to promoting cultural events called *Tor 4*, with which BASF aims to promote discourse on relevant social issues through cultural projects, or a pilot program to integrate people with immigrant or migrant backgrounds.

We also foster social integration, particularly of young low achievers and refugees. Programs in the Rhine-Neckar metropolitan region include *Start in den Beruf*, *Anlauf zur Ausbildung* and *Start Integration*. In 2018, 241 young people in the BASF Training Verbund participated in these programs in cooperation with partner companies. The goal is to prepare participants for a subsequent 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 350 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 €5.6 million on the BASF Training Verbund in 2018.

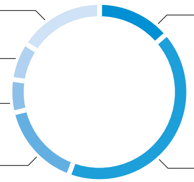
In North America, BASF supported various charitable organizations to provide relief for the damage caused by hurricanes Michael and Florence in states such as Florida, North Carolina and Virginia in the fall of 2018.

We also aim to create long-term value for BASF and society with new business models and cross-industry partnerships. Our company-wide 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 strengthens our contribution to reaching the U.N. Sustainable Development Goals. One project in Egypt, for example, helps tomato smallholders to increase their tomato crop yields. A digital early warning system developed by BASF sends an alert via SMS or voice message to inform them of any outbreaks of plant diseases.

In the area of international development work, we support the BASF Stiftung, an independent nonprofit organization, through donations to its projects with various U.N. organizations. In 2018, BASF supported a project spearheaded by the U.N. Children's Fund (UNICEF) to promote inclusive education in Peru with its annual year-end donation campaign to the BASF Stiftung. BASF doubled all donations by employees of participating German and South American Group companies, bringing the total amount benefiting the children in Peru to €567,926.64.

The BASF Group spent a total of €38.4 million supporting projects in 2018; we donated 39% of this amount (2017: €56.0 million, of which 57% were donations).

BASF Group donations, sponsorship and own projects in 2018[1]



1 Figure relates to all consolidated companies with employees including joint operations, but excluding the vegetable seeds business acquired from Bayer (Nunhems®)

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

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 our desired growth while constantly improving the efficiency of our production processes. For the period from 2019 to 2023, we have planned capital expenditures (capex)[1] totaling €21.3 billion worldwide.

For more information on our investments from 2019 onward, see page 122

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 are investigating the possibility of building an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong and expanding the site we operate together with our partner Sinopec in Nanjing, China.

We will also refine our portfolio through acquisitions that promise above-average profitable growth as part of the BASF Verbund and help to reach a relevant market position. We also take into account whether they 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 2018

Million €

	Investments	Acquisitions	Total
Intangible assets	155	5,540	5,695
of which goodwill	–	1,261	1,261
Property, plant and equipment[2]	3,615	1,425	5,040
Total	**3,770**	**6,965**	**10,735**

Investments

We invested €3,615 million[3] in property, plant and equipment in 2018 (previous year: €4,020 million). Capex[1] accounted for €3,498 million of this amount (previous year: €3,735 million). Our investments in 2018 focused on the Chemicals, Functional Materials & Solutions and Performance Products segments.

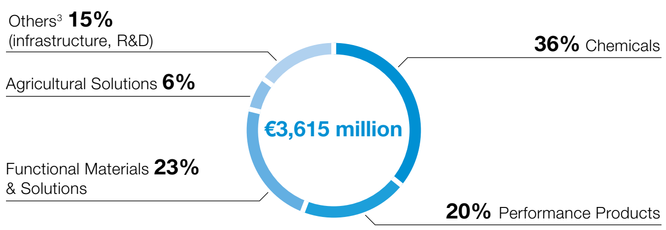
In Europe, we will strengthen the Verbund by replacing our acetylene plant in Ludwigshafen, Germany, which plays a central role for many products and value chains, with a modern, highly efficient plant by the end of 2019. We are also constructing another production plant for special zeolites in Ludwigshafen, Germany. Special zeolites are used to produce state-of-the-art exhaust catalysts for commercial vehicles and passenger cars with diesel engines. Production startup is scheduled for 2019. In the first quarter of 2018, we started construction of another production plant for vitamin A, which is scheduled for startup in 2020.

In North America, we constructed and started operation of an ammonia production plant in Freeport, Texas, together with Yara International ASA, headquartered in Oslo, Norway. We started construction of a new MDI synthesis unit in Geismar, Louisiana. Startup is scheduled for 2020.

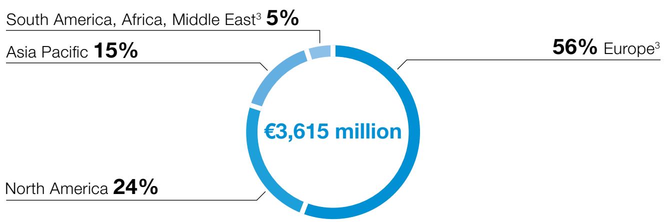
In Asia, we started production at the new aroma ingredients complex in 2018, which was built together with our partner PETRONAS Chemicals Group Berhad, Kuala Lumpur, Malaysia, and at the Ultraform® plant in Gimcheon, South Korea, build together with our partner Kolon Plastics Inc., headquartered in Gimcheon, South Korea. We are constructing a plant for plastic additives in Shanghai, China, with startup planned for 2019. These investments strengthen our presence in Asia.

For more information on investments within the segments, see page 58 onward

Additions to property, plant and equipment[2] by segment in 2018



Additions to property, plant and equipment[2] by region in 2018



1 Additions to property, plant and equipment excluding acquisitions, capitalized exploration, restoration obligations, IT investments and right-of-use assets arising from leases
2 Including capitalized exploration, restoration obligations and IT investments
3 Including investments in connection with our oil and gas activities until September 2018

Acquisitions

We added €1,425 million worth of property, plant and equipment through acquisitions in 2018. Additions to intangible assets including goodwill amounted to €5,540 million.

For more information on acquisitions, see the Notes to the Consolidated Financial Statements from page 205 onward

On March 7, 2018, we closed the agreement to form BASF Toda America LLC (BTA), Iselin, New Jersey, for battery materials. BTA is a cooperative venture between BASF and Toda; BASF holds a majority share in and control over BTA. With the acquisition of the Battle Creek site in Michigan and the site contributed by BASF in Elyria, Ohio, the new company took over production of high energy cathode active materials for e-mobility applications. The transaction strengthens the Catalysts division's battery materials business.

On August 1, 2018, we closed the acquisition of a range of businesses and assets from Bayer to complement our activities in crop protection, biotechnology and digital farming. At the same time, the transaction marked our entry into the seeds, non-selective herbicides and nematicide seed treatments businesses. The assets acquired included Bayer's global glufosinate-ammonium business, commercialized under the Liberty®, Basta® and Finale® trademarks, as well as its seed businesses for key field crops in selected markets. The transaction also covered Bayer's trait research and breeding capabilities for these crops. We also closed the acquisition of Bayer's global vegetable seeds business, which mainly operates under the trademark Nunhems®, on August 16, 2018. This strengthens the Agricultural Solutions division. The all-cash purchase price amounted to a total of €7.4 billion and may be subject to purchase price adjustments.

For more information on acquisitions, see page 81 onward

Divestitures

On January 31, 2018, our production site for styrene butadiene-based paper dispersions in Pischelsdorf, Austria, was sold to Synthomer Austria GmbH, a subsidiary of the British specialty chemicals manufacturer Synthomer plc. The styrene acrylic dispersions that were produced in Pischelsdorf were not included in the sale. They were bundled with the businesses in Ludwigshafen, Germany. The sale was made in connection with the concentration of paper dispersions production in Europe at the sites in Ludwigshafen, Germany, and Hamina, Finland, which is designed to strengthen the Dispersions & Pigments division.

Agreed transactions

On September 18, 2017, we signed an agreement with the Solvay group on the acquisition of Solvay's global polyamide business, subject to the approval of the relevant antitrust authorities. The E.U. Commission granted conditional clearance for BASF to acquire the polyamide business on January 18, 2019. They require divesting parts of the original transaction scope to a third-party buyer, namely manufacturing assets and innovation capabilities of Solvay for engineering plastics in Europe. The divestment process has started. By complementing the engineering plastics portfolio, enhancing the access to key growth markets in Asia and South America as well as strengthening the value chain through backward integration into key raw materials, BASF will still achieve its key strategic objectives. The review procedure in China is ongoing. Closing is expected in the second half of 2019, as soon as all remaining closing conditions have been fulfilled, including the sale of the businesses and assets to be divested to a third party. We plan to integrate the polyamide business into the Performance Materials and Monomers divisions. Before being adjusted to reflect the necessary antitrust-related changes to the scope of the transaction, the purchase price on a cash and debt-free basis and excluding other adjustments would have been €1.6 billion.

On May 3, 2018, BASF and Solenis announced that they had signed an agreement on the combination of BASF's paper and water chemicals business with Solenis. BASF and Solenis closed the transaction on January 31, 2019.

For more information, see Events after the reporting period on page 122

On September 27, 2018, we signed a definitive agreement with the LetterOne group to merge our respective oil and gas businesses. The merger aims to create the leading independent company in the European oil and gas sector. To effect the merger, LetterOne will contribute all its shares in DEA Deutsche Erdöl AG to Wintershall Holding GmbH against the issuance of new shares of the company to LetterOne. The company will then be renamed Wintershall DEA. BASF will initially hold 67% and LetterOne 33% of Wintershall DEA's ordinary shares, reflecting the value of the respective exploration and production businesses of Wintershall and DEA. To reflect the value of Wintershall's gas transportation business, BASF will receive additional preference shares. No later than 36 months after closing but in all cases before an IPO, these preference shares will be converted into ordinary shares of the company Wintershall DEA. This will increase BASF's share in Wintershall DEA. Closing of the transaction is expected in the first half of 2019, subject to the approvals of merger control and foreign investment authorities as well as mining authorities and the German Federal Network Agency. Until closing, Wintershall and DEA will continue to operate as independent companies.

For more information on this transaction, see Note 2.5 to the Consolidated Financial Statements from page 209 onward

Economic Environment

Overall, global economic growth in 2018 was as strong as we expected at the beginning of the year.[1] However, momentum slowed considerably over the course of the year. Economic output in the advanced economies rose at roughly the same rate as in 2017, while growth in the emerging markets softened slightly overall. Growth in the European Union (E.U.) declined significantly. By contrast, gross domestic product (GDP) in the United States increased faster than expected. The Chinese economy cooled in the second half of the year. Global GDP grew by 3.2% overall, only slightly slower than in 2017 (+3.3%). The global chemical industry (excluding pharmaceuticals) expanded by 2.7%, below the 2017 figure (+3.7%). The average price for a barrel of Brent blend crude oil rose to $71 per barrel (2017: $54 per barrel).

For the outlook on the economic environment in 2019, see page 117 onward

Trends in the global economy in 2018

The global economy continued its growth trajectory in 2018. However, economic momentum slowed significantly over the course of the year. Regional trends were also more disparate than in 2017 and growth in global trade weakened. The escalation of the trade conflict between the United States and China, as well as fears that the United States would introduce additional tariffs on automotive imports increasingly weighed on the economic climate. In addition, financing conditions for a number of emerging markets deteriorated following interest rate hikes by the Federal Reserve. This led to capital outflows into the dollar zone and corresponding currency devaluations. By contrast, monetary policy in the eurozone and in Japan remained expansionary.

Gross domestic product

Real change compared with previous year

World	**2018**	**3.2%**
	2017	3.3%
European Union	**2018**	**1.9%**
	2017	2.5%
United States	**2018**	**2.9%**
	2017	2.2%
Emerging markets of Asia	**2018**	**6.2%**
	2017	6.4%
Japan	**2018**	**0.7%**
	2017	1.9%
South America	**2018**	**1.0%**
	2017	1.6%

Economic trends by region

- **Weaker economic growth in the E.U.**
- **Acceleration of growth in the United States**
- **Economic cooldown in China**
- **Delayed recovery in South America**

As we had forecast, GDP growth in the **E.U.** slowed to just under 2% in 2018 (2017: +2.5%). Besides capacity bottlenecks, the decline in economic momentum was primarily attributable to weaker export demand. In addition, the rising oil price led to higher import values and energy prices drove up inflation, which dampened growth in consumer purchasing power. Growth in France (+1.5%), Italy (+0.8%), Spain (+2.5%) and the United Kingdom (+1.4%) was in line with our expectations, while Germany turned in a disappointing performance (+1.5%). This was attributable to a large extent to difficulties in the introduction of the new Worldwide Harmonized Light-Duty Vehicles Test Procedure (WLTP) emission standard in the automotive industry, which also affected its supplier industries and led to a slight overall decrease in GDP in the third quarter of 2018. At 4.2%, GDP growth in the eastern E.U. countries remained high but was lower than in the previous year (+4.6%). According to official estimates, Russian GDP rose faster than in the previous year, at 2.3% (2017: +1.6%). The economy was supported by the rising oil price and strong growth in the construction sector, while the weak ruble and sanctions imposed by the E.U. and the United States had an offsetting effect. Consumer confidence also declined significantly, among other factors due to higher inflation rates and the increase in the retirement age.

In the **United States**, the expansionary tax policy led to stronger-than-expected growth of 2.9% (2017: +2.2%). Rising employment figures and income tax cuts boosted private consumption; investment was stimulated by the corporate tax reform. By contrast, headwinds came from foreign trade in the second half of the year. Exports slowed as a result of China's new import tariffs, which were introduced in response to higher U.S. duties.

Average annual growth in the **emerging markets of Asia** declined only slightly (2018: +6.2%; 2017: +6.4%). However, economic momentum in **China** slowed significantly over the course of the year. Overall, China saw growth of 6.6% in 2018, slower than in 2017 (+6.8%). The trade conflict with the United States in particular unsettled consumers and investors. Growth in Chinese industrial production declined over the course of the year. Automotive production declined by 3.8% after tax incentives expired in the previous year. Momentum slowed somewhat in the electronics industry and weakened significantly in the textile industry. Growth picked up in the construction sector. Economic output in the remaining emerging markets of Asia rose at the same rate as in 2017 (+5.6%).

1 All information relating to past years in this section can deviate from the previous year's report due to statistic revisions. In addition, the baseline for calculating real growth rates for GDP, customer industry and chemical production figures has been adjusted from 2010 to 2015. This changes the market share of individual countries and slightly increases global growth rates overall.

In **Japan**, growth declined again in 2018 after the exceptionally strong increase in the previous year (2018: +0.7%; 2017: +1.9%). Although private sector investment in production facilities continued to grow dynamically as a result of low interest rates and high capacity utilization, private consumption only rose moderately and export growth declined significantly. The trade conflict between the United States and China also increasingly made itself felt. In addition, extreme weather conditions and a severe earthquake led to a decline in GDP in the third quarter of 2018.

South America continued the recovery that started in 2017, albeit only at a moderate pace (2018: +1.0%; 2017: +1.6%). The truck drivers' strikes and the political uncertainty ahead of the presidential elections in the fall prevented a stronger economic recovery in Brazil (2018: +1.3%; 2017: +1.0%). Argentina suffered a loss of confidence among external investors, succumbed to a severe currency crisis and fell back into recession (2018: –2.4%; 2017: +2.9%). The crisis in Venezuela further intensified (2018: –15.0%; 2017: –9.1%), while the other countries in the region saw stronger growth overall (2018: +3.0%; 2017: +2.0%).

Trends in key customer industries

- **Growth in global industrial production lower than in 2017**
- **Mixed trends in key customer sectors**

Global industrial production grew by 3.2% in 2018, roughly in line with our expectations at the beginning of 2018 but down from the previous year (2017: +3.4%). Growth slowed in both the advanced economies (2018: +2.1%; 2017: +2.4%) and the emerging markets (2018: +4.2%; 2017: +4.4%).

The downturn was most pronounced in the E.U. (2018: +1.4%; 2017: +3.1%) and in Japan (2018: +0.9%; 2017: +2.7%). In South America, too, industrial production again declined slightly (2018: –0.3%; 2017: –0.8%). In the emerging markets of Asia, growth in industrial production was roughly on a level with the previous year, at 5.5% (2017: +5.6%). By contrast, growth in North America accelerated again markedly (2018: +3.1%; 2017: +1.8%).

The chemical industry's key customer sectors saw very mixed trends: Global **automotive production** contracted by 0.8% in 2018, a much weaker performance than in the previous year (+2.3%). Production fell by 1.3% in the E.U. Difficulties in the introduction of the new WLTP emission standard contributed significantly here. Automotive production declined slightly in North America. In China and South Korea, it decreased by 3.8% and 2%, respectively, and was largely flat in Japan (–0.2%). Production growth in the remaining emerging markets of Asia was slightly stronger than in 2017. India was a particularly large contributor here, with growth of 6.6%. In South America and Russia, automotive production rose significantly from a low baseline, but not as strongly as in the previous year. At 3.1%, growth in the **construction industry** was at the prior-year level (+3.1%). The E.U. saw much slower growth in construction activity after the exceptionally strong prior year. Moderating effects came from residential and commercial construction, while the infrastructure segment saw stronger year-on-year growth. Growth in the U.S. construction industry remained modest. Only investment in infrastructure saw significant gains here. In Asia, by contrast, growth in the construction industry remained at a comparatively high level. **Agricultural** production expanded at a much slower pace in 2018 compared with the previous year (2018: +1.9%; 2017: 3.3%), as cereal and soybean yields in Europe, North and South America as well as in South Africa were negatively impacted by the unusually long dry period. Agricultural output was flat overall in western Europe and fell significantly in eastern Europe. Substantial losses were also recorded in North America. Alongside weather-related influences, the trade conflict with China also played a key role here, which negatively impacted U.S. soybean exports to China. There was a noticeable decline in production in South America as a whole, primarily as a result of heavy production losses in Argentina. By contrast, the strong upward trend in agricultural production continued in Asia, although here too, growth was lower than in the previous year.

Growth in key customer industries

Real change compared with previous year

Industry total	**2018**	**3.2%**
	2017	3.4%
Transportation	**2018**	**(0.3%)**
	2017	2.0%
of which: automotive industry	**2018**	**(0.8%)**
	2017	2.3%
Energy and resources	**2018**	**3.0%**
	2017	1.7%
Construction	**2018**	**3.1%**
	2017	3.1%
Consumer goods	**2018**	**2.3%**
	2017	3.4%
Electronics	**2018**	**7.2%**
	2017	8.5%
Health and nutrition	**2018**	**4.0%**
	2017	4.4%
Agriculture	**2018**	**1.9%**
	2017	3.3%

Trends in the chemical industry

- **Global growth weaker than in prior year and below expectations**

The global chemical industry (excluding pharmaceuticals) grew by 2.7%, below our expectations at the beginning of 2018 (+3.6%) and below 2017 (+3.7%). Chemical production in the E.U. declined slightly overall after the strong prior year (2018: –0.9%, 2017: +3.2%), but fell sharply at the end of 2018 in particular. Contributing factors included capacity bottlenecks, lower export demand and weaker demand from the automotive industry in the second half of the year. In Asia, growth slowed overall to 3.4% after 4.5% in the previous year. At 3.6%, growth in the world's largest chemical market, China, was lower than in the prior year (+4.0%) and significantly lower than forecast at the beginning of the year (+5.0%). Stagnant demand from the automotive industry and slower momentum in other customer industries had a dampening effect. In Japan, too, growth fell significantly to 0.9% (2017: +7.1%) due to softer export demand. By contrast, growth picked up in the United States on the back of the economic upturn there and new production capacity (2018: +3.7%; 2017: +2.6%).

Important raw material price developments

- **Higher prices for crude oil and naphtha**
- **Year-on-year increase in gas prices, but with wide regional variance**

Averaging around $71 per barrel in 2018, the **oil price** for Brent crude rose by about 30% compared with the previous year ($54 per barrel). The average monthly oil price fluctuated over the course of the year between $81 per barrel in October and $56 per barrel in December.

The average monthly price for the chemical raw material **naphtha** ranged over the course of 2018 between $463 per metric ton in December and $676 per metric ton in September. At $602 per metric ton, the annualized average price of naphtha in 2018 was higher than in 2017 ($485 per metric ton).

The average **price of gas** in the United States was $3.16 per mmBtu, above the level of the previous year ($2.97 per mmBtu). In Europe, the average price of gas at the Title Transfer Facility (TTF) was significantly higher than in 2017, at $7.90 per mmBtu (2017: $5.71 per mmBtu). Gas prices in China averaged around $6.38 per mmBtu nationally (2017: $6.24 per mmBtu), while the average price in the coastal provinces of Shanghai, Jiangsu, Zhejiang, Shandong and Guangdong was $7.59 per mmBtu (2017: $7.43 per mmBtu).

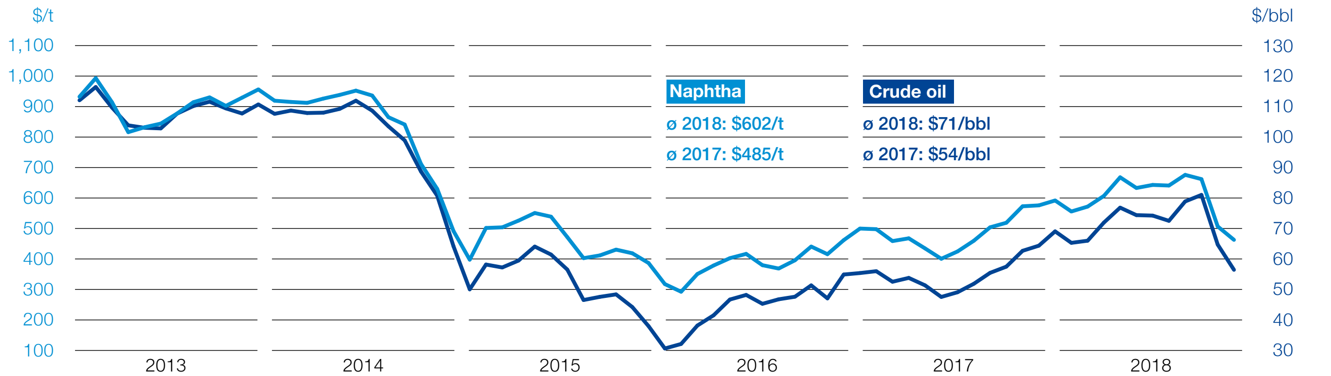
Chemical production (excluding pharmaceuticals)

Real change compared with previous year

World	**2018**	**2.7%**
	2017	3.7%
European Union	**2018**	**(0.9%)**
	2017	3.2%
United States	**2018**	**3.7%**
	2017	2.6%
Emerging markets of Asia	**2018**	**3.6%**
	2017	4.3%
Japan	**2018**	**0.9%**
	2017	7.1%
South America	**2018**	**(0.1%)**
	2017	0.0%

Price trends for crude oil (Brent blend) and naphtha

$/barrel, $/metric ton



Results of Operations

The world economy saw slightly weaker growth in 2018 than in 2017, with momentum increasingly slowing over the course of the year. Growth in global industrial production was also down slightly year on year, while the global chemical industry (excluding pharmaceuticals) saw a stronger decrease. In this market environment, BASF did not perform as well as we expected. Although we increased sales slightly, earnings declined considerably. All segments were affected by the earnings decrease. Earnings rose in the discontinued oil and gas business.

Business reviews by segment can be found from page 58 onward

Sales

- **Sales growth of 2% to €62,675 million**

Sales rose by €1,452 million to €62,675 million in 2018. This was primarily attributable to higher sales prices in all segments, particularly in the chemicals business.[1] Sales were also positively impacted by the acquisition of significant businesses and assets from Bayer in the Agricultural Solutions segment, which was closed in August 2018, and higher volumes, especially in the Functional Materials & Solutions segment. This was partly offset by negative currency effects in all segments.

Sales[2]

Million €	
2018	62,675
2017	61,223
2016	57,550
2015	70,449
2014	74,326

2 Sales for 2017 were reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for the years 2014 to 2016 have not been restated.

Factors influencing sales of the BASF Group

	Change in million €	Change in %
Volumes	442	1
Prices	2,715	4
Currencies	(2,183)	(4)
Acquisitions	629	1
Divestitures	(157)	0
Changes in scope of consolidation	6	0
Total change in sales	**1,452**	**2**

Income from operations

- **Considerable decline in EBIT before special items, EBIT and EBIT after cost of capital**
- **Significant premium on cost of capital again earned**

Income from operations (EBIT) before special items decreased by €1,292 million to €6,353 million as a result of lower contributions from all segments. The Chemicals segment in particular recorded considerably lower earnings, mainly due to lower margins for isocyanates and steam cracker products. The BASF Group's earnings were also negatively impacted by the low water levels on the Rhine River in the second half of 2018. BASF's business with the automotive industry also slowed in the second half of the year. In the Functional Materials & Solutions segment, EBIT before special items was considerably below the prior-year figure, primarily due to softer margins as a result of the increase in raw materials prices and higher fixed costs. The considerable decline in earnings in the Agricultural Solutions segment was attributable to negative currency effects in all regions as well as the strongly negative contribution from the businesses acquired from Bayer as a result of the late, intra-year timing of the transaction, the seasonality of the businesses and costs for integrating the businesses into the BASF Group. EBIT before special items declined slightly in the Performance Products segment, primarily due to lower sales volumes and negative currency effects.

For an explanation of the indicator EBIT before special items, see pages 29 to 30

EBIT before special items[3]

Million €	
2018	6,353
2017	7,645
2016	6,309
2015	6,739
2014	7,357

3 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 the years 2014 to 2016 have not been restated.

Special items in EBIT totaled minus €320 million in 2018, compared with minus €58 million in the previous year. Various restructuring measures led to special items of minus €102 million, after minus €131 million in 2017. At €174 million, integration costs in connection with business acquisitions were higher than the prior-year level (2017: €52 million), largely from the integration of the businesses acquired from Bayer in the Agricultural Solutions segment. Divestitures in 2018 accounted for an earnings contribution of minus €2 million. The prior-year figure included special income totaling €137 million, mainly in the Performance Products segment from the transfer of BASF's leather chemicals business to the Stahl group. The special items recognized in other charges and income amounted to minus €42 million in 2018, compared with minus €12 million in the previous year.

For the definition of special items, see pages 29 to 30

1 Our chemicals business comprises the Chemicals, Performance Products and Functional Materials & Solutions segments.

Special items

Million €	2018	2017
Restructuring measures	(102)	(131)
Integration costs	(174)	(52)
Divestitures	(2)	137
Other charges and income	(42)	(12)
Total special items in EBIT	**(320)**	**(58)**

At €6,033 million, **EBIT** for the BASF Group in 2018 was considerably below the previous year's level (2017: €7,587 million). Included in this figure is income from companies accounted for using the equity method, which declined from €323 million to €269 million.

EBIT[1]

Million €	
2018	6,033
2017	7,587
2016	6,275
2015	6,248
2014	7,626

1 EBIT for 2017 was reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for the years 2014 to 2016 have not been restated.

We once again earned a significant premium on our cost of capital in 2018. **EBIT after cost of capital** amounted to €825 million, compared with €2,902 million in the previous year. The cost of capital rose by €323 million year on year. This increase was mainly attributable to the assets acquired from Bayer in August 2018. By contrast, the classification of the oil and gas activities as discontinued operations meant that the related assets were retroactively no longer included in the cost of capital basis.

For an explanation of the indicator EBIT after cost of capital, see page 29

The calculation of EBIT as part of our statement of income is shown in the Consolidated Financial Statements on page 176

EBIT after cost of capital

Million €	2018	2017
EBIT of BASF Group	6,033	7,587
– EBIT of Other	(491)	(691)
– Cost of capital[2]	5,699	5,376
EBIT after cost of capital	**825**	**2,902**

2 In 2017 and 2018, the cost of capital percentage was 10%.

EBIT after cost of capital[3]

Million €	
2018	825
2017	2,902
2016	1,136
2015	194
2014	1,368

3 EBIT after cost of capital for 2017 was reduced by the share attributable to oil and gas activities due to their presentation as discontinued operations. Figures for the years 2014 to 2016 have not been restated.

Financial result and income after taxes

- **Financial result slightly, net income considerably below previous year**
- **Earnings per share decline from €6.62 to €5.12**

The **financial result** declined to minus €745 million in 2018, compared with minus €705 million in the previous year.

Net income from shareholdings decreased from minus €30 million in 2017 to minus €42 million, mainly as a result of higher expenses from loss transfer agreements.

The interest result declined from minus €315 million in 2017 to minus €366 million, mainly due to the increase in interest expenses from the higher level of financial indebtedness.

The other financial result amounted to minus €337 million, compared with minus €360 million in the previous year. This was largely attributable to the decrease in other financial expenses, primarily due to the lower net interest expense from pension plans.

Income before income taxes declined from €6,882 million in the previous year to €5,288 million in 2018. Income taxes decreased from €1,290 million in the previous year to €1,138 million in 2018. At 21.5%, the tax rate was above the prior-year level (18.7%), which included one-off deferred tax income in the total amount of €426 million from tax reforms, of which €379 million in the United States.

Income after taxes from continuing operations declined from €5,592 million to €4,150 million. **Income after taxes from discontinued operations** rose from €760 million to €829 million. This was mainly due to higher oil and gas prices as well as volumes growth in Norway and Russia. Overall, **income after taxes** declined from €6,352 million to €4,979 million.

At €272 million, noncontrolling interests were on a level with the previous year. **Net income** amounted to €4,707 million, considerably below the prior-year figure of €6,078 million. **Earnings per share** were €5.12, compared with €6.62 in 2017.

For information on the items in the statement of income, see the Notes to the Consolidated Financial Statements from page 218 onward

For information on the tax rate, see the Notes to the Consolidated Financial Statements from page 223 onward

For more information on the results of operations of discontinued operations, see page 86 onward

Additional indicators for results of operations

- **ROCE declines from 15.4% to 11.4%, adjusted earnings per share from €6.44 to €5.87**
- **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, EBIT after cost of capital, EBITDA before special items, EBITDA, the EBITDA margin, ROCE[1] and adjusted earnings per share. Other APMs are net debt,[2] free cash flow[2] and capital expenditure (capex).[3]

We have used the indicator **return on capital employed (ROCE)** since the 2018 business year. It measures the profitability of the capital employed by the segments. ROCE was 11.4%, after 15.4% in the previous year.

For more information on the determination of ROCE, see page 29

ROCE

Million €

		2018	2017
EBIT of BASF Group		6,033	7,587
– EBIT of Other		(491)	(691)
EBIT of segments		6,524	8,278
Cost of capital basis of segments, average of month-end figures		**56,990**	**53,750**
ROCE	%	**11.4**	**15.4**

Capital employed

Million €

	2018	2017
Intangible assets	13,375	11,666
+ Property, plant and equipment	18,519	18,128
+ Investments accounted for using the equity method	1,800	1,685
+ Inventories	10,951	9,896
+ Accounts receivable, trade	10,320	10,660
+ Current and noncurrent other receivables and other assets[4]	1,749	1,715
+ Assets of disposal groups	276	–
Cost of capital basis of segments, average of month-end figures	**56,990**	**53,750**
+ Deviation from cost of capital basis at closing rates as of December 31	5,823	(625)
+ Assets not included in cost of capital	23,743	25,643
of which disposal group for the oil and gas business	14,088	–
Assets of the BASF Group as of December 31	**86,556**	**78,768**

4 Including customer/supplier financing and other adjustments

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 extraordinary valuation allowances (impairments or reversals of impairments). 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.

EBITDA before special items declined by €1,257 million year on year to €9,481 million in 2018. At €9,166 million, EBITDA was down €1,599 million from the prior-year figure. The EBITDA margin was 14.6% in 2018, compared with 17.6% in the previous year.

EBITDA before special items

Million €

	2018	2017
EBIT	6,033	7,587
– Special items	(320)	(58)
EBIT before special items	**6,353**	**7.645**
+ Depreciation and amortization[5]	3,080	2,959
+ Valuation allowances on intangible assets and property, plant and equipment[5]	48	134
Depreciation, amortization and valuation allowances on intangible assets and property, plant and equipment	**3,128**	**3,093**
EBITDA before special items	**9,481**	**10,738**

5 Excluding depreciation, amortization and valuation allowances attributable to the discontinued oil and gas business

1 The financial return on assets reported in the previous year was the starting point for determining the return on assets, adjusted for special items from acquisitions and divestitures, which was used as a compensation parameter. The return on assets is no longer reported on, as this was replaced by ROCE as the compensation-relevant indicator from 2018 onward.
2 For more information on these indicators, see the Financial Position from page 53 onward
3 For more information on capex, see Value-Based Management on page 30 and Material Investments and Portfolio Measures on page 41

EBITDA

Million €		2018	2017
EBIT		6,033	7,587
+ Depreciation and amortization[1]		3,080	2,959
+ Valuation allowances on intangible assets and property, plant and equipment[1]		53	219
Depreciation, amortization and valuation allowances on intangible assets and property, plant and equipment		**3,133**	**3,178**
EBITDA		**9,166**	**10,765**
Sales revenue		62,675	61,223
EBITDA margin	%	**14.6**	**17.6**

1 Excluding depreciation, amortization and valuation allowances attributable to the discontinued oil and gas business

Compared with earnings per share, **adjusted earnings per share** has firstly been adjusted for special items. Secondly, amortization and valuation allowances (impairments and reversals of impairments) on intangible assets were 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 2018, adjusted earnings per share amounted to €5.87 compared with €6.44 in the previous year.

For information on the earnings per share according to IFRS, see the Notes to the Consolidated Financial Statements on page 218

Adjusted earnings per share

Million €		2018	2017
Income after taxes		**4,979**	**6,352**
– Special items		(320)	(58)
+ Amortization and valuation allowances on intangible assets		563	539
– Amortization and valuation allowances on intangible assets contained in special items		1	32
– Adjustments to income taxes		231	537
– Adjustments to income after taxes from discontinued operations		(34)	188
Adjusted income after taxes		**5,664**	**6,192**
– Adjusted noncontrolling interests		273	277
Adjusted net income		**5,391**	**5,915**
Weighted average number of outstanding shares (in thousands)		918,479	918,479
Adjusted earnings per share	€	**5.87**	**6.44**

Sales and earnings

Million €

		2018	2017	+/–
Sales		62,675	61,223	2.4%
Income from operations before depreciation, amortization and special items		9,481	10,738	(11.7%)
Income from operations before depreciation and amortization (EBITDA)		9,166	10,765	(14.9%)
EBITDA margin	%	14.6	17.6	–
Depreciation and amortization[1]		3,133	3,178	(1.4%)
Income from operations (EBIT)		6,033	7,587	(20.5%)
Special items		(320)	(58)	.
EBIT before special items		6,353	7,645	(16.9%)
Financial result		(745)	(705)	(5.7%)
Income before income taxes		5,288	6,882	(23.2%)
Income after taxes from continuing operations		4,150	5,592	(25.8%)
Income after taxes from discontinued operations		829	760	9.1%
Net income		4,707	6,078	(22.6%)
Earnings per share	€	5.12	6.62	(22.7%)
Adjusted earnings per share	€	5.87	6.44	(8.9%)

Sales and earnings by quarter in 2018[2]

Million €

		Q1	Q2	Q3	Q4	Full year
Sales		15,700	15,783	15,606	15,586	62,675
Income from operations before depreciation, amortization and special items		3,013	2,709	2,263	1,496	9,481
Income from operations before depreciation and amortization (EBITDA)		2,995	2,645	2,190	1,336	9,166
Depreciation and amortization[1]		732	739	795	867	3,133
Income from operations (EBIT)		2,263	1,906	1,395	469	6,033
Special items		(18)	(66)	(75)	(161)	(320)
EBIT before special items		2,281	1,972	1,470	630	6,353
Financial result		(181)	(192)	(138)	(234)	(745)
Income before income taxes		2,082	1,714	1,257	235	5,288
Income after taxes from continuing operations		1,581	1,361	1,032	176	4,150
Income after taxes from discontinued operations		177	162	235	255	829
Net income		1,679	1,480	1,200	348	4,707
Earnings per share	€	1.83	1.61	1.31	0.37	5.12
Adjusted earnings per share	€	1.93	1.77	1.51	0.66	5.87

Sales and earnings by quarter in 2017[2]

Million €

		Q1	Q2	Q3	Q4	Full year
Sales		16,027	15,449	14,516	15,231	61,223
Income from operations before depreciation, amortization and special items		3,035	2,872	2,517	2,314	10,738
Income from operations before depreciation and amortization (EBITDA)		3,030	2,814	2,655	2,266	10,765
Depreciation and amortization[1]		738	764	831	845	3,178
Income from operations (EBIT)		2,292	2,050	1,824	1,421	7,587
Special items		(6)	(70)	122	(104)	(58)
EBIT before special items		2,298	2,120	1,702	1,525	7,645
Financial result		(149)	(162)	(184)	(210)	(705)
Income before income taxes		2,143	1,888	1,640	1,211	6,882
Income after taxes from continuing operations		1,626	1,433	1,260	1,273	5,592
Income after taxes from discontinued operations		146	131	149	334	760
Net income		1,709	1,496	1,336	1,537	6,078
Earnings per share	€	1.86	1.63	1.45	1.68	6.62
Adjusted earnings per share	€	1.97	1.78	1.40	1.29	6.44

1 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments) excluding depreciation and amortization attributable to the discontinued oil and gas business
2 Quarterly results not audited

Net Assets

Assets

	December 31, 2018		December 31, 2017	
	Million €	**%**	**Million €**	**%**
Intangible assets	16,554	19.1	13,594	17.3
Property, plant and equipment	20,780	24.0	25,258	32.0
Investments accounted for using the equity method	2,203	2.5	4,715	6.0
Other financial assets	570	0.7	606	0.8
Deferred tax assets	2,342	2.7	2,118	2.7
Other receivables and miscellaneous assets	886	1.0	1,332	1.7
Noncurrent assets	**43,335**	**50.0**	**47,623**	**60.5**
Inventories	12,166	14.1	10,303	13.1
Accounts receivable, trade[1]	10,665	12.3	10,801	13.7
Other receivables and miscellaneous assets[1]	3,139	3.6	3,494	4.4
Marketable securities	344	0.4	52	0.1
Cash and cash equivalents	2,300	2.7	6,495	8.2
Assets of disposal groups	14,607	16.9	–	–
Current assets	**43,221**	**50.0**	**31,145**	**39.5**
Total assets	**86,556**	**100.0**	**78,768**	**100.0**

Assets

- **Acquisition-driven increase in total assets**
- **Reclassification of material assets to current assets of disposal groups**

Total assets amounted to €86,556 million as of December 31, 2018, around 10% higher than the prior-year figure. This increase was largely driven by the acquisition of significant businesses and assets from Bayer.

Noncurrent assets decreased by €4,288 million to €43,335 million. This is primarily attributable to the reclassification of noncurrent assets to the disposal groups, mainly for the oil and gas business and to a minor extent for the paper and water chemicals business.

More information on the above transactions and disposal groups can be found on page 42 of this Management's Report and in Notes 2.4 and 2.5 to the Consolidated Financial Statements from page 205 onward

The €2,960 million increase in intangible assets was largely attributable to acquisition-related additions, which amounted to €5,540 million as of the year-end, including €1,261 million in goodwill. The main offsetting effects were reclassifications to the disposal groups and depreciation and amortization.[2]

Property, plant and equipment declined by around 18% to €20,780 million, mainly as a result of reclassifications totaling €6,651 million, primarily to the disposal groups. Depreciation and amortization[2] amounted to €3,155 million, lower than investments (€3,615 million). Additions from acquisitions amounted to €1,425 million.

1 As of January 1, 2018, receivables from bank acceptance drafts are no longer reported under trade accounts receivable, but under the item other receivables and miscellaneous assets. The 2017 figures have been restated accordingly. For more information, see Note 18 to the Consolidated Financial Statements from page 235 onward.
2 Including impairments and reversals of impairments

Investments accounted for using the equity method declined by €2,512 million to €2,203 million, largely due to the reclassification of oil and gas shareholdings to the disposal group.

At €570 million, other financial assets were down €36 million from the prior-year level. Deferred tax assets increased by €224 million to €2,342 million, primarily from higher provisions for pensions and similar obligations. Other receivables and miscellaneous assets declined by €446 million year on year to €886 million, mainly due to the reclassification of loan receivables to the disposal group for the oil and gas business.

Current assets rose by €12,076 million to €43,221 million. This was primarily attributable to reclassifications from noncurrent assets to the disposal groups. The assets of disposal groups totaled €14,607 million as of the year-end, of which €14,088 million was attributable to the discontinued oil and gas business.

Inventories increased by €1,863 million. Of this figure, €887 million resulted from the transaction with Bayer. By contrast, trade accounts receivable declined by €136 million and other receivables and miscellaneous assets by €355 million, mainly due to lower bank acceptance drafts in China and the reclassification to the disposal group for the discontinued oil and gas business. Marketable securities rose by €292 million to €344 million following an optimization of current cash deposits. By contrast, cash and cash equivalents decreased by €4,195 million to €2,300 million, largely as a result of the purchase price payment to Bayer.

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, 2018		December 31, 2017	
	Million €	%	Million €	%
Paid-in capital	4,294	5.0	4,293	5.4
Retained earnings	36,699	42.4	34,826	44.2
Other comprehensive income	(5,939)	(6.9)	(5,282)	(6.7)
Noncontrolling interests	1,055	1.2	919	1.2
Equity	**36,109**	**41.7**	**34,756**	**44.1**
Provisions for pensions and similar obligations	7,434	8.6	6,293	8.0
Other provisions	1,860	2.1	3,478	4.4
Deferred tax liabilities	1,787	2.1	2,731	3.5
Financial indebtedness	15,332	17.7	15,535	19.7
Other liabilities	705	0.8	1,095	1.4
Noncurrent liabilities	**27,118**	**31.3**	**29,132**	**37.0**
Accounts payable, trade	5,122	5.9	4,971	6.3
Provisions	3,252	3.8	3,229	4.1
Tax liabilities	695	0.8	1,119	1.4
Financial indebtedness	5,509	6.4	2,497	3.2
Other liabilities	2,998	3.5	3,064	3.9
Liabilities of disposal groups	5,753	6.6	–	–
Current liabilities	**23,329**	**27.0**	**14,880**	**18.9**
Total equity and liabilities	**86,556**	**100.0**	**78,768**	**100.0**

Equity and liabilities

- **Equity ratio at 41.7%, compared with 44.1% in previous year**
- **Net debt rises by €6,712 million**

Equity rose by €1,353 million year on year to €36,109 million. Retained earnings increased by €1,873 million to €36,699 million. Other comprehensive income declined by €657 million to minus €5,939 million. This was mainly due to actuarial losses on the plan assets for defined benefit plans due to the negative development of the capital markets. This contrasted with currency effects. The equity ratio decreased from 44.1% to 41.7%, mainly as a result of the increase in total assets.

Compared with the end of 2017, noncurrent liabilities decreased by €2,014 million to €27,118 million. This was primarily due to the intra-year reclassification of noncurrent liabilities to the disposal groups, almost exclusively for the oil and gas business. By contrast, the transaction with Bayer increased noncurrent liabilities by €636 million in 2018.

Provisions for pensions and similar obligations rose by €1,141 million. This was largely driven by the remeasurement of plan assets. The reclassification of provisions to the disposal groups had an offsetting effect.

The €203 million decline in noncurrent financial indebtedness was mainly attributable to lower liabilities to credit institutions, which accounted for €190 million of this decrease. The carrying amounts of bonds and other liabilities to the capital market were slightly below the prior-year level as of December 31, 2018. Two eurobonds with an aggregate carrying amount of €2,002 million were reclassified to current financial indebtedness in 2018. By contrast, bonds were issued in pounds sterling, euros, U.S. dollars, Australian dollars and Japanese yen with terms of between four and 30 years and an aggregate carrying amount of €1,866 million as of the year-end. The intrayear reclassification of liabilities to credit institutions with a carrying amount of €499 million to the disposal group for the oil and gas business was partly offset by long-term loans taken out from banks.

Noncurrent other provisions declined by €1,618 million, deferred tax liabilities by €944 million and noncurrent other liabilities by €390 million. In each case, this was mainly due to reclassifications to the disposal group for the oil and gas business.

Current liabilities rose by €8,449 million to €23,329 million, primarily as a result of reclassifications to the disposal groups. The liabilities of disposal groups amounted to €5,753 million as of December 31, 2018. Current liabilities assumed in connection with the transaction with Bayer during the year amounted to €282 million as of the year-end.

Higher current financial indebtedness (+€3,012 million) and trade accounts payable (+€151 million) also contributed to the increase in current liabilities.

The rise in current financial indebtedness was largely due to the issue of U.S. dollar commercial paper with a carrying amount of around €2,549 million as of December 31, 2018. The reclassification of bonds to current financial indebtedness mentioned above contrasted with the scheduled repayment of three eurobonds with an aggregate carrying amount of €1,773 million.

Current tax liabilities declined by €424 million and current other liabilities by €66 million, in both cases primarily as a result of the reclassification to the disposal group for the oil and gas business. Within current liabilities, the main offsetting effect came from higher advances on orders. At €3,252 million as of December 31, 2018, current provisions were slightly above the prior-year level.

Overall, financial indebtedness grew by €2,809 million to €20,841 million. Together with the decline in cash and cash equivalents, particularly in connection with the purchase price payment for the acquisition of significant businesses from Bayer, this increased net debt by €6,712 million compared with December 31, 2017, to €18,197 million. Net debt is calculated by subtracting marketable securities and cash and cash equivalents from current and noncurrent financial indebtedness. This balance-related indicator provides information on effective indebtedness.

For more information on the composition and development of individual equity and liability items, see the Notes to the Consolidated Financial Statements from page 238 onward

For more information on the development of the balance sheet, see the Ten-Year Summary on pages 282 to 283

Net debt

Million €

	December 31, 2018	December 31, 2017
Noncurrent financial indebtedness	15,332	15,535
+ Current financial indebtedness	5,509	2,497
Financial indebtedness	**20,841**	**18,032**
– Marketable securities	344	52
– Cash and cash equivalents	2,300	6,495
Net debt	**18,197**	**11,485**

Financing policy and credit ratings

- **Financing principles remain unchanged**
- **"A" ratings confirmed**

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

Million €

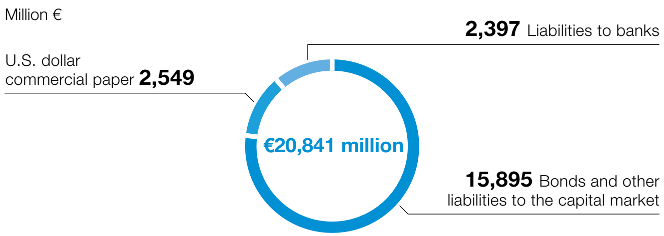
2019	5,509
2020	1,335
2021	1,178
2022	2,105
2023	1,155
2024 and beyond	9,559

Rated "A1/P-1/outlook stable" by Moody's, "A/A-1/outlook stable" by Standard & Poor's and "A/S-1/outlook stable" by Scope Ratings, BASF enjoys good credit ratings, especially compared with competitors in the chemical industry. These ratings were most recently confirmed by Moody's on February 15, 2019, by Standard & Poor's on January 11, 2019, and by Scope Ratings on December 11, 2018.

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 U.S. dollar commercial paper program, which has an issuing volume of up to $12.5 billion. As of December 31, 2018, commercial paper in the amount of $2,919 million was outstanding under this program; we did not hold any commercial paper as of December 31, 2017. Firmly committed, syndicated credit lines of €6 billion serve to cover the repayment of outstanding commercial paper, and can also be used for general company purposes. These were refinanced in January 2019. The above credit lines were not used at any point in 2018. Our external financing is therefore largely independent of short-term fluctuations in the credit markets.

Financing instruments



Off-balance-sheet financing tools, such as leasing, are of minor importance to us. 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).

For more information on the financing tools used, see Note 24 from page 246 onward and Note 27 from page 251 onward in the Notes to the Consolidated Financial Statements

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 by means of 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 interest to variable rates or vice versa.

Statement of cash flows

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

Cash flows from operating activities declined by €846 million compared with the previous year to €7,939 million in 2018. This was mainly due to the decrease in net income, despite lower amortization of intangible assets and depreciation of property, plant and equipment. The change in net working capital had an offsetting effect. This was primarily attributable to the decline in cash tied up for receivables and the higher level of cash released from operating liabilities. This was partly offset by the increase in cash tied up in inventories. The cash released in miscellaneous items in 2018 was largely the result of the increase in pension provisions as well as lower adjustments for non-cash-effective earnings contributions from equity-accounted investments compared with the previous year.

Cash flows from investing activities amounted to minus €11,804 million in 2018, compared with minus €3,958 million in 2017. Payments made for intangible assets and property, plant and equipment amounted to €3,894 million, €102 million below the prior-year figure and €144 million higher than amortization of intangible assets and depreciation of property, plant and equipment.

Acquisitions and divestitures in 2018 resulted in net payments made of €7,255 million. These mainly related to the purchase price payment to Bayer, which amounted to €7,208 million including liquid funds assumed. By contrast, net payments of €27 million were received in the previous year.

Cash tied up by changes in financial assets and miscellaneous items amounted to minus €655 million in 2018, after €11 million was released in 2017. The main contributing factors were higher additions from marketable securities and financial assets compared with the previous year, as well as the change in other financing-related receivables.

For more information on investments and acquisitions, see page 41 onward

Cash flows from financing activities amounted to minus €52 million in 2018, after €394 million in 2017. Changes in financial and similar liabilities resulted in a cash inflow of €3.0 billion in the reporting year, around €0.3 billion less than in the previous year. This was primarily due to the issue of U.S. dollar commercial paper by BASF SE with a carrying amount of around €2.5 billion and bonds with a carrying amount of around €1.9 billion. The main offsetting effect was the repayment of maturing bonds in the amount of €1.8 billion. In 2018, dividends of €2,847 million were paid to shareholders of BASF SE and €174 million to noncontrolling interests.

Cash and cash equivalents amounted to €2,519 million as of December 31, 2018. They declined by a cash-effective amount of €3,917 million in 2018, mainly as a result of the purchase price payment to Bayer.

Statement of cash flows

Million €

	2018	2017
Net income	4,707	6,078
Amortization of intangible assets and depreciation of property, plant and equipment	3,750	4,213
Changes in net working capital	(530)	(1,167)
Miscellaneous items	12	(339)
Cash flows from operating activities	**7,939**	**8,785**
Payments made for intangible assets and property, plant and equipment	(3,894)	(3,996)
Acquisitions/divestitures	(7,255)	27
Changes in financial assets and miscellaneous items	(655)	11
Cash flows from investing activities	**(11,804)**	**(3,958)**
Capital increases/repayments and other equity transactions	3	19
Changes in financial and similar liabilities	2,966	3,248
Dividends	(3,021)	(2,873)
Cash flows from financing activities	**(52)**	**394**
Changes in cash and cash equivalents affecting liquidity	(3,917)	5,221
Cash and cash equivalents at the beginning of the period and other changes	6,436	1,274
Cash and cash equivalents at the end of the year[1]	**2,519**	**6,495**

1 In 2018, cash and cash equivalents presented in the statement of cash flows deviate from the figure in the balance sheet, as cash and cash equivalents of the oil and gas business in the balance sheet have been reclassified to the disposal group.

Free cash flow, which remains after deducting payments made for intangible assets and property, plant and equipment from cash flows from operating activities, represents the financial resources remaining after investments. It declined to €4,045 million compared with €4,789 million in the previous year due to the decrease in cash flows from operating activities.

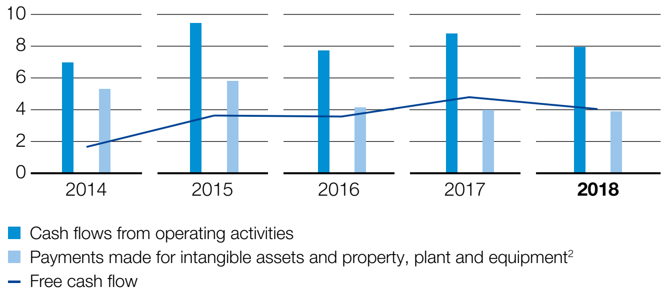
Free cash flow

Million €

	December 31, 2018	December 31, 2017
Cash flows from operating activities	7,939	8,785
– Payments made for intangible assets and property, plant and equipment	3,894	3,996
Free cash flow	**4,045**	**4,789**

Cash flow

Billion €



2 Including investments to the extent that they already had an effect on cash

Actual Development Compared with Outlook for 2018

BASF Group sales increased slightly in 2018, in line with our forecast. EBIT before special items declined considerably in 2018 and was thus lower than the slight increase forecast at the beginning of the year. On the one hand, we adjusted our forecast in September 2018 to a slight decline in EBIT before special items compared with the adjusted figure for 2017 as a result of the changed presentation of the oil and gas business following the signing of the definitive agreement with LetterOne. On the other, earnings development in the Functional Materials & Solutions and Performance Products segments in particular did not meet our expectations. As a result, EBIT also declined considerably in 2018 instead of slightly as we had anticipated. EBIT after cost of capital declined considerably, as expected.

Forecast/actual comparison[1]

	Sales		Income from operations (EBIT) before special items	
	2018 forecast	**2018 actual**	**2018 forecast**	**2018 actual**
Chemicals	slight decline	slight increase	considerable decline	considerable decline
Performance Products	slight increase	slight decline	considerable increase	slight decline
Functional Materials & Solutions	slight increase	slight increase	considerable increase	considerable decline
Agricultural Solutions	considerable increase	considerable increase	slight decline	considerable decline
Other	slight increase	considerable increase	slight increase	considerable increase
BASF Group	**slight increase**	**slight increase**	**slight increase**[2]	**considerable decline**

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%).
2 We adjusted our forecast in September 2018 to a slight decline in EBIT before special items compared with the adjusted figure for 2017 as a result of the changed presentation of the Wintershall Group following the signing of the definitive agreement with LetterOne. We revised this forecast in December 2018 to a considerable decline in EBIT before special items.

We increased sales slightly in the **Chemicals** segment, after predicting a slight decline in sales at the beginning of 2018. The anticipated decrease in isocyanate prices as a result of additional capacities occurred later in the year than expected. EBIT before special items declined considerably as forecast.

Sales in the **Performance Products** segment declined slightly, contrary to our forecast of a slight increase. We were unable to increase sales volumes as expected due to the continued lower availability of citral-based products in the Nutrition & Health division and lower sales volumes in the Care Chemicals division, especially for oleochemical surfactants and fatty alcohols, as well as in the hygiene business. As a result, EBIT before special items did not increase considerably as anticipated, but declined slightly.

Sales in the **Functional Materials & Solutions** segment increased slightly in line with our forecast. Margins did not improve as expected due to the increase in raw materials prices, and so we recorded a considerable decline instead of a considerable increase in EBIT before special items.

We achieved a considerable increase in sales in the **Agricultural Solutions** segment, as forecast. The acquisition of significant businesses from Bayer, which was originally expected in the first half of 2018, was delayed until August 2018. The later-than-expected closing of the transaction and the seasonality of the businesses meant that earnings were more negatively impacted than anticipated. Earnings were also weighed down by currency effects in all regions. Consequently, EBIT before special items declined considerably instead of slightly. EBIT before special items excluding the acquired Bayer activities also declined considerably compared with the previous year, rather than the slight increase we forecast.

In **Other**, both sales and EBIT before special items increased considerably and were thus higher than our forecast of a slight increase. The stronger sales development was mainly attributable to higher sales volumes in raw materials trading. The improvement in earnings was primarily due to valuation effects for our long-term incentive program.

In 2018, we invested a total of €3.5 billion in capital expenditures (capex), excluding additions from acquisitions, capitalized exploration, IT investments, restoration obligations and right-of-use assets arising from leases. This includes **capex** of €383 million in the former Oil & Gas segment for the first three quarters of 2018. The figure forecast at the beginning of 2018 was approximately €4.0 billion and included investments of €0.7 billion in the former Oil & Gas segment. Capex in the Functional Materials & Solutions segment and Other in particular was below the planned values.

For information on our expectations for 2019, see page 120 onward
For information on investments, see page 41

Business Review by Segment

Segment overview

Million €

	Sales		Income from operations before depreciation and amortization (EBITDA)		Income from operations (EBIT) before special items	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Chemicals	16,501	16,331	4,432	5,374	3,386	4,233
Performance Products	15,812	16,217	2,205	2,427	1,376	1,416
Functional Materials & Solutions	21,435	20,745	1,917	2,251	1,307	1,617
Agricultural Solutions	6,156	5,696	985	1,282	734	1,033
Other	2,771	2,234	(373)	(569)	(450)	(654)
BASF Group	**62,675**	**61,223**	**9,166**	**10,765**	**6,353**	**7,645**

Segment overview

Million €

	Income from operations (EBIT)		Assets		Investments including acquisitions[1]	
	2018	**2017**	**2018**	**2017**	**2018**	**2017**
Chemicals	3,360	4,208	13,264	13,233	1,325	1,149
Performance Products	1,338	1,510	14,903	14,432	765	800
Functional Materials & Solutions	1,235	1,545	17,654	17,364	872	1,056
Agricultural Solutions	591	1,015	16,992	8,096	7,110	185
Other	(491)	(691)	23,743	25,643	663	1,174
BASF Group	**6,033**	**7,587**	**86,556**	**78,768**	**10,735**	**4,364**

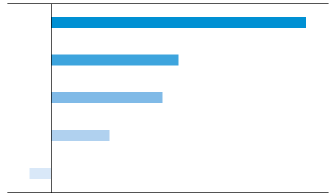
1 Additions to property, plant and equipment (of which from acquisitions: €1,425 million in 2018 and €8 million in 2017) and intangible assets (of which from acquisitions: €5,540 million in 2018 and €235 million in 2017)

Contributions to total sales by segment

Chemicals	26%	
Performance Products	25%	
Functional Materials & Solutions	34%	
Agricultural Solutions	10%	
Other	5%	

Contributions to EBITDA by segment

Chemicals	48%	
Performance Products	24%	
Functional Materials & Solutions	21%	
Agricultural Solutions	11%	
Other	(4%)	



Sales[1]

Million €

	Q1		Q2		Q3		Q4	
	2018	2017	2018	2017	2018	2017	2018	2017
Chemicals	4,286	4,105	4,132	4,045	4,309	4,023	3,774	4,158
Performance Products	3,991	4,260	3,949	4,142	3,989	3,983	3,883	3,832
Functional Materials & Solutions	5,139	5,198	5,540	5,261	5,238	4,975	5,518	5,311
Agricultural Solutions	1,728	1,855	1,501	1,526	1,243	987	1,684	1,328
Other	556	609	661	475	827	548	727	602
BASF Group	**15,700**	**16,027**	**15,783**	**15,449**	**15,606**	**14,516**	**15,586**	**15,231**

Income from operations (EBIT) before special items[1]

Million €

	Q1		Q2		Q3		Q4	
	2018	2017	2018	2017	2018	2017	2018	2017
Chemicals	1,134	958	1,074	1,120	851	1,102	327	1,053
Performance Products	470	515	409	405	360	385	137	111
Functional Materials & Solutions	333	531	338	422	347	397	289	267
Agricultural Solutions	423	533	278	272	(5)	21	38	207
Other	(79)	(239)	(127)	(99)	(83)	(203)	(161)	(113)
BASF Group	**2,281**	**2,298**	**1,972**	**2,120**	**1,470**	**1,702**	**630**	**1,525**

Income from operations (EBIT)[1]

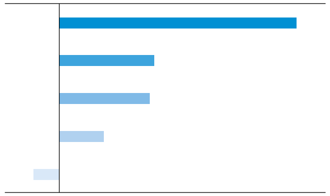
Million €

	Q1		Q2		Q3		Q4	
	2018	2017	2018	2017	2018	2017	2018	2017
Chemicals	1,126	974	1,064	1,119	846	1,089	324	1,026
Performance Products	482	499	402	363	348	567	106	81
Functional Materials & Solutions	325	521	326	427	337	357	247	240
Agricultural Solutions	417	531	259	270	(39)	20	(46)	194
Other	(87)	(233)	(145)	(129)	(97)	(209)	(162)	(120)
BASF Group	**2,263**	**2,292**	**1,906**	**2,050**	**1,395**	**1,824**	**469**	**1,421**

1 Quarterly results not audited

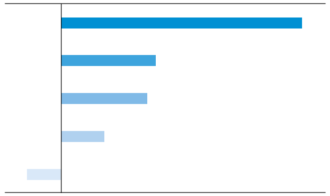
Contributions to EBIT before special items by segment

Chemicals	53%
Performance Products	22%
Functional Materials & Solutions	21%
Agricultural Solutions	11%
Other	(7%)



Contributions to EBIT by segment

Chemicals	56%
Performance Products	22%
Functional Materials & Solutions	20%
Agricultural Solutions	10%
Other	(8%)



Chemicals

The Chemicals segment consists of the Petrochemicals, Monomers and Intermediates divisions. In our integrated production facilities – our Verbund – we produce a broad range of basic chemicals and intermediates in Europe, Asia, North America and South America for our customers as well as for internal supply into the BASF Verbund.

Divisions

Petrochemicals

Broad range of basic products for sectors such as the chemical and plastics industries

Monomers

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

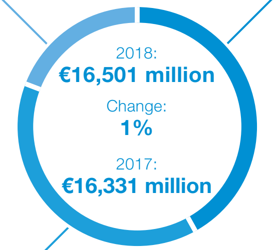
Intermediates

Most comprehensive intermediates portfolio in the world, including precursors for coatings, plastics, textile fibers and crop protection products

Sales

Intermediates
€3,133 million
Change: **5%**
Percentage of sales: **19%**

Petrochemicals
€6,904 million
Change: **8%**
Percentage of sales: **42%**



Monomers
€6,464 million
Change: **–7%**
Percentage of sales: **39%**

Factors influencing sales

Volumes	(1%)
Prices	4%
Portfolio	0%
Currencies	(2%)
Sales	**1%**

Income from operations before special items

Million €	
2018	**3,386**
2017	4,233

Change: **–€847 million**

How we create value – an example

Biomass balance approach for methanol

Fossil resource-saving process expanded

Value for BASF

Annual volume of relevant market in Europe

20.5 million metric tons

Value for the environment

≥50% lower greenhouse gas emissions

Since 2013, BASF has used the biomass balance approach to promote the use of sustainably produced renewable raw materials in the integrated Production Verbund by replacing fossil feedstock with biogas or bio-naphtha at the very beginning of the value chain. BASF has produced methanol according to the biomass balance approach since 2018. This methanol is certified according to the EU-RedCert standard. Methanol is an important raw material for many products in different value chains. Potential applications are biofuels and fuel additives. The European market for methyl-tert-butylether (MTBE), a fuel additive manufactured from methanol, has an annual volume of 20.5 million metric tons.

Biomass balance products actively contribute to saving fossil raw materials and in this way, help reduce greenhouse gas emissions. For instance, using renewable feedstock in the methanol production process reduces climate-damaging greenhouse gas emissions by at least 50% compared with conventionally produced methanol. For the methanol certified according to the EU-RedCert standard, BASF completely replaces fossil methane with biomethane made from waste and residual materials.

Strategy

- **Integrated production facilities form core of Verbund**
- **Technology and cost leadership provide most important competitive edge**

With its production facilities, the Chemicals segment is at the heart of the Verbund and supplies BASF's segments with basic chemicals for the production of downstream products. We add value with innovations in processes and production and invest in future markets. As a reliable supplier, we provide chemicals of consistent quality and market them to customers in downstream industries. We continuously improve our value chains and are expanding our market position – particularly outside Europe – with new processes and technologies, as well as through investments and collaborations in future markets.

We invest in research and development to develop new technologies and to make our existing technologies even more efficient. Cost leadership and a clear orientation along 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 capacity utilization, continuous optimization of access to raw materials, lean and energy efficient processes – including reducing greenhouse gas emissions – and reliable, cost-effective logistics. Furthermore, we are constantly improving our global production structures and aligning these with regional market requirements.

We plan to build an integrated Verbund chemical production site in Zhanjiang in the southern Chinese province of Guangdong. A non-binding Memorandum of Understanding was signed in July 2018. At the new site, we intend to implement a comprehensive smart manufacturing concept based on implementing cutting-edge digital technologies within the plants.

BASF and Sinopec, Beijing, signed a Memorandum of Understanding in October to further strengthen their partnership in chemical production in China. The partners intend to build an additional steam cracker and to further expand their existing 50:50 joint venture, BASF-YPC Company Limited, at our Verbund site in Nanjing.

To support the growing demand for acrylic monomers in Asia Pacific, BASF PETRONAS Chemicals is looking into expanding the production capacity of its acrylic acid plant and butyl acrylate plants at our Verbund site in Kuantan, Malaysia.

At our Verbund site in Antwerp, Belgium, we are planning a significant capacity expansion of the integrated ethylene oxide complex. The project also includes several downstream derivatives, such as surfactants.

In Ludwigshafen, Germany, we will strengthen our Verbund by replacing our acetylene plant with a modern highly efficient plant by the end of 2019.

The new MDI synthesis unit in Geismar, Louisiana, is a major milestone toward increasing MDI production capacity in North America. This investment supports the growth of our MDI customers in the North American market.

On September 18, 2017, we signed an agreement with Solvay on the acquisition of Solvay's integrated polyamide business.

For more information on the current status of the agreement with Solvay, see page 42

Products, customers and applications

Division	Products	Customer industries and applications
Petrochemicals	Ethylene, propylene, butadiene, benzene, alcohols, solvents, plasticizers, alkylene oxides, glycols and acrylic monomers	Use in the BASF Verbund Chemical and plastics industry, detergent, hygiene, automotive, packaging and textile industries; production of paints, coatings, and cosmetics as well as oilfield, construction and paper chemicals
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
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 Plastics, coatings and pharmaceutical industries, production of detergents and cleaners as well as crop protection products and textile fibers

Investments

Location	Project	Additional annual capacity through expansion (metric tons)	Total annual capacity (metric tons)	Startup
Freeport, Texas	Construction: ammonia plant[1]		750,000	2018
Geismar, Louisiana	Construction: MDI synthesis unit	n/a	300,000	2020
Ludwigshafen, Germany	Replacement: acetylene plant	n/a	90,000	2019
Nanjing, China	Construction: specialty amines plant	21,000	n/a	2019
	Expansion: propionic acid plant[2]	30,000	69,000	2019

1 Operated by an associated company with Yara International ASA
2 Operated by a joint venture with Sinopec

Production capacities of significant products[1]

	Sites				
Product	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
Ammonia	■				1,525,000
Benzene	■	■	■		910,000
Butadiene	■	■	■		680,000
Butanediol equivalents	■	■	■		670,000
Chlorine	■				385,000
Ethanolamines and derivatives	■		■		430,000
Ethylene	■	■	■		3,480,000
Ethylene oxide	■	■	■		1,445,000
Urea	■				545,000
Isocyanates	■	■	■		2,610,000
Caustic soda	■				360,000
Neopentyl glycol	■	■	■		205,000
Oxo-C4 alcohols (calculated as butyraldehyde)	■	■	■		1,625,000
Polyamide 6 and 6.6	■	■	■		820,000
Polyamide precursors	■	■			910,000
PolyTHF®	■	■	■		350,000
Propionic acid	■		■		150,000
Propylene	■	■	■		2,610,000
Propylene oxide	■				675,000
Sulfuric acid	■				920,000
Plasticizers	■	■			595,000

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

Segment data – Chemicals

Million €

		2018	2017	+/–
Sales to third parties		16,501	16,331	1%
of which Petrochemicals		6,904	6,389	8%
Monomers		6,464	6,963	(7%)
Intermediates		3,133	2,979	5%
Intersegment transfers		6,105	6,063	1%
Sales including intersegment transfers		22,606	22,394	1%
Income from operations before depreciation and amortization (EBITDA)		4,432	5,374	(18%)
EBITDA margin	%	26.9	32.9	–
Depreciation and amortization[1]		1,072	1,166	(8%)
Income from operations (EBIT)		3,360	4,208	(20%)
Special items		(26)	(25)	(4%)
EBIT before special items		3,386	4,233	(20%)
EBIT after cost of capital		2,030	2,895	(30%)
Assets		13,264	13,233	0%
Investments including acquisitions[2]		1,325	1,149	15%
Research and development expenses		129	128	1%

1 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments)
2 Additions to intangible assets and property, plant and equipment

Chemicals segment

- **Sales growth of 1% to €16,501 million due to higher prices**
- **EBIT before special items declines 20% to €3,386 million primarily as a result of lower margins, impacted by low water level of Rhine River**

At €16,501 million, sales to third parties in the Chemicals segment in 2018 were €170 million above the prior-year figure (volumes –1%, prices 4%, portfolio 0%, currencies –2%). This was due to higher prices overall in all divisions, especially in Petrochemicals. By contrast, the Monomers division saw a decrease in isocyanate prices. Currency effects had a negative impact on sales. Sales volumes were also slightly below the prior-year level. We increased volumes overall in the Petrochemicals and Intermediates divisions despite the low water levels on the Rhine River, while sales volumes declined considerably in the Monomers division.

Income from operations (EBIT) before special items declined by €847 million to €3,386 million. This was mainly attributable to lower margins for isocyanates in the Monomers division and steam cracker products in the Petrochemicals division. Stronger margins in the Intermediates division were unable to compensate for this. Plant shutdowns and the low water levels on the Rhine River in the second half of 2018 also contributed to the decline in earnings. EBIT declined by €848 million to €3,360 million. Overall, special items did not have a substantial impact.

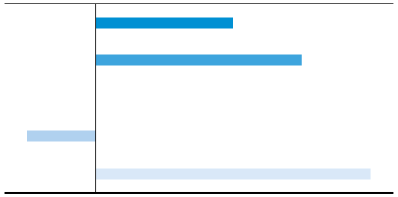
Petrochemicals

- **Sales rise 8% to €6,904 million due to higher prices and volumes**
- **Considerable decline in EBIT before special items attributable to lower margins, higher fixed costs and low water level of Rhine River**

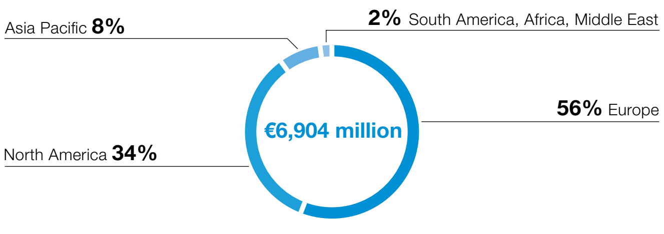
The Petrochemicals division increased sales to third parties by €515 million to €6,904 million in 2018. This was mainly due to significantly higher sales prices. These rose in all regions and business areas, largely following the higher raw materials prices for naphtha and butane, our most important feedstock. We also increased volumes. In Europe, sales volumes were slightly higher than in the previous year, as the supply of raw materials through the North Harbor and thus production in Ludwigshafen, Germany, was severely restricted in 2017. However, the low water levels on the Rhine River in the third and fourth quarters of 2018 led to significant production limitations. Volumes rose in North America, mainly as a result of higher capacity utilization of the condensate splitter in Port Arthur, Texas. Sales were dampened by currency effects.

Petrochemicals – Factors influencing sales

Volumes	4%
Prices	6%
Portfolio	0%
Currencies	(2%)
Sales	**8%**



Petrochemicals – Sales by region



EBIT before special items declined considerably. Compared with the very strong prior-year level, margins decreased significantly over the course of the year, especially for steam cracker products. This was due to higher market supply as a result of new capacities in the market, particularly in North America. Fixed costs increased. In the previous year, we received significantly higher insurance refunds; in addition, maintenance expenses were up from the 2017 figure. The low water levels on the Rhine River was a significant contributor to the decline in earnings.

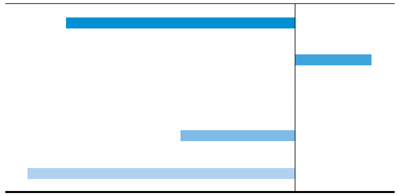
Monomers

- **Sales down 7% to €6,464 million as a result of lower volumes and negative currency effects**
- **Considerable decline in EBIT before special items largely from lower margins and volumes in the isocyanates business**

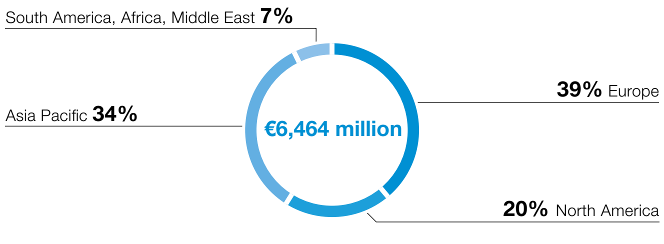
Sales to third parties in the Monomers division decreased by €499 million to €6,464 million in 2018 due to lower volumes and negative currency effects. Sales volumes declined year on year as a result of higher market supply and the low water levels on the Rhine River. Overall, prices were above the prior-year level. Higher prices for polyamides in particular compensated for the price decrease in the isocyanates business on the back of higher market supply.

Monomers – Factors influencing sales

Volumes	(6%)
Prices	2%
Portfolio	0%
Currencies	(3%)
Sales	**(7%)**



Monomers – Sales by region



The considerable year-on-year decline in EBIT before special items in the Monomers division was primarily attributable to the lower margins and volumes in the isocyanates business. Earnings development in the fourth quarter of 2018 was also negatively impacted by the low water levels on the Rhine River. The restructuring of our caprolactam production in Europe and reduced fixed costs, mainly owing to lower impairments, had a positive effect on earnings.

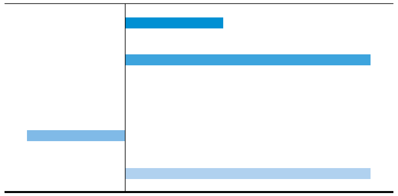
Intermediates

- **Sales increase of 5% to €3,133 million largely driven by higher prices**
- **EBIT before special items slightly above the prior-year level due to margin and volumes growth**

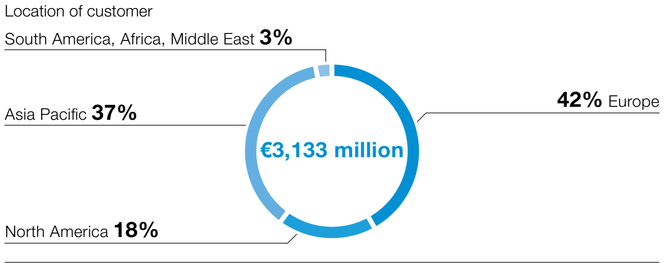
The Intermediates division increased sales to third parties by €154 million year on year to €3,133 million, primarily due to higher prices. We were able to increase prices, particularly in the acids and polyalcohols business in all regions. Prices for butanediol and derivatives rose as well, especially in Europe and North America. We also increased sales volumes in 2018 – across the entire portfolio in Asia and above all in the amines and butanediol and derivatives businesses in North America. Currency effects had a negative impact on sales.

Intermediates – Factors influencing sales

Volumes	2%
Prices	5%
Portfolio	0%
Currencies	(2%)
Sales	**5%**



Intermediates – Sales by region



EBIT before special items rose slightly compared with the previous year as a result of improved margins and volumes growth. This was partly offset by higher fixed costs, mostly from plant shutdowns.

The construction of the new acetylene plant in Ludwigshafen, Germany, is progressing according to schedule, with startup planned by the end of 2019.

Performance Products

The Performance Products segment consists of the Dispersions & Pigments, Care Chemicals, Nutrition & Health and Performance Chemicals divisions. Our offerings enhance the performance of industrial and consumer products worldwide. With our tailor-made solutions, our customers can make their production processes more efficient and give their products improved application properties.

Divisions

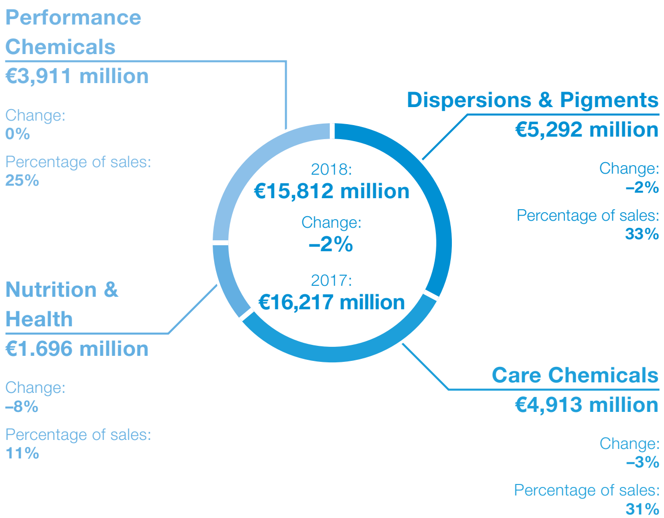
Dispersions & Pigments
Raw materials used to formulate products in the coating, construction, paper, adhesives, printing and packaging, plastics and electronic industries

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

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

Performance Chemicals
Customized products for many sectors, from mining and the fuel industry to plastics processing

Sales



Factors influencing sales

Volumes	(2%)
Prices	4%
Portfolio	(1%)
Currencies	(3%)
Sales	**(2%)**

Income from operations before special items

Million €	
2018	**1,376**
2017	1,416

Change: **–€40 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 population growth: scarce resources, environmental and climatic stressors, greater demand for food and the desire for better quality of life. In doing so, we focus on research and development and maintain close relationships to leading companies in our customer industries. We position ourselves globally in order 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.

Our products create additional value for our customers, providing a competitive advantage. We develop new solutions together with our customers and strive for long-term partnerships that create profitable growth opportunities for both sides.

A different business model is pursued for standard products such as vitamins or dispersions for paper coatings. Here, efficient production setups, backward integration in our Production Verbund's value chains, capacity management, and technology and cost leadership are all essential.

We support our customers by serving as a reliable supplier with consistently high product quality, good value for money and lean processes. Our in-depth knowledge of the areas of application and technological innovations strengthen our customer relationships in key industries.

How we create value – an example

Hepaxa™

First-to-the-world dietary management product for patients with non-alcoholic fatty liver disease

Value for BASF

Annual sales potential of

around **€45 million**

Value for customers

Reduction of fat in the liver of

up to **44%**

Hepaxa™ is a breakthrough in the nutritional support of non-alcoholic fatty liver disease (NAFLD), one of the most common forms of chronic liver disease worldwide and can help tens of millions of patients manage NAFLD. Providing highly concentrated and pure eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), Hepaxa™, which was launched in the United States, is the first product in the world specifically designed to address a build-up of fat in the liver, known as steatosis, in NAFLD patients. We expect an annual sales potential with Hepaxa™ of around €45 million over the medium term.

NAFLD has become a disease of public health significance affecting both adults and children. It has been shown that patients with NAFLD have reduced levels of EPA and DHA. Hepaxa™ helps address a patient's distinct nutritional requirement for such omega-3 long chain polyunsaturated fatty acids. A BASF product-specific clinical trial has shown that Hepaxa™ is safe and effective in the dietary management of steatosis in patients with NAFLD. Patients in the trial showed reductions of fat of up to 44% in the liver after placebo correction.

We plan to increase global production capacities for the antioxidant Irganox® 1010 by 40% at our sites in Jurong, Singapore, and Kaisten, Switzerland. Once the projects are complete – in 2019 in Kaisten and early 2021 in Jurong – BASF wants to even better meet the growing demand from customers in Asia and Europe, the Middle East and Africa at its regional distribution centers. We are expanding our existing ibuprofen production capacities in Bishop, Texas, and started construction of a new world-scale ibuprofen plant in Ludwigshafen, Germany, which is scheduled for startup in 2022. To reliably meet the growing demand for high quality dispersions solutions in the ASEAN countries, Australia and New Zealand, we plan to double the production capacity for acrylics dispersions in Pasir Gudang, Malaysia. The additional capacities are planned to be operational in 2020.

On May 3, 2018, BASF and Solenis announced that they had signed an agreement on the combination of BASF's paper and water chemicals business with Solenis. BASF and Solenis closed the transaction on January 31, 2019.

For more information, see Events after the reporting period on page 122

Products, customers and applications

Division	Products	Customer industries and applications
Dispersions & Pigments	Polymer dispersions, pigments, resins, formulation additives, electronic materials	Coating, construction, paper, adhesives, printing and packaging, plastics and electronic industries
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, polymers, biocides and products for optical effects Excipients for crop protection product formulations, products for concrete additives and chemical processes such as emulsion polymerization, metal surface treatments or textile processing, as well as products for biofuels and other industrial applications Superabsorbents for baby diapers, incontinence products and feminine hygiene articles	Cosmetics industry, detergent and cleaner industry, agrochemical industry, technical applications for various industries, hygiene industry
Nutrition & Health	Additives for the food and feed industries, such as vitamins, carotenoids, sterols, enzymes, emulsifiers and omega-3 fatty acids Industrial enzymes for ethanol production Flavors and fragrances, such as citral, geraniol, citronellol, L-menthol and linalool 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 ethanol industry
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 Functional chemicals and process chemicals for the production of paper and cardboard, water treatment chemicals, membrane technologies, kaolin minerals	Plastics processing industry, automotive industry, fuel and lubricant industry, oil and gas industry, mining industry, municipal and industrial water treatment as well as paper and packaging industry

Production capacities of significant products[1]

	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
Polyisobutene	■		■		265,000
Superabsorbents	■	■	■	■	590,000

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

Investments

Location	Project	Startup
Antwerp, Belgium	Gradual capacity expansion: alkoxylates	2018–2021
Bishop, Texas	Capacity expansion: production plant for ibuprofen	2019
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
Jiaxing, China	Construction: production plant for electronic-grade sulfuric acid	2018
Jurong, Singapore	Capacity expansion: antioxidants (Irganox®)	2021
Kaisten, Switzerland	Capacity expansion: antioxidants (Irganox®)	2019
Kuantan, Malaysia	Construction: aroma ingredients complex	2017/2018
Ludwigshafen, Germany	Expansion: production plant for dispersions	2018
	Construction: production plant for vitamin A	2020
	Construction: production plant for ibuprofen	2022
Nanjing, China	Capacity expansion: polyacrylamide plant	2018
Pasir Gudang, Malaysia	Capacity expansion: production plant for acrylics dispersions	2020
Shanghai, China	Construction: production plant for plastic additives	2019

Segment data – Performance Products

Million €

		2018	2017	+/–
Sales to third parties		15,812	16,217	(2%)
of which Dispersions & Pigments		5,292	5,398	(2%)
Care Chemicals		4,913	5,079	(3%)
Nutrition & Health		1,696	1,844	(8%)
Performance Chemicals		3,911	3,896	0%
Intersegment transfers		498	506	(2%)
Sales including intersegment transfers		16,310	16,723	(2%)
Income from operations before depreciation and amortization (EBITDA)		2,205	2,427	(9%)
EBITDA margin	%	13.9	15.0	–
Depreciation and amortization[1]		867	917	(5%)
Income from operations (EBIT)		1,338	1,510	(11%)
Special items		(38)	94	.
EBIT before special items		1,376	1,416	(3%)
EBIT after cost of capital		(131)	26	.
Assets		14,903	14,432	3%
Investments including acquisitions[2]		765	800	(4%)
Research and development expenses		394	395	(0%)

1 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments)
2 Additions to intangible assets and property, plant and equipment

Performance Products segment

- **Sales 2% lower at €15,812 million, mainly as a result of currency effects and lower volumes**
- **EBIT before special items down 3% to €1,376 million, primarily due to lower sales volumes and negative currency effects**

At €15,812 million, sales to third parties in the Performance Products segment in 2018 were €405 million below the prior-year figure (volumes –2%, prices 4%, portfolio –1%, currencies –3%). This is mainly attributable to negative currency effects in all divisions. Sales were also negatively impacted by lower volumes in the Nutrition & Health and Care Chemicals divisions as well as portfolio effects. Higher sales prices in all divisions had an offsetting effect.

Despite an overall improvement in margins, income from operations (EBIT) before special items declined by €40 million year on year to €1,376 million. This was largely due to lower sales volumes and negative currency effects. Excluding the negative currency effects, EBIT before special items was flat year on year. Compared with 2017, EBIT declined by €172 million to €1,338 million. In the previous year, we generated special income from the transfer of BASF's leather chemicals business to the Stahl group; in 2018, special charges arose from various individual items.

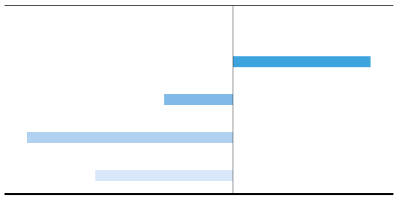
Dispersions & Pigments

- **Sales 2% below the prior-year figure at €5,292 million, largely from negative currency effects**
- **Considerable decline in EBIT before special items, primarily as a result of lower margins and higher fixed costs**

Sales to third parties in the Dispersions & Pigments division amounted to €5,292 million, €106 million below the prior-year level. This was mainly due to negative currency effects in almost all regions. Sales were also reduced by the divestiture of the production site for styrene butadiene-based paper dispersions in Pischelsdorf, Austria. The slight increase in prices, especially in the dispersions and resins businesses, was unable to compensate for this. Volumes were on a level with the prior year. Higher sales volumes in the dispersions business in Europe and North America as well as in the electronic materials business were offset by lower volumes in the additives and pigments businesses as a result of stronger competition and in the resins business due to raw materials shortages.

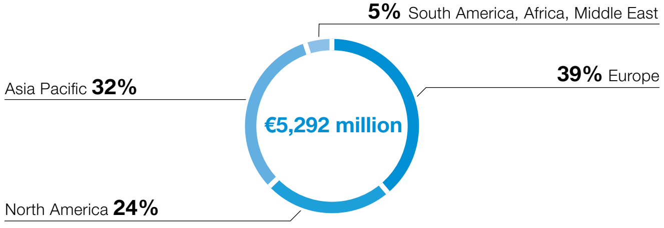
Dispersions & Pigments – Factors influencing sales

Volumes	0%
Prices	2%
Portfolio	(1%)
Currencies	(3%)
Sales	**(2%)**



Dispersions & Pigments – Sales by region

Location of customer



EBIT before special items declined considerably compared with 2017. This was mainly due to lower margins as a result of the increase in raw materials prices, negative currency effects and higher fixed costs. In 2017, fixed costs were partly offset by an insurance refund; in 2018, additional fixed costs arose in connection with new production facilities in Ludwigshafen, Germany, and a new electronic materials plant in Yeosu, South Korea.

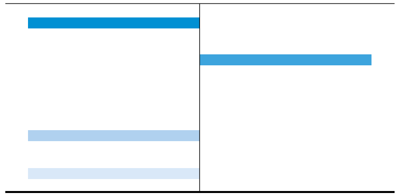
Care Chemicals

- **Sales decline 3% to €4,913 million due to lower volumes and currency effects**
- **Considerable increase in EBIT before special items, primarily from higher margins**

In the Care Chemicals division, sales to third parties declined by €166 million to €4,913 million in 2018. This was attributable to lower sales volumes, especially for oleochemical surfactants and fatty alcohols and in the hygiene business, as well as negative currency effects. By contrast, sales were positively impacted by higher prices in almost all business areas.

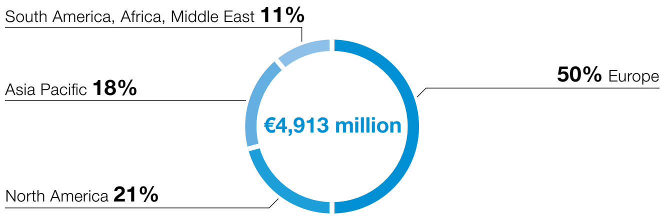
Care Chemicals – Factors influencing sales

Volumes	(3%)
Prices	3%
Portfolio	0%
Currencies	(3%)
Sales	**(3%)**



Care Chemicals – Sales by region

Location of customer



EBIT before special items increased considerably compared with 2017. This was mainly due to higher margins for products for the cosmetics industry, especially for oleochemical surfactants and fatty alcohols. Fixed costs declined slightly as a result of currency effects, insurance refunds and successful restructuring measures, especially in North America.

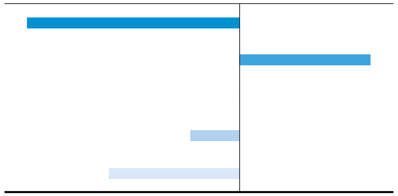
Nutrition & Health

- **Sales down 8% year on year at €1,696 million, largely as a result of lower product availability**
- **EBIT before special items considerably above the 2017 figure due to lower fixed costs and higher margins**

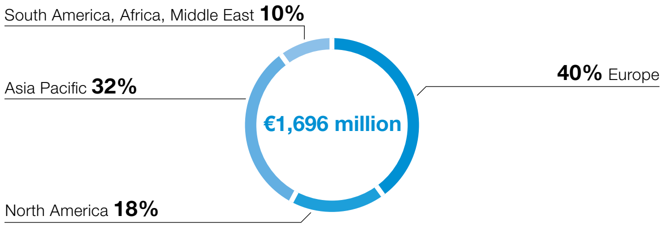
In the Nutrition & Health division, sales to third parties declined by €148 million to €1,696 million in 2018. This was mainly attributable to lower volumes from the reduced availability of citral-based products. In October 2017, a fire occurred during startup of the citral plant in Ludwigshafen, Germany. As a result, we had to declare Force Majeure for all citral and isoprenol-based aroma ingredients, and consequently for vitamin A, vitamin E and several carotenoid products as well. We were able to gradually lift Force Majeure for almost all affected products in 2018. Sales were weighed down by negative currency effects. Higher sales prices had an offsetting effect.

Nutrition & Health – Factors influencing sales

Volumes	(13%)
Prices	8%
Portfolio	0%
Currencies	(3%)
Sales	**(8%)**



Nutrition & Health – Sales by region



EBIT before special items increased considerably compared with 2017. Insurance refunds for production outages in 2017 and 2018 led to lower fixed costs. Despite higher raw materials prices, we achieved higher margins in the animal nutrition business in particular.

The citral plant in Ludwigshafen, Germany, was restarted in April 2018. We started production of citral, citronellol and menthol at our new aroma ingredients complex in Kuantan, Malaysia.

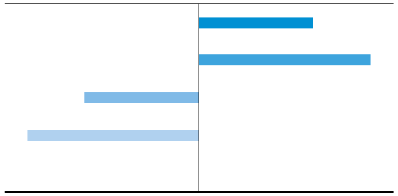
Performance Chemicals

- **Sales of €3,911 million at prior-year level**
- **EBIT before special items slightly below previous year, mainly due to lower margins**

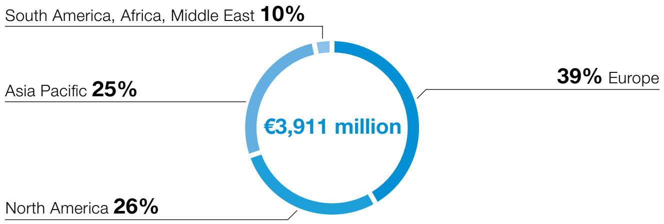
At €3,911 million, sales to third parties in the Performance Chemicals division were on a level with the previous year. Sales were positively impacted by higher sales prices in all regions and almost all business areas, as well as higher volumes in the oilfield and mining chemicals and lubricant and plastic additives businesses. Negative currency effects, mainly from the U.S. dollar, and the transfer of BASF's leather chemicals business to the Stahl group dampened sales development.

Performance Chemicals – Factors influencing sales

Volumes	2%
Prices	3%
Portfolio	(2%)
Currencies	(3%)
Sales	**0%**



Performance Chemicals – Sales by region



EBIT before special items declined slightly compared with the previous year. This was mainly attributable to lower margins, in particular as a result of negative currency effects. Fixed costs were at the prior-year level.

Functional Materials & Solutions

The Functional Materials & Solutions segment comprises the Catalysts, Construction Chemicals, Coatings, and Performance Materials divisions. They develop and market system solutions, services and innovative products for specific sectors and customers, particularly for the automotive, electronics, chemical and construction industries as well as for household applications, sports and leisure.

Divisions

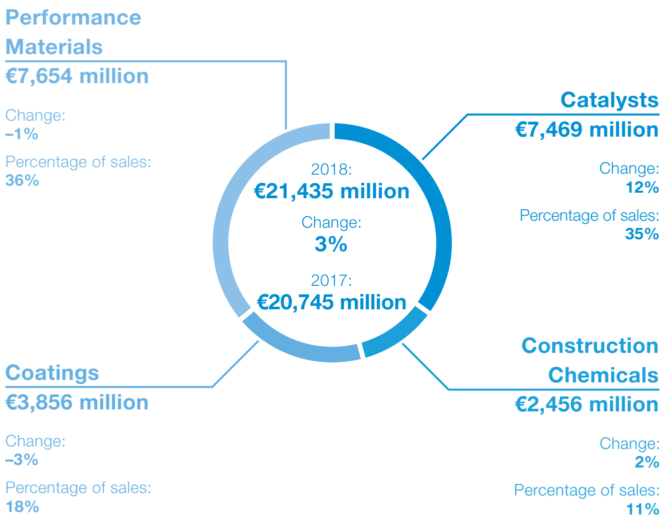
Catalysts
Automotive and process catalysts, battery materials, precious metal trading

Construction Chemicals
Solutions for building structure and envelopes, interior construction and infrastructure

Coatings
Coatings solutions, surface treatments, decorative paints

Performance Materials
Polyurethanes, thermoplastics and foams

Sales



Factors influencing sales

Volumes	2%
Prices	5%
Portfolio	0%
Currencies	(4%)
Sales	**3%**

Income from operations before special items

Million €	
2018	**1,307**
2017	1,617

Change: **–€310 million**

Strategy

- **Development of innovative products and technologies in close collaboration with our customers**
- **Focus on specialties and system solutions that allow our customers to stand out from the competition**

We develop innovative products and technologies in close cooperation with our customers. Our aim is to find the best solution in terms of cost and functionality, helping our customers to drive forward innovation in their industries and contribute to sustainable development. For instance, the transformation of mobility is a key trend in the automotive industry. To address this, we are developing solutions in the areas of battery materials, emission control, lightweight engineering concepts and coatings together with our customers. Our specialties and system solutions enable customers to stand out from the competition.

We aim to continuously optimize our product and services portfolio and our structures according to different regional market requirements as well as trends in our customer industries.

The focus is on securing our leading market position in Europe, profitably expanding our position in the North American market and purposefully extending our activities in the growth regions of Asia, South America, eastern Europe and the Middle East. New business fields such as battery materials play a particularly important role here. On October 22, 2018, we announced that Harjavalta, Finland, will be the location of our first site to produce battery materials for the European automotive market. The plant will be constructed adjacent to the nickel and cobalt refinery owned by Norilsk Nickel (Nornickel). BASF and Nornickel have signed a long-term, market-based supply agreement for nickel and cobalt from Nornickel's metal refinery. With the investment, BASF will be present in all major regions with local production and increased customer proximity.

How we create value – an example

Novel diesel oxidation catalyst (DOC)

Efficient design for removing hydrocarbons and carbon monoxide with lower consumption of precious metals

Value for BASF

Enabled business wins since first introduction in 2015 with a value of

>€700 million

Value for our customers and the environment

Meets the latest emission regulations while reducing precious metal consumption by

≥25%

Diesel oxidation catalysts (DOC) reduce the emissions of heavy duty diesel engines by removing hydrocarbons and carbon monoxide from the exhaust. Furthermore, they provide the functionality to facilitate the removal of soot and nitrogen oxides by the downstream soot filter and the selective catalytic reduction catalyst. BASF has developed a novel DOC design to better utilize the precious metals of such catalysts, while significantly improving the catalysts' performance. Since its first introduction in 2015, the technology has been continuously further developed and has enabled business wins of more than €700 million.

The novel DOC design is used on-road in all major markets and thus provides a significant benefit for air quality and fuel economy. With our DOC catalyst in the front of the emission control system, it is possible to meet the most stringent of current emission control regulations such as US HDD 2010 (United States), EUVI (Europe), NSVI (China) and BSVI (India). The technology not only reduces precious metal consumption by at least 25%, but also significantly broadens the temperature region to implement removal of soot and prevent build-up of back pressure on the engine, thereby reducing fuel consumption.

On September 18, 2017, we signed an agreement with Solvay on the acquisition of Solvay's integrated polyamide business.

For more information on the current status of the agreement with Solvay, see page 42

We are also evaluating strategic options for our construction chemicals business to ensure the successful and profitable development of the business area in the long term, and to take advantage of opportunities in the market. The outcome of this review is open. We are considering the possibility of merging with a strong partner as well as the option of a divestiture. We strive to sign an agreement in 2019.

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 and chemical industries, refineries, battery manufacturers, solutions for the protection of air quality as well as the production of fuels, chemicals, plastics and battery materials
Construction Chemicals	Concrete admixtures, cement additives, underground construction solutions, flooring systems, sealants, solutions for the protection and repair of concrete, high-performance mortars and grouts, tile-laying systems, exterior insulation and finishing systems, expansion joints, wood protection	Cement and concrete producers, construction companies, craftspeople, builders' merchants, solutions for new building construction, maintenance, repair and renovation of commercial and residential buildings as well as infrastructure
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
Performance Materials	Engineering plastics, biodegradable plastics, standard foams, foam specialties, polyurethanes	Automotive manufacture, electrical engineering, packaging, games, sports and leisure, household, mechanical engineering, construction, medical technology, sanitation and water industry, solar thermal energy and photovoltaics

Investments

Location	Project	Startup
Brighton, Colorado	Capacity expansion: plant for sealants	2019
Dahej, India	Capacity expansion: for Cellasto®	2019
Gimcheon, South Korea	Construction: plant for Ultraform®	2018
Greenville, Ohio	Capacity expansion: resin plant	2019
Hamm, Germany	Capacity expansion: logistics for floor installation systems	2019
Harjavalta, Finland	Construction: battery materials plant for the automotive market	2018
Langelsheim, Germany	Capacity expansion: for Naftoseal® aircraft sealants	2019
Ludwigshafen, Germany	Construction: specialty zeolites plant for emissions catalysts	2019
Münster, Germany	Construction: modular laboratory for automotive OEM coatings	2018
	Construction: plant for functional film coatings	2019
	Construction: laboratory building for automotive coatings	2020
Pinghu, China	New surface treatment site	2021
Rayong, Thailand	Construction: plant for automotive emissions catalysts	2018
Shanghai, China	Construction: technical competence center for automotive coatings	2018
	Construction: plant for mobile emissions catalysts	2019
Środa Śląska, Poland	Capacity expansion: plant for emissions catalysts	2020
Tultitlán, Mexico	Capacity expansion: automotive coatings plant	2019

Segment data – Functional Materials & Solutions

Million €

		2018	2017	+/–
Sales to third parties		21,435	20,745	3%
of which Catalysts		7,469	6,658	12%
Construction Chemicals		2,456	2,412	2%
Coatings		3,856	3,969	(3%)
Performance Materials		7,654	7,706	(1%)
Intersegment transfers		837	805	4%
Sales including intersegment transfers		22,272	21,550	3%
Income from operations before depreciation and amortization (EBITDA)		1,917	2,251	(15%)
EBITDA margin	%	8.9	10.9	–
Depreciation and amortization[1]		682	706	(3%)
Income from operations (EBIT)		1,235	1,545	(20%)
Special items		(72)	(72)	–
EBIT before special items		1,307	1,617	(19%)
EBIT after cost of capital		(512)	(190)	.
Assets		17,654	17,364	2%
Investments including acquisitions[2]		872	1,056	(17%)
Research and development expenses		412	431	(4%)

1 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments)
2 Additions to intangible assets and property, plant and equipment

Functional Materials & Solutions segment

- **Sales growth of 3% to €21,435 million from higher prices and volumes**
- **EBIT before special items declines 19% to €1,307 million, primarily due to lower margins and increase in fixed costs**

Sales to third parties in the Functional Materials & Solutions segment grew by €690 million to €21,435 million, especially in Catalysts. This was mainly attributable to higher prices in all divisions. Volumes also increased. Sales were reduced by currency effects (volumes 2%, prices 5%, portfolio 0%, currencies –4%).

Income from operations (EBIT) before special items was €1,307 million, down €310 million from the 2017 figure. This was mainly driven by lower margins as a result of the increase in raw materials prices and higher fixed costs. EBIT declined by €310 million to €1,235 million in 2018. Overall, special items did not have a substantial impact.

Catalysts

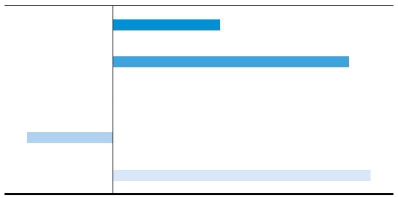
- **Sales increase of 12% to €7,469 million mainly driven by higher prices**
- **EBIT before special items slightly higher, largely as a result of volumes growth**

The Catalysts division increased sales to third parties by €811 million to €7,469 million in 2018. This was largely attributable to higher sales prices on the back of an increase in precious metal prices. Our sales volumes also increased. This was dampened by currency effects.

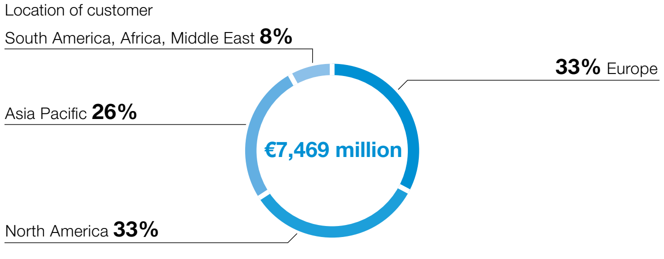
We recorded considerable volumes growth in the chemical catalysts, battery materials and refining catalysts businesses. By contrast, sales volumes declined for automotive catalysts, especially in Europe. In precious metal trading, sales rose considerably by €672 million to €3,190 million, primarily due to higher prices and volumes.

Catalysts – Factors influencing sales

Volumes	5%
Prices	11%
Portfolio	0%
Currencies	(4%)
Sales	**12%**



Catalysts – Sales by region



EBIT before special items was slightly above the prior-year figure, mainly owing to higher sales volumes. Fixed costs increased due among other factors to the startup of new plants in the chemical catalysts, automotive catalysts and battery materials businesses.

Construction Chemicals

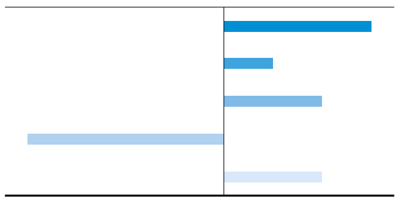
- **Sales 2% above previous year at €2,456 million, primarily due to higher volumes**
- **EBIT before special items slightly lower, mainly from softer margins**

In the Construction Chemicals division, we increased sales to third parties by €44 million compared with the previous year to €2,456 million. This was largely driven by higher sales volumes. The acquisition of Grupo Thermotek, Monterrey, Mexico, in September 2017 and higher prices also contributed to the increase in sales. By contrast, currency effects had a negative impact in all regions.

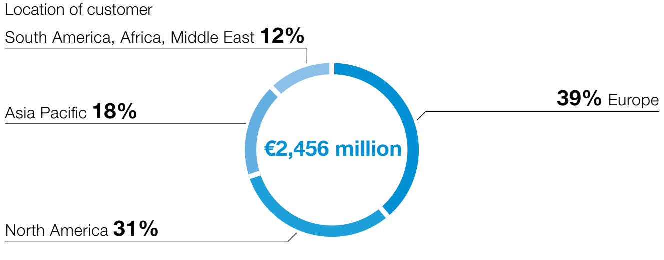
Higher volumes and prices led to sales growth in Europe, while in North America, the increase was attributable to the Thermotek acquisition and higher sales volumes. In Asia, higher volumes and prices were unable to completely offset the negative currency effects. Despite volumes growth, negative currency effects pushed down sales in the region South America, Africa, Middle East.

Construction Chemicals – Factors influencing sales

Volumes	3%
Prices	1%
Portfolio	2%
Currencies	(4%)
Sales	**2%**



Construction Chemicals – Sales by region



Although sales volumes rose and fixed costs declined, mainly as a result of currency effects, EBIT before special items was slightly below the 2017 figure. This was primarily attributable to lower margins.

Coatings

- **Sales decline 3% to €3,856 million as a result of negative currency effects**
- **EBIT before special items considerably below prior-year figure, mainly due to higher fixed costs and lower margins**

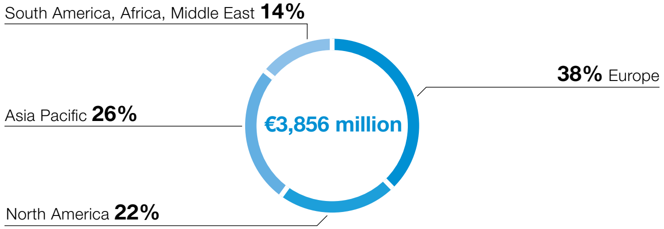
Sales to third parties in the Coatings division declined by €113 million to €3,856 million in 2018. This was attributable to negative currency effects in all regions, especially in South America. Sales were positively impacted by higher volumes and prices.

Despite slightly higher volumes, particularly in Asia and North America, sales of automotive OEM coatings declined due to negative currency effects in all regions. We recorded sales growth in the automotive refinish coatings business as negative currency effects were more than offset by higher sales volumes in Asia, North America and Europe, and higher prices. Sales in the decorative paints business in Brazil were considerably below the prior-year figure, with significantly higher sales prices unable to compensate for strongly negative currency effects and slightly weaker demand. We increased sales in the surface treatments business. Higher sales volumes in all regions compensated for negative currency effects.

Coatings – Factors influencing sales

Volumes	1%
Prices	1%
Portfolio	0%
Currencies	(5%)
Sales	**(3%)**

Coatings – Sales by region



EBIT before special items declined considerably. This was mainly due to higher fixed costs, largely as a result of higher personnel costs and integration costs for the Chemetall business, as well as lower margins from the increase in raw materials prices.

In September 2018, we opened a new laboratory for automotive OEM coatings in Münster, Germany, with a focus on optimized, digital and transparent processes as well as using resources efficiently.

Performance Materials

- **Sales of €7,654 million, down 1% from the previous year due to currency effects and lower volumes**
- **Considerable year-on-year decrease in EBIT before special items, mainly as a result of lower margins**

At €7,654 million, sales to third parties in the Performance Materials division in 2018 were €52 million below the prior-year level. Price increases due to significantly higher raw materials prices, particularly in the first half of 2018, were unable to completely offset the negative currency effects in all regions and business areas, as well as slightly lower volumes. Sales volumes declined, primarily as a result of weaker demand from the construction and consumer goods industries.

Sales to the automotive industry rose slightly due to higher prices, in particular for engineering plastics in Asia and Europe. Volumes declined slightly overall. While higher volumes contributed to sales growth in South America, demand in Europe, Asia and North America remained below the prior-year level, especially for polyurethane systems.

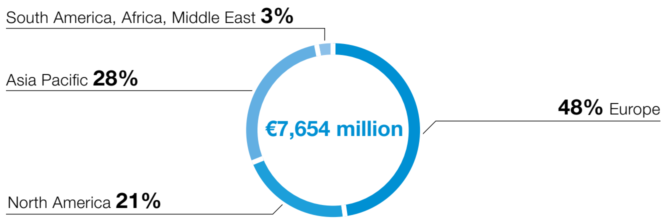
Sales in the consumer goods industry decreased slightly. As well as currency effects, this was mainly attributable to lower demand for polyurethane systems, particularly in Europe. This could not be completely offset by higher volumes in our engineering plastics and specialty businesses and higher prices.

Sales to the construction industry declined slightly due to lower volumes and currency effects. Although we achieved higher sales prices overall in the polyurethane systems business, demand was down from the prior-year level, especially in Europe. Scheduled plant turnarounds in the first half of 2018 also reduced sales volumes in the styrene foams business.

Performance Materials – Factors influencing sales

Volumes	(2%)
Prices	4%
Portfolio	0%
Currencies	(3%)
Sales	**(1%)**

Performance Materials – Sales by region



EBIT before special items was considerably below the prior-year level. This was mainly attributable to lower margins. The increase in raw materials prices could only be partly offset by higher sales prices. Fixed costs rose slightly. Higher expenses, especially from the startup of new plants for thermoplastic polyurethanes, Ultraform® and Ultrason®, were partly offset by insurance refunds, mainly for production outages.

Agricultural Solutions

The Agricultural Solutions segment consists of the division of the same name. We develop and produce innovative solutions to improve crop health and yields, and market them worldwide.

Indications and sectors

Fungicides
Protecting crops against harmful fungal diseases

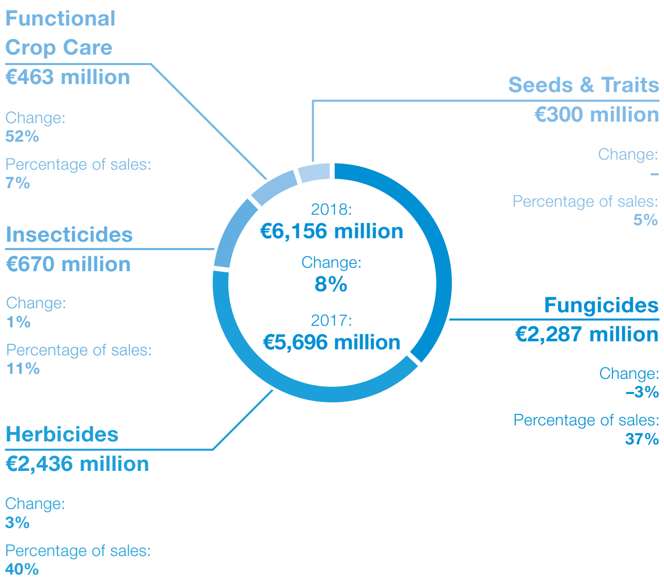
Herbicides
Reducing competition from weeds for water and nutrients

Insecticides
Combating insect pests in agriculture and beyond

Functional Crop Care
Biological crop protection, seed treatment, polymers and colorants

Seeds & Traits
Optimization and development of seeds and new traits

Sales



Factors influencing sales

Volumes	1%
Prices	4%
Portfolio	10%
Currencies	(7%)
Sales	**8%**

Income from operations before special items

Million €	
2018	**734**
2017	1,033

Change: **–€299 million**

Strategy

- **Integrated provider of crop protection and biotechnology products, seeds for selected field crops and vegetables, and digital farming**
- **Long-term innovation strategy ensures future growth**
- **Development of solutions that go beyond conventional crop protection**

Natural resources such as land and arable area are limited, while the world's population and its demand for food continue to grow. This means that farmers around the world face the challenge of increasing their crop yields. We offer our customers innovative solutions combined with practical, down-to-earth advice to support them in the efficient and safe production of high-quality crops over the long term.

In August 2018, we closed the acquisition of a range of businesses and assets from Bayer to be able to provide farmers with an even wider range of solutions in the future, and to better meet the growing demand for high-quality seeds as well as chemical and biological crop protection. The acquisition is a strategic complement to our crop protection, biotechnology and digital farming activities. At the same time, it marks our entry into the seed business for key field crops and vegetables, as well as non-selective herbicides and nematicide seed treatments. With the transaction, our portfolio now also includes the global glufosinate-ammonium non-selective herbicide business, which is marketed under the Liberty®, Basta® and Finale® brands. The seed businesses comprise traits, research and breeding capabilities as well as the corresponding brands for key field crops in selected markets. These include canola hybrids in North America under the InVigor® brand with LibertyLink® trait technology, as well as the oilseed rape business mainly in European markets, cotton in the Americas and Europe, and soybean in the Americas. We also acquired the R&D platform for hybrid wheat,[1] a range of seed treatment products, certain glyphosate-based herbicides in Europe used predominantly for industrial applications, xarvio® digital farming solutions and other non-selective herbicide and nematicide research projects. We are committed to ensuring the responsible use of our products and the preservation of a healthy environment. We also invest continuously in our development pipeline to provide our customers an increasingly wide range of integrated offers. The combination of our existing activities and the acquired businesses increases our innovation potential and strengthens our market position and competitiveness in the long term.

For more information on our R&D activities, see Research and development on page 82

The success of our customers depends on many factors such as weather, plant health, soil conditions and prices for agricultural produce. Modern farmers have to analyze more and more data of

1 Reported under Other

How we create value – an example

InVigor®

Patented pod shatter reduction technology for canola/oilseed rape seed pods enabling innovative yield protection and greater harvesting flexibility for growers

Value for BASF

Market share of InVigor® seed portfolio in main markets of North America

>55%

Value for customers

Yield improvement for growers of

>5%

InVigor® hybrids with pod shatter reduction (PSR) technology are an innovative solution for minimizing lost yield due to seed pods splitting open and seeds prematurely falling out. The first canola hybrids with patented PSR technology from the newly acquired seed business were launched on the Canadian market in 2014. By 2019, more than half of BASF's InVigor® product line-up in the United States, Canada and Australia will contain the PSR feature. The market share of the InVigor® seed portfolio in its main markets of North America is greater than 55% and popularity in Australia is increasing rapidly.

The patented PSR technology in InVigor® hybrid canola continues to revolutionize the way canola growers approach their season. The PSR feature naturally strengthens the pod seam and connective tissue, reducing premature seed losses prior to harvest. It offers the flexibility to harvest canola by straight cutting, therefore allowing the pod to fill for a longer period of time and providing a yield increase of over 5%.

increasing complexity to make the right cultivation decisions. BASF's innovative digital applications help our customers to use this data to their advantage, supporting better decision-making and ensuring more efficient and sustainable resource allocation. The acquisition of xarvio® digital farming solutions complements our digital offering with novel products with additional functionalities and access to new technologies.

Investments

Capital expenditures (capex) amounted to €157 million in 2018. Major projects included the startup of new production capacities for our fungicide Revysol® in Hannibal, Missouri, and our insecticide Inscalis® in Elbeuf, France, as well as modernization measures at plants in North America and Europe. A state-of-the-art global breeding station for the vegetable seeds business was opened at the Nunhem site in the Netherlands. We also invested in plant infrastructure in North America and research and development in Limburgerhof, Germany. To meet the continuing high demand for our innovative solutions in the future, we will invest around €1,270 million in developing and expanding our infrastructure and in our production and formulation capacities for active ingredients between 2019 and 2023. This increase in investment is driven by the expansion of production capacities for the planned market launches of a large number of products from our crop protection pipeline, as well as for the acquired businesses.

Research and development

In 2018, we invested €679 million in research and development in the Agricultural Solutions division, representing around 11% of sales for the segment. Our well-stocked innovation pipeline comprises products with a launch date between 2018 and 2028. With a peak sales potential[1] of more than €6 billion, the pipeline includes innovations from all business areas. The expanded research and development activities in the Agricultural Solutions division range from seeds, including traits, research and breeding capacities, and solutions to protect plants against fungal diseases, insect pests and weeds, to improved soil management and plant health.

With the acquisition of the Bayer businesses in 2018, our team grew by approximately 1,600 research and development employees at 17 locations worldwide. We expanded our biotechnology activities and our research and development capabilities considerably – from advanced breeding techniques, analytics, technology platforms and trait validation to specific discovery expertise. These are closely aligned with further activities in the field of biotechnology, which remain part of BASF's Bioscience Research unit. Research and development expenses, sales, earnings and all other data for BASF's Bioscience Research unit are not reported in the Agricultural Solutions segment; they continue to be reported under Other.

Our combined, complementary seeds and traits research and development activities across field crops and vegetables ensure even better innovation capabilities and scale while positioning us to seize future market opportunities and increase our competitiveness. With our expanded network of research sites, new seed breeding and production facilities, we help farmers meet the growing demand for increased agricultural productivity and better nutrition. With a pioneering platform for gene identification, we have specialized in the development of plant characteristics, such as higher yield, herbicide tolerance, disease resistance, drought tolerance and quality traits. Our goal is to optimize crops so that farmers can achieve greater and more secure yields. In this way, we make an important contribution to securing a better food supply for a growing world population. We also contribute to sustainable agriculture, as the cultivation of these plants significantly reduces the amount of land, water and energy required for food production.

Products, customers and applications

Indications and sectors	Applications	Example products
Fungicides	Protecting crops from harmful fungal diseases; improving plant health	AgCelence® (umbrella brand), boscalid, dimethomorph, F 500®, Initium®, metiram, metrafenone, Xemium®
Herbicides	Reducing competition from weeds for water and nutrients	Basta®, Clearfield®, dimethenamid-P, Engenia®, Finale®, imazamox, Kixor®, Liberty®, pendimethalin, 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®
Functional Crop Care	Products for plant health and increased yield potential that go beyond traditional crop protection, such as biological crop protection, seed treatments, polymers and colorants	COPeO®, Flo Rite®, ILeVO®, Integral®, Limus®, Nodulator® PRO, PONCHO®, Serifel®, Systiva®, Vault® HP, Velondis®, Vizura®, VOTiVO®
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®

1 Peak sales describes the highest sales value to be expected in one year. For more information, see the Glossary on page 288

Segment data – Agricultural Solutions

Million €

		2018	2017	+/–
Sales to third parties		6,156	5,696	8%
Intersegment transfers		58	36	61%
Sales including intersegment transfers		6,214	5,732	8%
Income from operations before depreciation and amortization (EBITDA)		985	1,282	(23%)
EBITDA margin	%	16.0	22.5	–
Depreciation and amortization[1]		394	267	48%
Income from operations (EBIT)		591	1,015	(42%)
Special items		(143)	(18)	.
EBIT before special items		734	1,033	(29%)
EBIT after cost of capital		(562)	171	.
Assets		16,992	8,096	110%
Investments including acquisitions[2]		7,110	185	.
Research and development expenses		679	507	34%

1 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments)
2 Additions to intangible assets and property, plant and equipment

Agricultural Solutions segment

- **Sales improve by 8% to €6,156 million due to portfolio effects, higher prices and increased volumes**
- **EBIT before special items down 29% year on year at €734 million as a result of negative currency effects and the negative contribution from the acquired businesses**

The Agricultural Solutions segment increased sales to third parties by €460 million to €6,156 million in 2018. The addition of the businesses and assets acquired from Bayer in August 2018 made a significant contribution. A higher price level and growth in sales volumes also contributed to the positive year-on-year sales development. In a continuing difficult market environment, strongly negative currency effects dampened sales in all regions.

Sales in **Europe** were €39 million higher than in the previous year, at €2,022 million. This was attributable to the acquired businesses and higher sales volumes in almost all indications, despite the extreme weather conditions and long dry period. Sales development was dampened by negative currency effects, particularly in eastern Europe and Turkey.

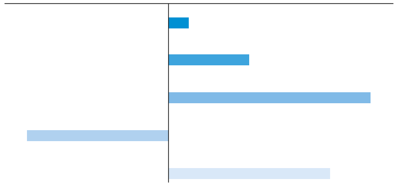
We increased sales in **North America** by €163 million to €2,166 million. The acquired businesses and a higher price level more than compensated for the negative currency effects. Lower volumes, especially for fungicides in Canada and the United States, also had an offsetting effect.

At €645 million, sales in **Asia** exceeded the prior-year figure by €63 million. We achieved volumes growth in all indications, particularly fungicides. The acquired businesses and a higher price level also contributed to the sales increase. Negative currency effects reduced sales development considerably.

In the region **South America, Africa, Middle East**, sales rose by €195 million to €1,323 million. The increase was largely driven by a higher price level and the contribution of the acquired businesses. Especially for fungicides in Brazil, sales volumes increased considerably. Negative currency effects had an offsetting impact.

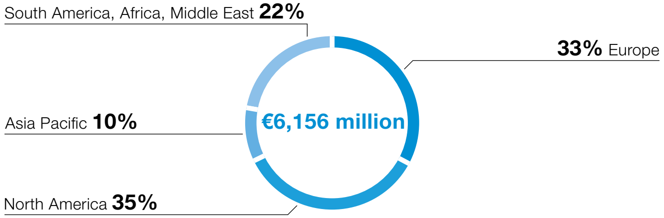
Agricultural Solutions – Factors influencing sales

Volumes	1%
Prices	4%
Portfolio	10%
Currencies	(7%)
Sales	**8%**



Agricultural Solutions – Sales by region

Location of customer



Income from operations (EBIT) before special items was €734 million, down €299 million from the prior-year figure. This was attributable to negative currency effects in all regions, as well as the strongly negative contribution from the acquired businesses due to the late, intrayear timing of the transaction, the seasonality of the business as well as costs for integrating the businesses into the BASF Group. EBIT decreased by €424 million to €591 million. Special items primarily arose from the acquisition.

Other

Financial data – Other[1]

Million €	2018	2017	+/–
Sales	2,771	2,234	24%
Income from operations before depreciation and amortization (EBITDA)	(373)	(569)	34%
Depreciation and amortization[2]	118	122	(3%)
Income from operations (EBIT)	(491)	(691)	29%
Special items	(41)	(37)	(11%)
EBIT before special items	(450)	(654)	31%
of which Costs for cross-divisional corporate research	(414)	(379)	(9%)
Costs of corporate headquarters	(249)	(224)	(11%)
Other businesses	43	60	(28%)
Foreign currency results, hedging and other measurement effects	327	88	267%
Miscellaneous income and expenses	(157)	(199)	22%
Assets[3]	23,743	25,643	(7%)
Investments including acquisitions[4]	663	1,174	(44%)
Research and development expenses	414	382	8%

1 Information on the composition of Other can be found in the Notes to the Consolidated Financial Statements from page 212 onward.
2 Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and reversals of impairments)
3 Contains assets of businesses recognized under Other as well as reconciliation to assets of the BASF Group including the disposal group for the oil and gas business.
4 Additions to intangible assets and property, plant and equipment

Sales in Other rose by €537 million compared with 2017 to €2,771 million, mainly as a result of higher sales volumes in the raw materials trading business.

At minus €450 million, income from operations before special items in Other was up €204 million from the prior-year figure. This was largely attributable to valuation effects for our long-term incentive program.

Discontinued Oil and Gas Business

Financial data[1]

Million €

	2018	2017	+/–
Sales to third parties	4,094	3,252	26%
Income from operations before depreciation and amortization (EBITDA)	2,350	1,959	20%
Income from operations (EBIT)[2]	1,733	935	85%
Special items	(12)	252	.
EBIT before special items[2]	1,745	683	155%
Financial result	(19)	(17)	(12%)
Income taxes	(885)	(158)	.
Income after taxes from discontinued operations	829	760	9%
Assets	14,088	11,967	18%
Investments including acquisitions[3]	1,062	988	7%

1 For more information, see Note 2.5 to the Consolidated Financial Statements from page 209 onward and Supplementary Information on the Oil and Gas Business from page 269 onward
2 2018 figure only includes depreciation and amortization for the first three quarters
3 Additions to intangible assets and property, plant and equipment and to the corresponding positions in the disposal group

Agreement with LetterOne

On September 27, 2018, BASF and LetterOne signed a definitive agreement to merge their oil and gas businesses in a joint venture, which will operate under the name Wintershall DEA. In 2017, the combined business of Wintershall and DEA had pro forma sales of €4.7 billion, income from operations before depreciation and amortization (EBITDA) of €2.8 billion and net income of €740 million. Closing of the transaction is expected in the first half of 2019, subject to the approvals of merger control and foreign investment authorities as well as mining authorities and the German Federal Network Agency. Until closing, Wintershall and DEA will continue to operate as independent companies.

The signing of the agreement has an immediate effect on the reporting of BASF Group: The sales and EBIT of the oil and gas business are no longer included in the respective figures for the BASF Group – retroactively as of January 1, 2018, and with the prior-year figures restated. Until closing, the Wintershall Group's income after taxes will be presented in the income after taxes of the BASF Group as a separate item (income after taxes from discontinued operations). The assets and liabilities of the oil and gas business were reclassified to a disposal group as of the end of the third quarter of 2018, and have since been presented under Other. Depreciation and amortization of its assets and accounting according to the equity method were suspended from the signing date onward.

The gain from the change from full consolidation to the equity method will be shown in income after taxes from discontinued operations on closing. From closing, BASF will account for its share in the joint venture Wintershall DEA using the equity method and include its share of Wintershall DEA's net income in EBIT before special items and EBIT for the BASF Group (reported under Other).

Significant developments

BASF's oil and gas activities are bundled in the Wintershall Group. We focus on exploration and production in oil and gas-rich regions in Europe, North Africa, Russia, South America and the Middle East – core regions in which Wintershall has a high level of regional and technological expertise. We are also active in the transportation of natural gas in Europe with our Russian partner Gazprom.

Europe: In March 2018, we started operation of the first development project operated by Wintershall in Norway at the Maria oilfield in the Norwegian Sea. In addition, the Norwegian Ministry of Petroleum and Energy approved the development and operation plan for the Nova field (previously: Skarfjell) operated by Wintershall, which is scheduled to start production in 2021. Production at the Aasta Hansteen gas field in the Norwegian Sea, which is operated by Equinor, started in 2018. A Wintershall exploration well discovered another gas field near Aasta Hansteen and we are now investigating the possibilities of developing this find. In Germany, we successfully completed a 3D seismic survey at the Emlichheim concession in 2018 with the aim of maintaining the crude oil production plateau at the site, which has been in operation for over 70 years.

Russia: Achimgaz, a joint venture of Wintershall and Gazprom, celebrated its 15th anniversary in 2018 and achieved a new milestone, with total production reaching 30 billion cubic meters of natural gas. We are drawing on the experience gained with Achimgaz to drive forward the development of Blocks 4A and 5A of the Achimov formation in the Urengoy field in western Siberia in a joint venture, Achim Development.

Middle East: Wintershall will invest in oil and gas production in Abu Dhabi. An agreement to this effect was signed by Wintershall and the Abu Dhabi National Oil Company (ADNOC) in November 2018. Wintershall's 10% interest in ADNOC's Ghasha concession marks its entry into natural gas and condensate production in Abu Dhabi. According to ADNOC's planning, the project will start producing around the middle of the next decade, with initial daily production volumes expected to exceed 40 million cubic meters of natural gas.

South America: Wintershall was awarded seven offshore exploration licenses in Brazil's 15th oil and gas licensing round. The company will hold the operatorship for four of these licenses. Initial exploration activities in the allocated blocks will start in 2019. In Argentina, Wintershall Energía celebrated its 40th anniversary in 2018 with total production of around 26 million barrels of oil equivalent (BOE) per year. Shares in the Aguada Pichana Este concession in Argentina were sold on January 23, 2018.

Natural gas transportation: Pipe-laying work for the Nord Stream 2 pipeline project, which Wintershall is co-financing, started in 2018 and is progressing as planned. The European gas pipeline link (EUGAL) project – the connecting pipeline for Nord Stream 2 – is being implemented by GASCADE Gastransport GmbH as the lead developer. All of the necessary planning approvals have been issued and construction is on schedule.

Business development

Sales to third parties from our oil and gas activities were increased by €842 million year on year to €4,094 million in 2018. This was mainly due to higher prices. We also increased volumes, while currency effects had an offsetting effect.

The price of a barrel of Brent crude oil averaged $71 in 2018 (previous year: $54). Gas prices on the European spot markets rose by 32% compared with the previous year.

Income from operations (EBIT) before special items increased by €1,062 million to €1,745 million. In addition to higher oil and gas prices, we recorded volumes growth in Norway and Russia. EBIT rose by €798 million to €1,733 million. Depreciation and amortization of assets was suspended as of the end of the third quarter of 2018.

The tax expense rose following the improvement in income from operations. At €829 million, income after taxes from discontinued operations was €69 million above the prior-year figure.

For more information on the earnings contribution from the discontinued oil and gas business, see Note 2.5 to the Consolidated Financial Statements from page 209 onward

Regional Results

Regions

Million €

	Sales by location of company			Sales by location of customer			Income from operations by location of company		
	2018	**2017**	**+/–**	**2018**	**2017**	**+/–**	**2018**	**2017**	**+/–**
Europe	28,502	28,045	2%	26,546	26,507	0%	3,210	4,090	(22%)
of which Germany	18,113	18,663	(3%)	6,965	7,159	(3%)	1,140	1,838	(38%)
North America	16,659	15,937	5%	16,143	15,357	5%	802	1,236	(35%)
Asia Pacific	13,886	13,658	2%	14,646	14,343	2%	1,820	2,209	(18%)
South America, Africa, Middle East	3,628	3,583	1%	5,340	5,016	6%	201	52	287%
BASF Group	**62,675**	**61,223**	**2%**	**62,675**	**61,223**	**2%**	**6,033**	**7,587**	**(20%)**

Europe

- **Sales up 2% compared with 2017 at €28,502 million**
- **Investments strengthen businesses in growth industries and markets**

Sales at companies located in Europe rose by 2% year on year to €28,502 million. Higher prices more than compensated for the negative currency effects and lower volumes.

Higher prices led to slight sales growth in the Chemicals segment. Sales also rose slightly in the Agricultural Solutions segment as a result of portfolio effects and volumes growth. In the Functional Materials & Solutions segment, sales matched the prior-year level. Slight price improvements were offset by lower volumes and negative currency effects. By contrast, sales declined slightly in the Performance Products segment. Lower volumes and negative portfolio and currency effects could not be completely offset by higher prices.

Income from operations (EBIT) decreased by 22% compared with the previous year to €3,210 million due to considerably lower contributions from all segments, but especially from the Chemicals segment. The main drivers for the lower earnings in the Chemicals segment were higher raw materials prices, temporary plant shutdowns as well as the low water levels on the Rhine River. The lower contribution from the Agricultural Solutions segment was mainly attributable to the higher fixed costs from the acquisition of the Bayer businesses. Earnings were also negatively impacted by the long dry period. Softer margins had a significant influence on earnings development in the Functional Materials & Solutions and Performance Products segments.

We aim to strengthen our position in the European market though investments, for example in a production plant for battery materials in Harjavalta, Finland. This investment supports the European Commission's goal of establishing a European value chain for battery production.

North America

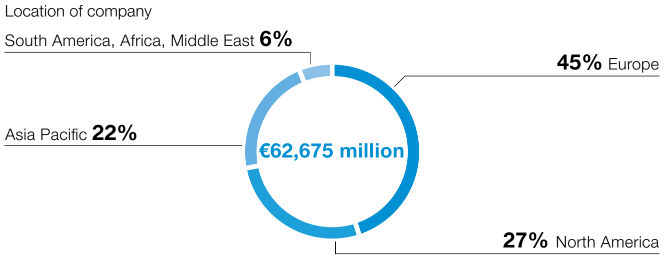
- **Sales growth of 5% year on year to €16,659 million**
- **Ongoing investments in production plants**

Sales at companies located in North America rose by 5% compared with 2017 to €16,659 million. In local currency terms, sales grew by 9%. This was largely due to higher sales prices in all segments. Sales were also positively impacted by portfolio effects, mainly from the acquisition of significant businesses from Bayer, and higher volumes, especially in the Functional Materials & Solutions segment. Currency effects dampened sales in all segments.

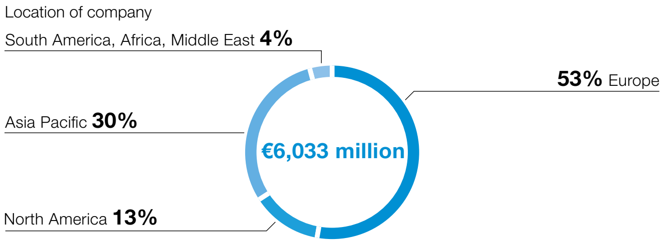
EBIT was down 35% from the 2017 figure, at €802 million. Earnings declined in the Agricultural Solutions segment in particular.

We further strengthened our position in the region with the acquisition of significant businesses from Bayer in the areas of seeds and non-selective herbicides. We aim to invest continuously in our production facilities. For example, we started up a new ammonia plant in Freeport, Texas, together with Yara International ASA, Oslo, Norway; are expanding production for ibuprofen in Bishop, Texas; and started construction of a new MDI synthesis unit in Geismar, Louisiana. We strengthened our global battery materials business with the formation of BASF Toda America LLC (BTA), a cooperation between BASF and Toda Kogyo Corp., Hiroshima, Japan. BTA produces state-of-the-art high energy cathode active materials close to our North American customers.

Sales by region



Income from operations by region



Asia Pacific

- **Sales 2% above prior-year level at €13,886 million**
- **Local production footprint expanded with new plants, including in South Korea and Malaysia**

Sales at companies headquartered in the Asia Pacific region rose by 2% to €13,886 million in 2018. In local currency terms, sales rose by 5% year on year. The positive development was mainly driven by the Functional Materials & Solutions segment. We also increased sales in the Agricultural Solutions segment.

All segments increased volumes; Functional Materials & Solutions and Performance Products also achieved higher prices. By contrast, sales were consistently weighed down by currency effects. Portfolio measures had no effect on sales development in 2018. The trade conflict between the United States and China dampened economic sentiment across Asia, leading to lower prices and volumes year on year in the fourth quarter of 2018.

EBIT in the region decreased by 18% year on year to €1,820 million. This was primarily due to the lower contribution from the Chemicals segment as a result of narrower margins in the isocyanates business, as well as for steam cracker products at our joint venture. Lower fixed costs were unable to compensate for these effects.

As part of our regional strategy, we aim to further increase the proportion of sales from local production in Asia Pacific. We once again made progress toward this goal: For instance, we started commercial production of polyoxymethylene (POM) in Gimcheon, South Korea, in October 2018. We started production of citral, citronellol and menthol at our new aroma ingredients complex in Kuantan, Malaysia.

Our investments in production facilities as well as in research and development serve to bring products to market for our local and global customers in this fast-growing region. We therefore plan to build an integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong and expand our existing joint venture with Sinopec in Nanjing, China.

South America, Africa, Middle East

- **Sales growth of 1% to €3,628 million**
- **Successful integration of acquired businesses in Agricultural Solutions segment**

Sales at companies located in the region South America, Africa, Middle East increased by 1% compared with 2017 to €3,628 million. In local currency terms, sales exceeded the prior-year figure by 17%.

In South America, the year was characterized by a slight economic recovery amid political uncertainty ahead of the presidential elections in Brazil. Weaker local currencies in Brazil and Argentina led to strongly negative currency effects. Against this background, our sales nevertheless rose as a result of higher prices, positive portfolio effects from the acquisition of significant businesses from Bayer and volumes growth. The Agricultural Solutions segment in particular increased volumes thanks to stronger demand. Sales volumes also rose in the Functional Materials & Solutions segment on the back of the recovery in the automotive industry. Volumes in the Performance Products segment were on a level with the prior year. By contrast, we recorded lower sales volumes in the Chemicals segment due to product shortages.

Companies in Africa and in the Middle East posted a considerable sales decrease. Lower volumes and negative currency effects were responsible for this development.

At €201 million, EBIT in the region South America, Africa, Middle East exceeded the prior-year figure by 287%. This was driven by improved earnings in the Agricultural Solutions segment as a result of higher demand, especially in Brazil, as well as the contribution from the acquired businesses.

Following the two-year recession in South America, which lasted until the end of 2016, our focus in 2018 was on increasing sales volumes and integrating the acquired businesses and assets in the Agricultural Solutions segment. We also continued the expansion of our sales channels to capture new customer segments, including with investments in digital platforms.

Responsible Conduct Along the Value Chain

Supplier Management

SUPPLIERS BASF CUSTOMERS

Our objective is to secure competitive advantages for BASF through professional procurement structures. Our suppliers are an important part of our value chain. Together with them, we aim to create value and minimize risks.

Strategy

- **Sustainability-oriented supply chain management**
- **New goal for sustainability evaluations of relevant spend**

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. We work together in an open and transparent way to generate long-term benefits for both sides. In doing so, we create added value that goes above and beyond procurement alone, for example, by developing solutions to target market-specific customer requirements together with our suppliers. Our sustainability-oriented supply chain management contributes to risk management by clarifying our expectations and standards for our suppliers, and by supporting them in carrying out our requirements. We count on reliable supply relationships and want to make our suppliers' contribution to sustainable development transparent to us. That is why we have set ourselves the goal of evaluating the sustainability performance of 70% of the BASF Group's relevant suppliers[1] and developing action plans for any necessary improvements by 2020. The proportion of relevant suppliers evaluated by the end of 2018 was 60%. Due to the size and scale of our supplier portfolio, our suppliers are evaluated based on risk, including both country and industry-specific risks.

As part of the updated corporate strategy, we resolved in 2018 to step up our efforts to improve our sustainability performance along the supply chain in the future. To this end, we have expanded our sustainability evaluations of relevant suppliers and integrated these into a new goal to improve our sustainability performance in procurement: 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. We will work towards having 80% of suppliers improve their sustainability performance upon re-evaluation.

Worldwide procurement

Our more than 70,000 Tier 1 suppliers play a significant 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 important raw materials, chemicals, investment goods and consumables, perform a range of services and are innovation partners. BASF acquired raw materials, goods and services for our own production totaling approximately €38.5 billion in value in 2018. There were no substantial changes to our supplier structure in 2018.

What we expect from our suppliers

- **Global Supplier Code of Conduct**

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. 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. The Code of Conduct covers compliance with human rights, labor and social standards, and antidiscrimination and anticorruption policies in addition to protecting the environment. We updated our Supplier Code of Conduct in 2018 in response to stricter requirements and new developments relating to the U.N. Guiding Principles on Business and Human Rights and the ILO. Issues such as modern slavery and human trafficking were incorporated, as well as our requirement that suppliers implement grievance mechanisms for their employees and stakeholders. We also added a reference to our own grievance mechanism – our compliance hotline, which suppliers and their employees can contact if they have questions or complaints. We are informing our existing suppliers of the updated Code of Conduct.

In 2018, we started the step-by-step rollout of a new registration portal for suppliers, in which our Code of Conduct is already integrated. This requires suppliers to commit to these values on registration. 4,866 suppliers did this and registered via the portal in 2018. A country-based risk analysis forms the basis of our selection process for new suppliers. Based on the country-related risks identified, we specifically asked suppliers in South America and Asia in particular to commit to the values of our Supplier Code of Conduct in 2018. Only those companies that have committed to our Code of Conduct actually became new suppliers.

Training and partnerships

In 2018, we continued our collaborations in relevant procurement markets such as China to instruct suppliers on sustainability standards. 116 suppliers received training in 2018 as part of a local partnership with the East China University of Science and Technology in Shanghai, for example. In addition, we instructed 962 BASF employees on sustainability-oriented supplier management and responsible procurement. These are ways in which poten-

1 We define relevant suppliers as Tier 1 suppliers showing an elevated sustainability risk potential as identified by our risk matrices and our purchasers' assessments. We also use further sources of information to identify relevant suppliers such as evaluations from Together for Sustainability (TfS), a joint initiative of chemical companies for sustainable supply chains.
2 We understand relevant spend as procurement volumes with relevant suppliers as defined above.

tial supply chain risks can be identified and minimized together with our suppliers.

BASF is one of 11 founding members of the German Business Initiative for Sustainable Value Chains established by the German sustainability network econsense and the Wittenberg Center for Global Ethics (WCGE). As part of this initiative, we help suppliers to improve their sustainability performance, for example, through training. The first supplier training events of the initiative were held in 2018 in China and Mexico.

In Brazil, we work together with the nongovernmental organization Integrare, which promotes diversity in supply chains. Integrare supports small and medium-sized businesses run by people with disabilities or socially disadvantaged minorities, for example, by offering special training and actively encouraging partnerships with larger companies.

For more information on decent work in global supply chains, see page 39

Evaluating our suppliers

- **Together for Sustainability initiative aims to harmonize and standardize supplier assessments and audits**

BASF is a founding member of the Together for Sustainability (TfS) initiative of leading chemical companies for the global standardization of supplier evaluations and auditing. With the help of TfS, we promote sustainability in the supply chain. The initiative aims to develop and implement a global program for the responsible supply of goods and services and improve suppliers' environmental and social standards. The evaluation process is simplified for both suppliers and TfS member companies by a globally uniform questionnaire. The 22 members of the initiative conducted a total of 3,767 sustainability assessments – including both initial and follow-up assessments – and 358 audits in 2018. In 2018, over 200 suppliers attended sustainability training in Shanghai as part of the TfS initiative. The initiative was named the "Best Third-Sector/Non-for-Profit Procurement Project" by the global Chartered Institute of Procurement Supply (CIPS) in September 2018.

Using TfS evaluations, we pursue a risk-oriented approach with clearly defined, BASF-specific follow-up processes. A total of 100 raw material supplier sites were audited on sustainability standards in 2018. We also received sustainability assessments for 546 suppliers from an external service provider. If we identify potential for improvement, we support suppliers in developing measures to fulfill our standards. We conduct another review according to a defined timeframe based on the sustainability risk measured. If the weak points discovered were particularly severe and we are unable to confirm any improvement, we reserve the right to terminate the business relationship. This did not occur in any case in 2018. We use this approach to evaluate suppliers with an elevated sustainability risk at least every five years. The approach itself is regularly reviewed to identify possibilities for optimization.

For more information on Together for Sustainability, see basf.com/en/together-for-sustainability

Audit results

The audits conducted over the past few years have identified some deviations with respect to environmental, social and corporate governance standards, for example in waste and wastewater management and relating to occupational safety, working hours and minimum wage. In the follow-up audits conducted in 2018, we found improvements in all areas. None of our 2018 audits identified instances of child labor. For the suppliers we reviewed, persons under 18 were excluded from overtime and dangerous work. We did not find any incidents of forced labor in 2018.

BASF undertook a thorough examination of the issues raised at platinum supplier Lonmin Plc, London, U.K., in connection with the events in Marikana, South Africa.[1] In 2018, we continued our regular dialog with both Lonmin and with local stakeholders, such as leading industry and human rights representatives. Topics discussed with Lonmin included the results of the follow-up audit, which we commissioned an internationally recognized audit firm to perform in 2017. This audit identified positive developments in several areas such as working standards, as well as a number of gaps, for example, not implementing a local, anonymous grievance mechanism. Lonmin introduced this in 2018. We will continue to monitor the audit process and maintain our dialog with Lonmin. In 2018, BASF played an active role in the establishment of a sector initiative by several precious metal processing companies. The initiative aims to improve the long-term situation in South Africa's platinum mining belt and tackle challenges together.

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

1 In 2012, an extended strike at a mine 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. For more information on the supplier relationship with Lonmin, see basf.com/audits-lonmin.

Raw Materials

SUPPLIERS | BASF | CUSTOMERS

Responsible resource management is an integral part of our strategy. It is applied within the company through our Verbund concept, our innovative products and the use of renewable raw materials. In the search for alternative raw materials, we employ solutions that contribute to sustainability.

Strategy

The Verbund system is an important component of our resource efficiency concept: The by-products of one plant often serve as feedstock elsewhere, helping us to use raw materials more efficiently. The value created by our Verbund is also part of our contribution to a circular economy. One example is our ChemCycling project (see box on the right).

In 2018, BASF purchased a total of around 30,000 different raw materials from more than 6,000 suppliers. Important raw materials include naphtha, natural gas, methanol, ammonia and benzene. In addition to fossil resources, we also employ renewable raw materials where appropriate. We use these to manufacture products that either cannot be made with fossil resources, or only at significantly greater effort, for example. Depending on the application, either fossil or renewable raw materials could be the better solution. Renewable raw materials are not sustainable per se, but can contribute to sustainability by, for example, reducing greenhouse gas emissions.

Chemical recycling

Recycling is becoming increasingly important due to the growing awareness of sustainability in the markets and regulatory developments. In 2018, BASF launched a project to manufacture products from chemically recycled plastic waste on an industrial scale.

In the ChemCycling project, our partners use thermochemical processes such as gasification or pyrolysis to transform plastic waste into syngas or pyrolysis oil. The first pyrolysis oil derived from plastic waste by our partners was fed into the BASF Verbund in 2018. The resulting products are of equal quality to products manufactured from fossil feedstock. Introducing this recycled feedstock back into the beginning of the value chain also means that we can calculate the percentage of recycled materials in certain products manufactured in the Verbund and offer our customers certified products.

The project's long-term goal is to make plastics recyclable that cannot yet be recycled, such as mixed plastics or plastics with residues. In the future, chemical recycling can make a significant contribution to reducing the amount of plastic waste that is disposed of in landfill or incinerated, while saving fossil resources. We are conducting Eco-Efficiency Analyses to ensure that this approach is sustainable compared with thermal recovery.

For more information, see basf.com/en/chemcycling

Renewable raw materials

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

In 2018, around 5.3% of the raw materials we purchased worldwide were from renewable resources. To make the use of these materials more competitive, we work on product innovations based on renewable raw materials as well as on enhancing production processes. We also further established our biomass balance approach on the market in 2018. The goal here is to replace natural gas and naphtha at the beginning of the value chain with biogas and bio-naphtha from certified sustainable production. Should a customer select a biomass balanced product, the proportion of renewable feedstock to be used is calculated based on the formulation. The calculation model is certified by an independent third party (TÜV Süd). Our Verbund production ensures that the characteristics and quality of all end products remain unchanged and that our customers can use them as usual. This method has already been applied for more than 60 BASF products – for example, for superabsorbents, dispersions, plastics such as polyamides and polyurethanes, and for intermediates available on the market as "drop-in products." These can be used in place of previously employed products in the production process without having to change the process itself.

Palm oil, palm kernel oil, and their derivatives are some of our most important renewable raw materials. We aim to ensure that these raw materials come from sustainable, certified sources, and actively support the Roundtable on Sustainable Palm Oil (RSPO). In 2018, we published our second progress report – the BASF Palm Progress Report – for greater transparency in the value chain. Based on our voluntary commitment to sustainably source palm oil products, we purchased 127,000 metric tons of certified palm kernel oil in 2018. This represents around 70% of our total volume.

Demand for certified products increased significantly again. As a result, in 2018 we increased sales volumes of certified palm oil and palm kernel oil-based products for the cosmetics and detergent and cleaner industries by more than 50% compared with the previous year. We are expanding our offering 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. BASF also continues to drive forward the RSPO supply chain certification of our sites for cosmetic ingredients. In 2018, 22 production sites worldwide were RSPO certified. Our goal is to only source RSPO certified palm oil and palm kernel oil by 2020, provided it is available on the market. By 2025, this voluntary commitment will be expanded to include the most important intermediate products based on palm oil and palm kernel oil; these include fractions and primary oleochemical derivatives as well as edible oil esters.

In addition, our BASF Palm Sourcing Policy addresses the requirements for protecting and preserving forests and peatland, as well as the involvement of local communities. At the same time, we will step up our efforts to improve transparency and traceability in the supply chain. We were most recently able to trace 79% of our overall oil palm exposure.

BASF and Henkel have cooperated with the development organization Solidaridad since 2016 to better involve smallholder farmers in Indonesia and improve their living conditions. Smallholders complete farming and environmental training as part of the Farmer Field School initiative, with a focus on efficient and sustainable growing practices and health and safety standards. Since 2016, more than 1,800 smallholders have completed a training program as part of the Farmer Field School initiative.

BASF continues to promote the establishment of a certified and transparent supply chain for coconut oil in the Philippines and Indonesia in a joint project with Cargill, Proctor & Gamble and the German governmental agency for international cooperation (Gesellschaft für Internationale Zusammenarbeit, or GIZ), supported by the Rainforest Alliance and the Philippine Coconut Authority. Thanks to the initiative, the first certified sustainable coconut oil was produced in the Philippines in 2018. The project is partly financed by the develoPPP.de program of the German Federal Ministry for Economic Cooperation and Development (BMZ). It is expected to improve income and living standards for around 3,300 smallholders.

The Sustainable Castor Initiative – Pragati, a joint initiative established by BASF together with Arkema, Jayant Agro and Solidaridad, made further progress in 2018. With the initiative, the project members aim to improve the economic situation of castor oil farmers and their workers in India. Smallholders are trained and audited based on a newly developed sustainability code. The goal is to optimize their yields, reduce the impact on the environment and be able to offer certified sustainable castor oil on the global market. Since the project was initiated, more than 2,700 smallholders and over 2,000 hectares of land have been certified for sustainable castor oil cultivation. The smallholders certified under the program have been able to increase their yields by 55% compared with the 2016 baseline. In 2018, the project was extended for another three years, from 2019 to 2022.

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

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

Mineral raw materials

Sourcing mineral raw materials responsibly is important to BASF. We procure a number of mineral raw materials, such as precious metals, which we use to produce mobile and process emissions catalysts, as well as various minerals for the production of battery materials.

In suspicious cases, we track the origins of minerals as defined in the Dodd-Frank Act – including tin, tantalum, tungsten, their ores and gold – to see if they come from mines in conflict regions. We reserve the right to have suppliers audited and, if necessary, terminate our business relationship. The suppliers addressed have confirmed to us that they do not source minerals matching this definition of conflict minerals from the Democratic Republic of Congo or its neighboring countries.

We intend to implement the E.U. Conflict Minerals Regulation published in 2017 by the 2021 deadline. The regulation defines supply chain due diligence obligations that must be met by 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 a responsible and sustainable global supply chain for cobalt and mica.

For instance, BASF is a founding member of the Responsible Cobalt Initiative and the World Economic Forum's Global Battery Alliance. These initiatives were created by companies in collaboration with international organizations such as the OECD and UNICEF to address fundamental challenges in the supply chain of battery materials. The most effective way of addressing these challenges is in cooperation with partners along the value chain. One example of this is our involvement in a joint pilot project launched in 2018 with BMW, Samsung SDI, Samsung Electronics and the German governmental agency for international cooperation (Gesellschaft für Internationale Zusammenarbeit, or GIZ). The companies tasked GIZ with setting up a three-year pilot mining project 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. Although BASF does not procure cobalt from artisanal mines in the Democratic Republic of Congo and our suppliers confirm that they do not either, we support the cross-industry project as it contributes to the goals of the Global Battery Alliance.

BASF mainly uses the mineral raw material mica and mica-based effect pigments in the production of coatings. Our demand is largely met with mica from our own mine in Hartwell, Georgia. We require our mica suppliers to comply with internationally recognized standards, including the prohibition of child labor. As a member of the Responsible Mica Initiative, BASF is actively working to eradicate child labor and unacceptable working conditions in the mica supply chain in India.

Environmental Protection, Health and Safety

Responsible Care Management System

SUPPLIERS BASF CUSTOMERS

The protection of people and the environment is our top priority. Our core business – the development, production, processing and transportation of chemicals – demands a responsible approach. We systematically address risks with a comprehensive Responsible Care Management System, which is continually being further developed. We expect our employees and contractors to know the risks of working with our products, substances and plants and handle these responsibly.

Responsible Care Management System

- **Global directives and standards for safety, security, health and environmental protection**
- **Regular audits to monitor performance and progress**

BASF's Responsible Care Management System comprises the global directives, standards and procedures for safety, security, health and environmental protection for the various stations 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 the relevant responsibilities, requirements and assessment methods. Our policies and requirements are constantly updated. We also maintain a dialog with government institutions, associations and other international organizations.

We set ourselves ambitious goals for safety and security, and health and environmental protection. We regularly conduct audits to monitor our performance and progress. We assess the potential risks and weak points of all our activities – from research to production and logistics – and the effects of these on the safety and security of our employees, the environment or our surroundings. In our databases, we 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

- **148 safety, security, health and environmental protection audits performed**

Regular audits help ensure that standards are met for safety, security, health and environmental protection. We conduct audits at BASF sites and at companies in which BASF is a majority shareholder. 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. We have defined our regulations for Responsible Care audits in a global Group 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, 181 BASF production sites are certified in accordance with ISO 14001 and EMAS (Eco-Management and Audit Scheme) (2017: 178). In addition, 53 sites worldwide are certified in accordance with OHSAS 18001.

In the BASF Group in 2018, 126 environmental and safety audits were conducted at 84 sites (2017: 109 audits at 83 sites). The focus was on auditing sites based on the level of risk. For production plants with a medium and high hazard potential, we conducted an additional 44 short-notice audits at 38 sites (2017: 63 audits at 47 sites). We audited 22 sites with respect to occupational medicine and health protection in 2018 (2017: 13). In addition, 34 health performance control visits were conducted at sites with low to medium health risks (2017: 31).

For more information on occupational safety and health protection, see page 96 onward

Costs and provisions for environmental protection in the BASF Group[1]

Million €	2018	2017
Operating costs for environmental protection	1,077	1,024
Investments in new and improved environmental protection plants and facilities[2]	277	234
Provisions for environmental protection measures and remediation[3]	639	600

1 Including provisions and environmental protection expenses from the discontinued oil and gas business.
2 Investments comprise end-of-pipe measures as well as integrated environmental protection measures.
3 Values shown refer to December 31 of the respective year.

For more information, see the Notes to the Consolidated Financial Statements on pages 220 and 245

Safety in production

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 as well as to prevent property and environmental damage and 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, 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 globally mandatory standards for safety, security, and environmental and health protection. A worldwide network of experts supports us in their implementation. 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, incidents and their causes in detail at a global level to learn from these. Hazard analyses 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 the safety culture.

By 2022, we will introduce digital solutions and applications at more than 350 of our plants to further increase the safety, security, planning capability and availability of our plants. For example, augmented reality solutions will support daily operations by providing direct, fast access to the required information with mobile end devices and apps. Other digital solutions will enable us to perform predictive maintenance or efficiently simulate maintenance and production processes in digital plant models.

Based on our corporate values, leaders serve as safety role models for our employees. Since July 2018, individual dialogs with experts on environmental protection, health, safety and security have been conducted with newly appointed senior executives to discuss function-specific issues and challenges.

Global safety initiative

- **Focus of Global Safety Days: "Understand risk, take action!"**

Our global safety initiative was established in 2008 and plays a key role in the ongoing development of the safety culture. With over 800 activities at 325 sites, the focus of our Global Safety Days was "Understand risk, take action!" in 2018. The aim was to increase risk awareness to identify and eliminate threats before they become a danger – whether at work, on the road or at home. Around 12,000 employees and contractors registered to participate at the Ludwigshafen site alone. This involvement and lively discussion make a major contribution to our safety culture.

For more information on the global safety initiative, see basf.com/global-safety-initiative

Occupational safety

- **New tools and global dialog to prevent work-related accidents**
- **Employees and contractors worldwide instructed on safe behavior**

We have adapted our incident reporting and goals to the recommendations of the International Council of Chemical Associations (ICCA), the European Chemical Industry Council (CEFIC) and the German Chemicals Industry Association (VCI). Our aim is to reduce the worldwide lost-time injury rate to no more than 0.1 per 200,000 working hours by 2025.[1]

2025 target

Reduction of worldwide lost-time injury rate per 200,000 working hours

≤0.1

To prevent work-related accidents, we encourage and promote risk-conscious behavior and safe working practices for every individual, learning from incidents and regular exchange of experiences (see box on page 97). We are constantly refining and enhancing our requirements.

1 Hours worked by BASF employees, temporary employees and contractors. Our previous goal was to reduce the worldwide lost-time injury rate per one million working hours (BASF and temporary employees) to 0.5 at most by 2025.

Global dialog improves risk awareness

A new global tool was launched in mid-2018 to help employees detect threats faster and better assess the risks involved. Our new, global requirement on key safety-related workflows emphasizes risk-conscious, safe working practices. A standardized risk matrix was adopted in 2018 to be able to determine and assess the hazard potential of incidents consistently across the company. We introduced new indicators such as checking work permits on-site to identify trends at an early stage. Around the world, employees and experts regularly share their insights and learnings, including – since 2018 – in short keynote talks.

In addition to the legally required briefings, we also held training courses on safe procedures in 2018 to strengthen risk awareness among our employees and contractors and prevent work-related accidents.

Furthermore, our training center at the Ludwigshafen site in Germany has offered continuous further education on diverse safety and security topics for employees and contractors since 2010. Some 18,000 participants received training there in 2018.

In 2018, 0.3 work-related accidents per 200,000 working hours[1] occurred at BASF sites worldwide. The proportion of chemical-related accidents rose slightly to 6% (2017: 5%). Unfortunately, there were three fatal work-related accidents in 2018 (2017: 2). BASF is working together with the authorities to analyze the incidents in depth and is using the findings to derive appropriate measures.

In February 2018, one employee died from injuries sustained in falling from a tank container at the Antwerp site in Belgium. Measures to prevent such accidents were taken following the incident. For example, existing training was updated to make working at heights an even greater focus. One employee of a contractor died during loading work at the Flotzgrün landfill site near Ludwigshafen, Germany, in February 2018. He became trapped during work with a construction vehicle. In November, one employee of a contractor died from injuries sustained after being struck by a falling sliding door at the Jacareí site in Brazil. In all cases, BASF is supporting the relevant authorities in their investigations into the circumstances and causes of the accidents. We use the findings of investigations into accidents to take appropriate measures to prevent these from happening again.

For more information on occupational safety, see basf.com/occupational_safety

Process safety

- **Regular review of plant protection plans and performance of safety inspections and safety-related measures**
- **Global initiatives to reduce process safety incidents**
- **Network of experts and global training methods foster dialog**

Process safety is a core part of safe, effective and thus future-proof 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 process safety 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 protection plan with the appropriate safety inspections 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 cycle, we review the implementation of our protection plans in all facilities at regular intervals and depending on risk potential, as well as the on-time performance of the required safety inspections and any resulting safety-related measures. 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**

In 2018, we adapted our reporting on accidents and process safety incidents to the recommendations of the International Council of Chemical Associations (ICCA), the European Chemical Industry Council (CEFIC) and the German Chemicals Industry Association (VCI). We now apply stricter reporting thresholds and use the number of process safety incidents per 200,000 working hours as a key performance 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 2018, we recorded 0.3 process safety incidents per 200,000 working hours[2] worldwide. We pursue continual improvement by investigating every incident in detail, analyzing root causes and using the findings to derive suitable measures.

Effectively reducing process safety incidents starts with knowing the potential risks. Around the world, we promote initiatives to discuss incidents and their causes, as well as to sensitize others to potential safety risks. In North America, for example, a key priority in 2018 was detecting all leaks. At the Ludwigshafen site in Germany and at other European sites, the focus was on sharing measures to improve

1 Hours worked by BASF employees, temporary employees and contractors. We previously reported on the number of lost-time injuries per one million working hours worldwide (BASF and temporary employees). In 2017, 1.4 work-related accidents per one million working hours occurred at BASF sites worldwide. The rate of work-related accidents for contractors was 1.4 per one million working hours in 2017. The 2017 figure has been adjusted due to updated data. Under the updated indicator definition, the rate of work-related accidents for 2017 would have been 0.3 per 200,000 working hours.

2 Hours worked by BASF employees, temporary employees and contractors. Our previous goal of reducing process safety incidents to a rate of no more than 0.5 per one million working hours (BASF and temporary employees) by 2025 largely followed the definition set by the European Chemical Industry Council (CEFIC). In 2017, the process safety incident rate per one million working hours was 2.0.

operational safety. In addition, our training methods are constantly refined and enhanced to increase risk awareness.

We are working on increasing the availability of our plants and determining the optimum point in time for maintenance measures and revamping/refurbishment. The aim is to further reduce unscheduled shutdowns. To achieve this, we launched a digitalization project in 2017, which was implemented at a number of plants in Ludwigshafen, Germany in 2018. In 2019, we plan to expand this to further plants in Ludwigshafen and at our sites in Schwarzheide, Germany, and Antwerp, Belgium. We want to roll the project out worldwide in 2020.

We play an active role in improving process safety around the world in a global network of experts, through our involvement in organizations such as the International Council of Chemical Associations (ICCA), 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**
- **2018 Global Health Campaign "Life. Saving. Heroes." focuses on cardiopulmonary resuscitation (CPR)**

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 directive that is implemented by a global network of experts. This was once again supported by numerous emergency drills and health promotion measures in 2018.

We measure our performance in health protection using the Health Performance Index (HPI). The HPI comprises five components: recognized occupational diseases, medical emergency preparedness, first aid, preventive medicine and health promotion. Each component contributes a maximum of 0.2 to the total score. The highest possible score is 1.0. Our goal is to reach a value of more than 0.9 every year. With an HPI of 0.96, we once again reached the ambitious goal of exceeding 0.9 each year in 2018 (2017: 0.97).[1]

Annual target[1]

Health protection
Health Performance Index
Maximum score 1.0

>0.9

Our 2018 Global Health Campaign "Life. Saving. Heroes." focused on cardiopulmonary resuscitation (CPR). We sensitized our employees about the issue with the ultimate aim of increasing the rate of CPR initiated by laypersons. This significantly increases a person's chances of survival if they suffer cardiac arrest in private life or at work. Over 480 sites worldwide took part in the health campaign and offered CPR training.

We raise employee awareness of health topics through offers tailored toward 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

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.

We regularly check our emergency systems, crisis management structures and drill procedures with employees, contractors, local authorities and emergency rescue workers. For example, in 2018 we conducted 224 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 protect our employees, sites, plants and company know-how against third-party interference. This includes, for example, potential terrorist risks in the communities surrounding our production sites

1 Our updated corporate strategy realigns our goals from 2019 onward; as a result, we will convert the Health Performance Index goal into a reporting indicator. For more information on our strategy and goals, see page 25 onward.

and addressing in depth the issue of cybersecurity. BASF has a comprehensive program in place to continually improve its ability to prevent, detect and react to cybersecurity incidents. By establishing a global Cyber Security Defense Center, BASF significantly expanded the availability of its cybersecurity experts to ensure around-the-clock protection. We cooperate closely with a global network of experts and partners to ensure that we can protect ourselves against cyberattacks as far as possible. In 2018, we therefore expanded our IT security certification according to ISO 27001, which was introduced in 2008.

Around the world, we work to sensitize all employees about protecting information and know-how. For example, we further strengthened our employees' awareness of risks in 2018 with training, case studies and interactive offerings. 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 more than 600 employees. They support the implementation of our uniform requirements and hold events and seminars on secure behaviors. We provided information protection instruction to more than 33,000 participants in 2018. 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.

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 such as a terrorist attack or a natural catastrophe, we can use a standardized global travel tracking system to locate and contact employees in the affected regions.

Aspects of human rights related to site security 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.

For more information on emergency response, see basf.com/emergency_response
For more information on security, see basf.com/corporate-security

Product stewardship

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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 for product stewardship**

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. This commitment to product stewardship is enshrined in our Responsible Care® charter and the initiatives of the International Council of Chemical Associations (ICCA). We also ensure uniformly high standards for product stewardship worldwide. In some cases, we have committed to voluntary initiatives, which go beyond the local legal requirements.

We provide extensive information on all our chemical sales products to our customers with safety data sheets in around 40 languages. This is achieved with the help of a global data base in which we maintain and evaluate continuously updated environmental, health and safety data for our substances and products. Our global emergency hotline network provides information around the clock. We train and support our customers in fulfilling their industry or application-specific product requirements. In associations and together with other manufacturers, BASF is pushing for the establishment of voluntary global commitments to prevent the misuse of chemicals.

Our risk assessment goals support 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. In addition, we are also involved in initiatives such as workshops and training seminars in developing countries and emerging markets, including in China and the Philippines in 2018. In order to facilitate public access to information, we are involved in the ICCA online portal that provides more than 4,500 GPS safety summaries.

For more information on GPS, see basf.com/en/gps

Global target

By 2020, we will conduct risk assessments for more than 99% of the substances and mixtures sold by BASF worldwide in quantities of more than one metric ton per year. We reached 91% of this goal in 2018 (2017: 76.2%).[1] The risk associated with using a substance is determined by the combination of its hazardous properties and its potential exposure to people and the environment.

2020 target[1]

Risk assessment of products that we sell in quantities of more than one metric ton per year

>99%

REACH and other chemical regulations

- **Final registration phase of REACH successfully completed**

BASF has completed the third and final registration phase of the E.U. chemicals regulation, REACH, successfully and on time. All substances produced in annual volumes between one and one hundred metric tons were registered by the deadline of May 31, 2018. Above and beyond this, our REACH activities continue to be determined by E.U. authorities' decisions on additional studies in connection with the evaluation of submitted dossiers. BASF is also obligated to continuously update the registration dossiers it has submitted.

We apply the experience we have gathered with REACH to fulfill new legal requirements around the world, such as in South Korea and Turkey. BASF took the industry lead for a significant share of substance registrations in South Korea and submitted all registrations for priority existing chemicals by the July 2018 deadline.

We continue to see a rise in both regulatory requirements for agrochemicals and the number of additional studies required to obtain or extend approval for crop protection products. Potential risks for people and the environment are carefully assessed and minimized throughout the research, development and registration process for crop protection products. We perform a large number of scientific studies every year to ensure that our products meet the highest safety requirements.

1 Our updated corporate strategy realigns our goals from 2019 onward; as a result, we will no longer report on the global risk assessment goal. Furthermore, this goal has become obsolete due to the legal requirement to make chemical risk assessment data available worldwide under regulations such as REACH. For more information on our strategy and goals, see page 25 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. We apply state-of-the-art knowledge in the research and development phase of our products. For instance, we only conduct animal studies when they are required by law and approved by respective authorities. Animal studies are at times stipulated by REACH and other national legislation outside the European Union in order to obtain more information on the properties and effects of chemical products.

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 are continually developing and optimizing alternative methods, and we use them wherever it is possible and accepted by the authorities. We use alternative methods in more than a third of our tests. Currently, 33 alternative methods are being used in our labs and another 19 are in the development stage. BASF spent €3.5 million toward this purpose in 2018. 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, our 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.

For more information on alternative methods, see basf.com/alternative_methods

Management of new technologies

■ Continual safety research on nano- and biotechnology

Nanotechnology and biotechnology offer solutions for key societal challenges – for example, in the areas of climate protection or health and nutrition.

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 over 40 different projects related to the safety of nanomaterials. The results were published in more than 100 scientific articles. In 2018, we concluded our five-year Nano-In-Vivo research project in cooperation with German governmental bodies. The project delivered important insights into the toxicological effects of long-term exposure to nanoparticles and complements our previous findings that toxicity is determined not by the size of the particles but by the intrinsic properties of the substance.

We contribute our expertise in various working groups of the European Chemicals Agency (ECHA) and the OECD's Business and Industry Advisory Group (BIAC), which develop testing and implementation guidelines. Together with partners from academia and government authorities, in 2018 we started work on E.U.-funded projects to validate alternative testing methods for evaluating and grouping nanomaterials with a view to regulatory acceptance. In 2018, we were recognized by the European Chemical Industry Council (CEFIC) for our transparency in addressing questions about the safety of nanomaterials.

BASF makes successful use of biotechnology. We produce a range of established products with the help of biotechnological methods. This provides us with extensive experience in the safe use of biotechnological methods in research and development as well as in production. When employing biotechnology, we adhere to all standards and legal regulations. We are also guided by the code of conduct set out by EuropaBio, the European biotechnology association.

For more information on nanotechnology and the Nanotechnology Code of Conduct, see basf.com/nanotechnology

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.

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 guideline. This is based on the guidelines of 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.

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 transportation routes, provided BASF arranged the transport.

We recorded three incidents in 2018 with spillage of more than 200 kilograms of dangerous goods (2017: 3). None of these transportation incidents had a significant impact on the environment (2017: 0).

Raw materials supply challenges due to low Rhine River

The low water levels on the Rhine River in 2018 impacted logistics at the Verbund site in Ludwigshafen, Germany. Under normal conditions, around 40% of incoming volumes are transported to the site by ship. This makes the Rhine the most important transportation route for incoming raw materials. As far as possible, we replaced transportation by ship with alternatives such as rail and truck while the Rhine was low. We are working on an overarching concept to make the site more resilient to long periods of low water and are investigating various measures, including selectively expanding on-site tank capacities or switching to ships better suited to low water levels. We intend to implement the first measures in 2019.

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 2018, we provided assistance to other companies in 145 cases worldwide (2017: 178). We apply the experience we have gathered to set up similar systems in other countries: For example, we intensified our activities in India in 2018.

For more information, see basf.com/distribution_safety and basf.com/emergency_response

Energy and climate protection

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As an energy-intensive company, we are committed to energy efficiency and global climate protection. We want to reduce emissions along the value chain and utilize, for example, efficient technologies for generating steam and electricity, energy-efficient production processes, and comprehensive energy management. Our climate protection products make an important contribution toward helping our customers avoid emissions.

Strategy

- **We are committed to energy efficiency and global climate protection along the value chain**
- **New climate protection goal: CO_2-neutral growth until 2030**

Climate protection is very important to us. As a leading chemical company, we want to achieve CO_2-neutral[1] production growth from 2019 to 2030. We have articulated this commitment in our new climate protection goal, which will apply from 2019. In order to reach this target, we aim to maintain total greenhouse gas emissions from our production sites and our energy purchases at the 2018 level. Sharp increases due to the startup of large-scale plants will be progressively offset. We will compensate for additional emissions with optimization measures at existing plants and a focus on purchasing low carbon energy. When deciding on investments and acquisitions, we systematically consider the effects on greenhouse gas emissions.

Most of BASF's greenhouse gas emissions are attributable to the consumption of energy. At sites that produce their own energy, 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. Around half[2] of our total annual research and development spending goes toward developing these products and optimizing our processes.

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 Standard as well as the sector-specific standard for the chemical industry.

Since 2004, we have participated in the international non-profit organization CDP's program for reporting on data relevant to climate protection. BASF achieved a top score of "A" in CDP's rating for 2018, again awarding it 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 emissions reduction strategies to achieve company-wide goals.

Climate protection is a shared global task. We advocate climate protection by supporting initiatives to this end. In 2018, BASF actively contributed to recommendations on energy, climate and resource efficiency for state and government leaders in a working group of companies from G20 countries – the Business 20 (B20). As a member of the Alliance of CEO Climate Leaders, BASF explicitly encourages companies to step up their commitment to meeting the targets of the Paris climate accord. In November 2018, BASF also co-signed an open letter published by the Alliance calling for a pledge to increase efforts to reduce emissions, improved analysis and reporting of climate-related financial risks as well as a global carbon pricing mechanism. BASF also supports the recommendations of the Task Force on Climate-related Financial Disclosures

Carbon management

Since 2018, we have bundled global activities to reach our new climate goal and a long-term research and development program under the banner of carbon management. The program targets new technologies to significantly reduce greenhouse gas emissions from production at our Verbund site in Ludwigshafen, Germany. The focus here is on production processes for basic chemicals, which account for the highest share of emissions. These technologies can be transferred to other sites. Developing the technologies is time-intensive and involves uncertainties. We expect these new processes to make a significant contribution to reducing CO_2 from 2030. As well as technical progress, this will require an adequate supply of renewable energy at competitive prices and a supportive regulatory framework.

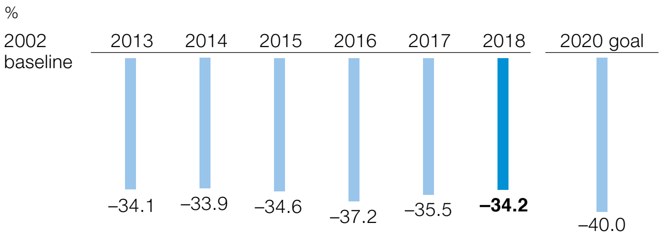
For more information, see basf.com/carbon-management

1 BASF operations excluding the discontinued oil and gas business. 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.

(TCFD). In 2018, we started comparing our annual reporting with the TCFD's recommendations and identifying potential action areas.

For more information on climate protection, see basf.com/climate_protection

Reduction of greenhouse gas emissions per metric ton of sales product in BASF operations excluding the discontinued oil and gas business



Global goals and measures

We aim to reduce our greenhouse gas emissions per metric ton of sales product by 40% by 2020, compared with baseline 2002 (BASF operations excluding the discontinued oil and gas business). In absolute terms, our emissions declined slightly in 2018 compared with the previous year. We reduced greenhouse gas emissions per metric ton of sales product by 34.2% compared with baseline 2002 (2017: reduction of 35.5%). Since 1990, we have been able to lower our overall greenhouse gas emissions from BASF operations (excluding the oil and gas business) by 49.2% and even reduce specific emissions by 74.2%.

We will pursue a new goal from 2019 onward: CO_2-neutral growth until 2030. We will maintain greenhouse gas emissions per metric ton of sales product as an additional reporting indicator.

By 2020, we want to have introduced certified energy management systems (DIN EN ISO 50001) at all relevant production sites.[1] Taken together, this represents 90% of BASF's primary energy demand.

BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol[1]

Million metric tons of CO_2 equivalents

BASF operations including the discontinued oil and gas business[2]	2002	2017	2018
Scope 1[3]			
CO_2 (carbon dioxide)[4]	14.634	16.813	16.956
N_2O (nitrous oxide)	6.407	0.747	0.740
CH_4 (methane)	0.244	0.048	0.064
HFC (hydrofluorocarbons)	0.061	0.081	0.091
Scope 2[5]			
CO_2[4]	5.243	3.796	3.361
Total	**26.589**	**21.485**	**21.212**
Sale of energy to third parties (Scope 1)[6]			
CO_2[4]	0.347	1.086	0.567
Total	**26.936**	**22.571**	**21.779**

1 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.
2 The assets and businesses acquired from Bayer are not yet included in the reported greenhouse gas emissions of the BASF Group for 2018.
3 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) 1995 (2002 emissions) and IPCC 2007, errata table 2012 (2017 and 2018 emissions). HFC (hydrofluorocarbons) are calculated using the GWP factors of the individual components.
4 In 2018, we changed how emissions are allocated for two BASF Group companies with interdependent operations, with part of the Scope 2 emissions included within Scope 1. Total emissions (excluding sales of energy to third parties) remain unchanged. Since double counting of emissions is avoided (see footnote 6), direct emissions from sale of energy to third parties are reduced accordingly.
5 Location-based approach. Under the market-based approach, Scope 2 emissions were 3,657 million metric tons of CO_2 in 2018.
6 Includes sale to BASF Group companies; as a result, emissions reported under Scope 2 can be reported twice in some cases.

This is one of the ways in which we intend to identify and carry out improvements in energy efficiency, reducing not only greenhouse gas emissions and saving valuable energy resources, but also increasing the BASF Group's competitive ability. From 2019 onward, we will maintain this goal as a reporting indicator to track our progress in introducing energy management systems.

2020 target

Reduction of greenhouse gas emissions per metric ton of sales product Baseline 2002

(BASF operations excluding the oil and gas business)

–40%

2020 target

Coverage of our primary energy demand through certified energy management systems at all relevant sites

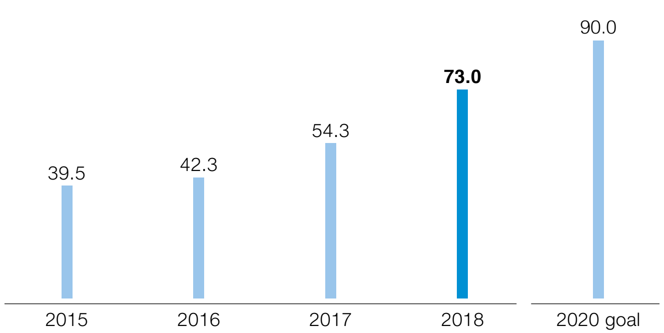
(BASF operations including the oil and gas business)

90%

1 The selection of relevant sites is determined by the amount of primary energy used and local energy prices; figures relate to BASF operations including the discontinued oil and gas business.

The introduction and implementation of the energy management systems is steered by a global working group. All energy efficiency measures are recorded and analyzed in a global database and made available to BASF sites as best practices. Currently, more than 150 measures are being pursued to reduce energy consumption and increase competitive ability. Further sites across all regions were certified in accordance with ISO 50001 in 2018. These include the Verbund site in Geismar, Louisiana, as well as another 19 sites in Brazil, India, Malaysia, Thailand, France and the Netherlands, among other countries. At the moment, 64 sites are certified worldwide, representing 73.0% of our primary energy demand.

Certified energy management systems (ISO 50001) at BASF Group sites worldwide, in terms of primary energy demand



Energy supply and efficiency

- **Verbund system as important component of our energy efficiency strategy**

Gas and steam turbines in combined heat and power plants enable us to fulfill more than 70% of the electricity demand of the BASF Group. Compared with separate methods of generating steam and electricity, we saved 13.1 million MWh of fossil fuels and prevented 2.6 million metric tons of carbon emissions in 2018. 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 18.5 million MWh in 2018, which translates to 3.7 million metric tons less CO_2 released into the environment. With combined power and steam generation as well as our continuously enhanced Energy Verbund, we were thus able to prevent a total of 6.3 million metric tons of carbon emissions in 2018.

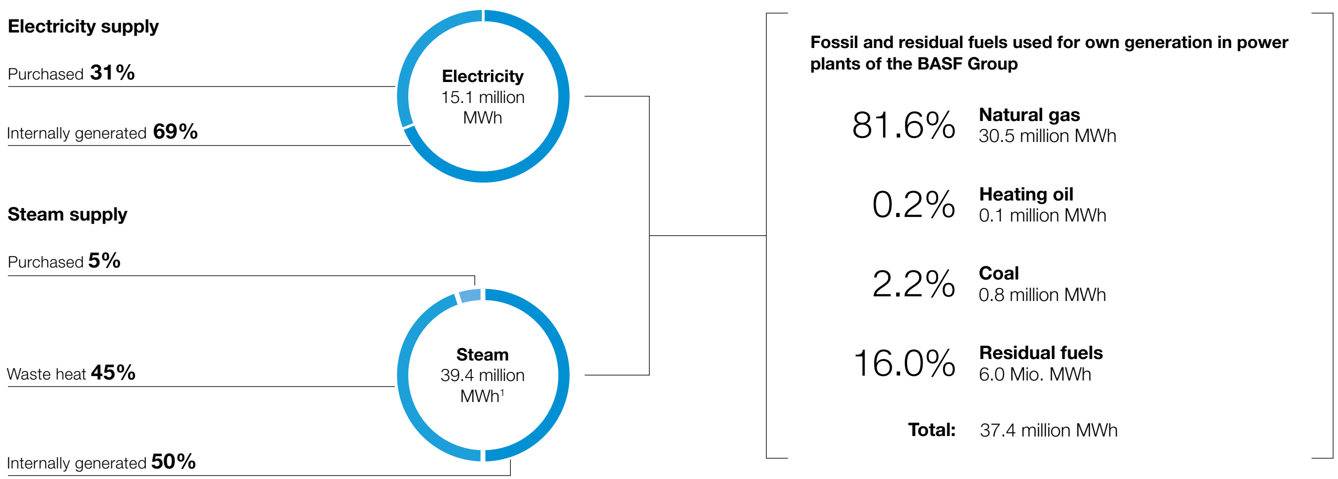
Energy saved in 2018 by the Verbund and combined heat and power generation

31.6 million MWh

We were able to further optimize the resource and energy consumption of our production in numerous projects around the world in 2018. For example, a new boiler was installed at the McIntosh site in Alabama to generate steam from production residues that were previously disposed of externally, saving primary energy. Process improvements at many additional sites have also led to savings in steam, electricity and fuel.

We also rely on locally available sources to supply our sites with energy. We are continuously exploring the use of renewable energies. The focus here is on the purchase of electricity. It only makes economic sense to replace highly efficient internal electricity and steam generation using natural gas once renewable energies offer the necessary supply security and are available at competitive prices.

Energy supply of the BASF Group 2018



1 Conversion factor: 0.75 MWh per metric ton of steam

Key indicators for energy and climate protection in BASF operations excluding the discontinued oil and gas business

	Baseline 2002[1]	2017	2018
Greenhouse gas emissions[2] (million metric tons of CO_2 equivalents)	24.713	20.716	20.378
Specific greenhouse gas emissions (metric tons of CO_2 equivalents per ton of sales product)	0.897	0.579	0.590
Primary energy demand[3] (million MWh)	55.759	57.268	57.364
Energy efficiency (kilograms of sales product per MWh)	494	625	602

1 The values for baseline 2002 were not adjusted to reflect the currently applied global warming potential factors.
2 Scope 1 and Scope 2 (location-based) according to the GHG Protocol Standard, excluding emissions from the generation of steam and electricity for sale to third parties
3 Primary energy used in BASF's plants as well as in the plants of our energy suppliers to cover energy demand for production processes

Our research also contributes to increasing the efficiency of technologies for the use of renewable energy sources.

Carbon footprint and climate protection products

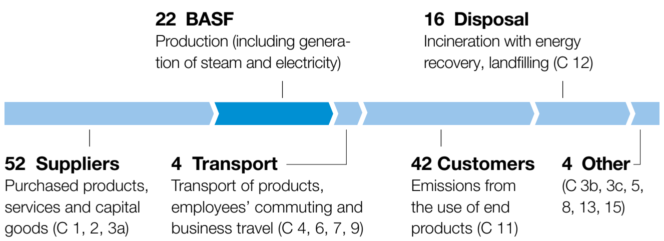
- **Reporting on greenhouse gas emissions along the entire value chain**
- **Customers' use of climate protection products sold in 2018 avoids 640 million metric tons of CO_2 equivalents**

BASF has published a comprehensive corporate carbon footprint since 2008. This reports on all greenhouse gas emissions along the value chain and shows the volume of emissions prevented through the use of our climate protection products. We plan our climate protection activities along the value chain based on our corporate carbon footprint.

Through various measures to reduce our raw material and energy requirements, the emission of greenhouse gases associated with producing the raw materials was decreased by a total of around 142,000 metric tons in 2018.

Greenhouse gas emissions along the BASF value chain in 2018[4]

Million metric tons of CO_2 equivalents



4 BASF operations including the discontinued oil and gas business; according to Greenhouse Gas Protocol, Scope 1, 2 and 3; categories within Scope 3 are shown in parentheses

Our climate protection products help us offer solutions to our customers to avoid greenhouse gas emissions over their entire lifecycle as compared with reference products. According to the systematic sustainability analysis we conduct on our portfolio – using the Sustainable Solution Steering method – such products are referred to as "Accelerator" solutions as using them contributes positively to climate protection and energy as compared with reference products. Two examples are Luprosil® and Lupro-Grain®, propionic acid-based preservatives that enable feed grains to be stored for up to 12 months after harvesting without being dried. An Eco-Efficiency Analysis shows that in addition to ecological and economic advantages, these can reduce greenhouse gas emissions by an average of 85% per metric ton of feed.

An analysis of 22 climate protection product groups revealed that customers' use of products sold in 2018 helps to avoid 640 million metric tons of CO_2 equivalents. Every product makes an individual contribution in the value chain of customer solutions. Value chains are assessed in terms of BASF's economic share of the respective customer solution. On average, 5% of the emissions avoided were attributable to BASF in 2018. The calculation of avoided greenhouse gas emissions took into account the chemical industry standards of the International Council of Chemical Associations (ICCA) and the World Business Council for Sustainable Development (WBCSD).

For more information on our emissions reporting, see basf.com/corporate_carbon_footprint
For more information on the sustainability analysis of our product portfolio, see pages 37 to 38

Prevention of greenhouse gas emissions through the use of BASF products

Million metric tons of CO_2 equivalents

Emissions along the entire value chain		
Without the use of BASF's climate protection products	1,000	
With the use of BASF's climate protection products	360	Emissions avoided 640 million metric tons

Air and soil

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We want to further reduce emissions to air from our production, prevent waste and protect the soil. We have set ourselves standards for doing so in global directives. If no recovery options are available for waste, we dispose of it in a proper and environmentally responsible manner.

Strategy

- **Regular monitoring of emissions to air**
- **Professional disposal of hazardous waste**

Regular monitoring of our emissions to air is a part of environmental management at BASF. Aside from greenhouse gases, we also measure emissions of other pollutants into the atmosphere. Our reporting does not take into account air pollutant emissions from oil and gas operations due to their substantial fluctuation during exploration phases.

Our Raw Material Verbund helps us prevent or reduce waste. We regularly carry out audits to inspect external waste disposal companies to ensure that waste is properly disposed of. 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 BASF sites, proper remediation measures are reviewed based on prevailing legal and current technical standards, and undertaken as necessary.

1 The 2017 figure has been adjusted due to updated data.

Emissions to air

- **Emissions at prior-year level**

Absolute emissions of air pollutants from our chemical plants amounted to 25,787 metric tons in 2018. Emissions of ozone-depleting substances as defined by the Montreal Protocol totaled 19 metric tons in 2018 (2017: 23 metric tons). Emissions of heavy metals in 2018 amounted to 2 metric tons (2017: 2 metric tons[1]).

Our product portfolio contains a variety of catalysts used in the automotive sector and in industry to reduce the emission of air pollutants.

Emissions to air

Metric tons

Air pollutants from BASF operations excluding the oil and gas business	2018	2017
CO (carbon monoxide)	3,627	3,644
NO_X (total nitrogen oxides)	10,712	11,205
NMVOC (nonmethane volatile organic compounds)	5,022	4,727
SO_X (total sulfur oxides)	1,825	1,753
Dust[1]	2,344	2,354
NH_3 (ammonia) and other inorganic substances	2,257	2,170
Total	**25,787**	**25,853**

Management of waste and contaminated sites

- **Total waste volume slightly higher**
- **Systematic management of contaminated sites**

We aim to avoid waste as far as possible. If waste is unavoidable, we review the options for recycling or energy recovery to close materials cycles, using BASF's existing Verbund structures for efficient waste management. Total waste volume amounted to 2.31 million metric tons in 2018 (+9.0%).

Waste generation in the BASF Group

Million metric tons

	2018	2017
Total waste generation[1]	**2.31**	**2.12**
of which from oil and gas exploration	0.12	0.10
Waste recovered	**0.89**	**0.79**
Recycled	0.36	0.27
Thermally recovered	0.53	0.52
Waste disposed of	**1.42**	**1.34**
In underground landfills	0.20	0.17
In surface landfills	0.46	0.39
Through incineration	0.76	0.77
Classification of waste for disposal[2]		
Nonhazardous waste	0.44	0.47
Hazardous waste	0.98	0.87
Transported hazardous waste	0.29	0.23

1 Comprises all production waste and hazardous waste from construction activities
2 The classification of waste into hazardous and nonhazardous waste is performed according to local regulations.

We set out global standards for managing contaminated sites. A worldwide network of experts ensures their proper implementation. We develop remediation solutions that combine 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 possibilities.

Relevant sites are documented in a contaminated site database. Ongoing remediation work around the world continued on schedule 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 220 and 245

Water

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Water is of fundamental importance in chemical production. It is used as a coolant, solvent and cleaning agent, as well as to make our products. 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 goal for sustainable water management.

Strategy

- **Sustainable water management**
- **Updated water goal from 2019 onward**

We aim to use water as sparingly as possible and further reduce emissions to water. To do so, we have set out a Group directive with globally applicable standards.

We are introducing sustainable water management at all relevant production sites. These include our major Verbund sites as well as the sites in water stress areas. Under our previous definition, these were regions in which more than 60% of available water is used by industry, household and agriculture. We consider the quantitative, qualitative and social aspects of water use. We want to identify where we can improve at our sites, and use as little water as possible, especially in water stress areas.

From 2019 onward, we will use an expanded definition of water stress areas: Regions in which more than 40% of available water is used by industry, household and agriculture in accordance with the new Global Reporting Initiative (GRI) standard. We will also report on the water consumption of the BASF Group and water consumption in water stress areas from 2019 onward.

In order to ensure transparency in our reporting on water, we once again took part in CDP reporting in 2018. BASF achieved a rating of "A–" in 2018 and thus Leadership status for sustainable water management. CDP's evaluation of sustainable water management includes how transparently companies report on their water management activities and what they do to reduce risks, such as water scarcity. CDP also assesses the extent to which product developments – even at the customers of the companies under evaluation – can contribute to sustainable water management.

We offer our customers solutions that help purify water and use it more efficiently while minimizing pollution.

For more information on the CDP water survey, see basf.com/en/cdp

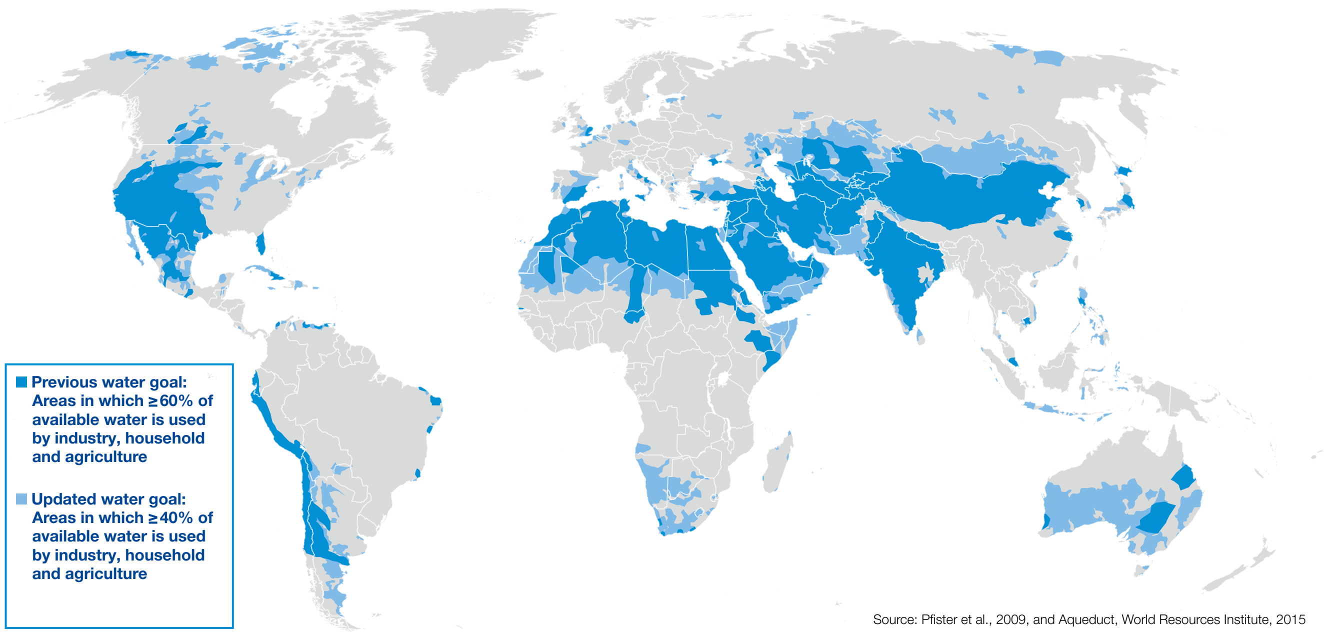
Global goal and measures

Our previous goal was to introduce sustainable water management at all sites in water stress areas and at our Verbund sites by 2025, covering 93% of BASF's total water abstraction. We achieved 50.0% of this goal in 2018 (2017: 45.2%). In 2018, BASF introduced sustainable water management at five sites.

In 2018, around 23% of our production sites were located in water stress areas. Around 1% of BASF's total water supply was abstracted from these sites.

We pursue our goal by applying the European Water Stewardship standard, which rests on four principles: sustainable water abstrac-

Water stress areas around the world



Source: Pfister et al., 2009, and Aqueduct, World Resources Institute, 2015 tion, maintaining good water quality, preserving conservation areas, and ensuring continuous improvement processes.

We will pursue an updated goal from 2019 onward. By 2030, we want to introduce sustainable water management at all sites in water stress areas and at our Verbund sites according to our expanded definition. This almost doubles the number of sites.

Water use

Using water responsibly

Our water usage totaled 1,745 million cubic meters in 2018. This demand was covered for the most part by surface water, such as rivers and lakes. At some sites, we use alternative sources such as treated municipal wastewater, brackish water or seawater.

We predominantly use water for cooling purposes (87%), after which we recirculate it back to our supply sources. We reduce our water use by recirculating as much water as possible. To do this, we use recooling plants that allow water to be reused several times.

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.

Emissions to water

Slight decrease in emissions to water

A total of 1,614 million cubic meters of water were discharged from BASF production sites in 2018, including 188 million cubic meters of treated wastewater from production. Emissions of nitrogen to water amounted to 3,100 metric tons (2017: 2,800 metric tons). Around

Water in the BASF Group 2018

Million cubic meters per year

Abstraction / withdrawal: 1,745[1]

Surface water / freshwater	1,409
Brackish water / seawater	246
Groundwater	66
Drinking water	23
Reusable wastewater from third parties	1

Use: 6,609

13% Production — 87% Cooling

Cooling	6,362
of which recirculating	4,936
once-through	1,426
Production[2]	247

Discharge: 1,614[1]

Surface water / freshwater	1,344
Brackish water / seawater	239
Groundwater	10
External treatment plant	21

1 The difference between the volume of water drawn and the volume discharged is primarily attributable to evaporation losses during closed-circuit cooling.
2 Total from production processes, graywater, rinsing and cleaning in production

12,400 metric tons of organic substances were emitted in wastewater (2017: 13,200 metric tons[1]). Our wastewater contained 23 metric tons of heavy metals (2017: 25 metric tons). Phosphorus emissions amounted to 220 metric tons (2017: 420 metric tons). Our wastewater is treated through different methods depending on the type and degree of contamination – including biological processes, oxidation, membrane technologies, precipitation or adsorption.

In order to avoid unanticipated emissions and the pollution of surface or groundwater, we create water protection strategies for our production sites. This is mandatory for all production plants as part of the Responsible Care® initiative. 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

1 The 2017 figure has been adjusted due to updated data.

Employees

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Our employees make a significant contribution to BASF's long-term 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.

122,404

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**

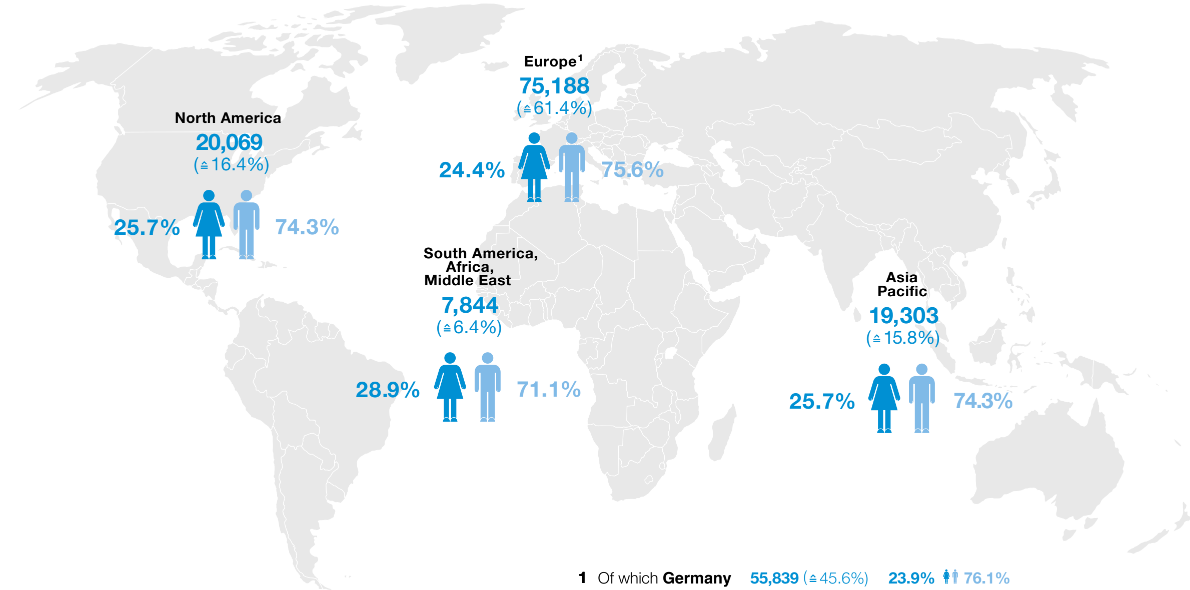
Our employees are key to the successful implementation of BASF's strategy. They contribute to changing the world we live in for the better with innovative and sustainable solutions. We remain convinced of the value of excellent employees, leaders and working conditions, and strive to give our employees the tools and skills necessary to be able to offer our customers products and services with an even greater level of differentiation and customization in the future. As part of the updated corporate strategy, we will sharpen our focus on employee engagement and impactful leadership. 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. We want our employees to thrive and best contribute their individual talents – also considering the increasingly rapidly changing environment, especially as a result of demographic change and the digitalization of work. 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

At the end of 2018, BASF had 122,404 employees (2017: 115,490); of these, 3,174 were apprentices[1] (2017: 3,103). 3,226 employees were on temporary contracts (of which 40.9% were women). The higher headcount was primarily due to the businesses acquired from Bayer. In addition, 2,017 employees from the disposal group for the oil and gas business were included in the number of employees as of December 31, 2018.

BASF Group employees by region

(Total: 122,404, of which 25.1% women, as of December 31, 2018)



1 Of which **Germany**	55,839 (≙45.6%)	23.9%	76.1%
Of which **BASF SE**	35,316 (≙28.9%)	21.6%	78.4%

1 At BASF, the apprenticeship program trains students for technical, scientific and business vocations as well as for trade and craft professions.

Employee engagement

■ Next employee survey to be conducted in 2019

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. Previous global employee surveys have shown that employee engagement is already high, and we aim to keep it this way and increase it even further where possible. As part of our updated corporate strategy, we have therefore set ourselves the following goal for the coming years from 2019 onward: More than 80% of our employees feel that at BASF, they can thrive and perform at their best. Our employee engagement level will be regularly calculated as an index score based on set questions in employee surveys. We identify improvement areas based on survey results to further strengthen the engagement of our employees.

Global employee surveys and pulse checks are and will remain 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 and the Supervisory Board. We have performed regular global employee surveys since 2008. As part of the updated corporate strategy, we conducted a global "pulse check" in 2018. We surveyed around 24,000 randomly chosen employees worldwide on topics such as customer focus, innovation, digitalization, sustainability and safety awareness. The results of this survey were taken into account in the strategy development process. We will conduct the next employee survey in 2019 based on an updated concept.

What we expect from our leaders

■ Leaders as role models

Our leaders and their teams should make a sustainable contribution to BASF's success and to safeguarding its future. This is why we want to strengthen leadership impact. We understand impactful leadership as leaders that serve as role models by developing and implementing business strategies in line with our corporate values. They should also have a positive impact on shaping day-to-day business, mobilizing employees and fostering their development. These expectations are part of the standard global nomination criteria for leadership candidates. Our leadership culture is founded on a global Competency Model, which sets out specific behavioral standards, as well as our global Code of Conduct. We offer our leaders learning and development opportunities for each phase of their career, as well as various formats that enable them to share knowledge and learn from one another. Global, regional and local offerings are optimally coordinated.

Regular feedback plays an important role in the development of leaders. In 2018, we tested new digital tools for providing direct, timely feedback in a number of business and functional units. This complements BASF's long-established Global Leadership Feedback tool, where leaders receive feedback from their employees, managers, colleagues and customers on different aspects of their leadership conduct, and derive conclusions and activities from this in a follow-up process. In the coming years, we will introduce additional feedback tools. The use of these tools is binding in order to further enhance our strong feedback culture and promote personal development among our leaders on a regular basis.

Leaders and digital transformation

Leaders play a special role in driving forward digitalization. We offer training and other resources to prepare them and help them inspire their teams about the digital transformation. One example is the BASF Leadership Camp held in the fall of 2018, where leaders from all of the regions came together to discuss topics such as the role of leaders and the challenges of the digital transformation facing them, as well as the possibilities of digital project management. Leaders were also given the opportunity to participate in a modular course with cross-company digitalization projects. The program was run under the auspices of the Digital Academy, a network of large companies and the Mannheim Business School, which aims to drive forward the digital transformation in Germany.

Inclusion of diversity

■ Promoting diversity is part of our company culture

The strong global character of our markets translates into different customer requirements – and we want to reflect this diversity among our employees, too. 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. This diversity is important to us because it enables our employees to better meet our customers' needs. By valuing and promoting employee diversity, we boost our teams' performance and power of innovation, and increase creativity, motivation and each and every individual's identification with the company.

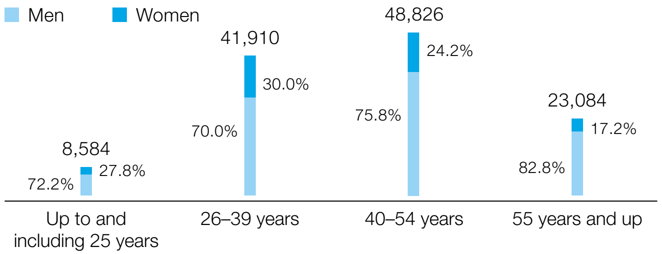
Promoting and valuing diversity across all hierarchical levels is an integral part of our strategy and is also embedded in our corporate values. BASF strives to foster a working environment based on mutual respect, trust and appreciation. This is enshrined in our global Competency Model, which provides 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 by integrating topics such as inclusive leadership into our leadership development courses. Special seminars and training events are held to sensitize leaders to issues such as unconscious bias. This enables them to remain as objective as possible when making personnel decisions, for example, to avoid unconscious biases in favor of or against candidates with certain characteristics or views.

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. Mixed-age teams also benefit from the combination of different skills and perspectives, for example, by bringing together knowledge of digital technologies with many years of experience and process expertise. We have various measures in place to foster this transfer of knowledge and experience, and learning from each other. Given the special role that our leaders assume, the topic "leadership in times of demographic change" forms a part of many of our leadership programs.

BASF Group employee age structure

(Total: 122,404, of which 25.1% women, as of December 31, 2018)



We also promote diversity in leadership development. Our global approach is evidenced by the high percentage of non-German senior executives,[1] for example. This was 40.4% at the end of 2018 (2017: 38.9%). Our goal is to continue to maintain this figure at significantly above the 2003 baseline (30%).

Since 2015, BASF has set itself global quantitative goals for increasing the percentage of women in leadership positions. We aim to increase this ratio to 22–24% worldwide by 2021, so that the proportion of women in leadership positions reflects the share of female employees in the BASF Group when the target was set.

2021 target

Proportion of women in leadership positions with disciplinary responsibility

22–24%

Considering the low rate of turnover in the BASF Group's leadership team, this is an ambitious goal that we want to achieve through various measures. At BASF in North America, for example, diversity considerations such as gender or ethnic background are systematically considered when drawing up candidate lists and interview panels for all vacant positions. BASF has been a member of the *Chefsache* initiative since 2016, a network of leaders from industry, academia, the public sector and media. The initiative aims to initiate social change such as increasing the percentage of women in leadership positions in Germany. In the BASF Group, the global proportion of female leaders with disciplinary responsibility was 21.7%[2] at the end of 2018 (2017: 20.5%).

Leaders and professionals in the BASF Group[2]

	December 31, 2018	Of which women (%)
(Senior) executives[1]	9,648	21.7
Professionals[2]	39,756	30.2

1 Employees with disciplinary leadership responsibilities
2 Specialists without disciplinary leadership responsibilities

For more information, see basf.com/diversity

For more information on diversity in the Board of Executive Directors and the Supervisory Board, see page 136 onward

For more information on health protection, see page 98

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.
2 Excluding employees of the businesses acquired from Bayer

Competition for talent

- **Positioning as an attractive employer**
- **Focus on social media and online marketing**

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.

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 address specific target groups. One focus is on the recruitment of digital talents. In 2018, we launched a dedicated global career website for digital talents to strengthen our position among this group. In Germany, we also held our second BASF hackathon in 2018 with the motto "Coding Chemistry." Around 50 university students solved specific problems from our divisions within 24 hours and presented their solutions to a panel of BASF experts.

In North America, our #belongatBASF campaign informed social media users of the benefits of working at BASF in 2018. Employees also joined in and posted about their personal experiences and their working day at BASF. In addition, we offered a global livestream about working at BASF for the first time in 2018, in which our experts interacted directly with and answered questions from potential candidates.

We once again achieved high scores in a number of employer rankings in 2018. For example, in a study conducted by Universum, BASF was again selected by engineering and IT students as one of the 50 most attractive employers in the world. In North America, DiversityInc named BASF as one of the top 50 companies for diversity in recruiting for the sixth consecutive year. In Asia, Top Employer recognized BASF China as one of the best employers for the eighth time in succession.

BASF Group new hires in 2018[1]

	December 31, 2018	Of which women (%)
Europe	5,182	28.9
North America	2,091	29.3
Asia Pacific	2,094	31.1
South America, Africa, Middle East	758	36.8
Total	**10,125**	**30.0**

The BASF Group hired 10,125 new employees in 2018. The percentage of employees who resigned during their first three years of employment – the early turnover rate – was 1.3% worldwide in 2018. This turnover rate was 0.6% in Europe, 2.3% in North America, 2.8% in Asia Pacific and 1.7% in South America, Africa, Middle East. Our early turnover rate is therefore at a desirable low level.[1]

As of December 31, 2018, the BASF Group was training 3,174 people in 15 countries and around 50 occupations. We spent a total of around €110 million[1] on vocational training in 2018.

For more information, see basf.com/apprenticeship

Learning and development

- **Life-long 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 prospects 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. Virtual learning is playing an increasingly important role here.

We held our first ever global virtual "Go Digital!" week in 2018, for example. This gave employees around the world the chance to find out about different digitalization topics via online events. BASF employees and representatives from other companies provided insights into their digital projects.

1 Excluding employees of the businesses acquired from Bayer

In addition, more and more academies in the divisions and functional 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. In 2018, we introduced a global website with an accompanying learning app to enable employees around the world to find out about the digital workplace of the future and independently prepare for the digital transformation. Employees can use the app to learn about things like digital jargon and technologies, and acquaint themselves with new working and leadership models.

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 levels.

We want our employees to contribute to the company's long-term success. This is why the compensation granted to 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. Since 2018, we have used 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 management process.

In numerous Group companies, our "plus" share program ensures employees' long-term participation in the company's success through incentive shares. In 2018, for example, 25,586 employees worldwide (2017: 23,700) participated in the "plus" share program. BASF offers senior executives the opportunity to participate in a share price-based compensation program, the long-term incentive (LTI) program. In 2018, 91% of the approximately 1,100 people eligible to participate in the LTI program worldwide did so, investing up to 30% of their variable compensation in BASF shares.

For more information, see the Notes to the Consolidated Financial Statements from page 263 onward

Personnel expenses

The BASF Group spent €10,659 million on wages and salaries, social security contributions and expenses for pensions and assistance in 2018 (2017: €10,610 million). This also includes personnel expenses from the disposal group for the oil and gas business in the amount of €276 million (2017: €268 million). The rise in personnel expenses was primarily driven by the higher average headcount following the acquisition of significant businesses from Bayer, as well as higher wages and salaries. The main offsetting effects were the increase in provisions released for the long-term incentive program compared with the previous year and currency effects.

BASF Group personnel expenses

Million €

	2018	2017	+/–
Wages and salaries	8,470	8,471	0%
Social security contributions and assistance expenses	1,459	1,434	1.7%
Pension expenses	730	705	3.5%
Total personnel expenses	**10,659**	**10,610**	**0.5%**

Balancing personal and professional life

- **Wide range of offerings for different phases of life**

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. These include flexible working hours, part-time employment and mobile working. Regional initiatives specifically address the needs of our employees at a local level. Our Work-Life Management employee center in Ludwigshafen (LuMit) offers a number of services under one roof: childcare, fitness and health, social counseling and coaching as well as other programs to help employees balance professional and personal life. We also provide social counseling and coaching at the Münster and Schwarzheide sites in Germany as well as in Asia, South Africa and North America to help employees overcome difficult life situations and maintain their employability.

1 In calculating ROCE, adjustments are made for negative and positive special items resulting from acquisitions and divestitures (e.g., integration costs in connection with acquisitions and gains or losses from the divestiture of businesses) when these exceed a corridor of plus or minus 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.

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.

Our actions are aligned with the respective legal regulations and the agreements reached, as well as operational considerations. In 2018, this happened in preparations to transfer the paper and water chemicals business to a joint venture, for example. We also involved our employee representatives in full and at an early stage when we introduced a new global metric for variable compensation. This ensured wide employee acceptance and seamless implementation of the change. The early, detailed presentation and explanation of the updated corporate strategy in 2018 was also a reflection of our trust-based cooperation.

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. This is why 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 was established in 2015 and applies Group-wide.

This guideline concretizes 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 monitor and evaluate whether the national law of all the countries in which BASF operates complies with international labor and social standards. If the national law contains no or lower requirements, actions 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. Based on our guideline, our management process has been able to improve maternity leave at BASF companies with no statutory requirements or lower requirements than in the BASF guideline, for example.

We already use internal control processes such as Responsible Care audits to review the degree of adherence with the individual elements of the guideline in BASF Group companies.[1] Beyond this, we started to integrate our voluntary commitment into the existing corporate audit process in 2018.

For more information on labor and social standards, see basf.com/labor_social_standards
For more information on global standards, see page 28
For more information on our sustainability-related risk management, see page 36 onward
For more information on compliance, see page 140 onward

1 Excluding employees of the businesses acquired from Bayer

Customer Orientation

SUPPLIERS | BASF | CUSTOMERS

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

Over 90,000

customers from almost all sectors and countries in the world

Innovative

in close partnership with our customers

Flexible

thanks to in-depth expertise and wide range of resources

Customer industry orientation

- **Innovations and tailored solutions in close partnership with our customers**
- **Updated corporate strategy aligns BASF even closer with customers**

Our broad portfolio – from basic chemicals to high value-added products and system solutions – means that we are active in many value chains and value creation networks. As a result, we work with a wide range of business models, which we flexibly adapt to the needs of individual industries. These range from cost leadership to tailored, customer-specific solutions for downstream products. This industry orientation is primarily driven forward and enhanced by the divisions. Around half of our business units are oriented toward specific industries.

Aligning our business with our customers' needs is our primary focus. Our ability to combine in-depth expertise with a wide range of resources to meet specific demands enables us to position BASF as a solution-oriented system provider.

Our updated corporate strategy puts an even greater focus on the customer. We aim to develop custom solutions that are both profitable and sustainable in close partnership with our customers, and optimize processes and applications. Our organization is being adapted accordingly so that we can work more effectively and efficiently and be even more customer-centric. We want to satisfy customer requests in a more focused and targeted way, and improve our reaction times. Our comprehensive understanding of value chains and value creation networks as well as our global setup and market knowledge remain key success factors.

We are also pursuing a series of measures that will, among other things, increase transparency for customers, enhance customer service and explore joint growth potential. To ensure even stronger customer communication and better understand our customers' needs, we regularly ask them for direct feedback on how we are doing. This gives us a timely insight into customer satisfaction and we can use the findings to continuously improve our performance.

For more information on BASF's updated corporate strategy and our stronger customer focus, see page 25 onward

For more information on the BASF Group's new organizational structure as of January 1, 2019, see page 19

For more information on the previous segments and their divisions in 2018, see pages 60, 67, 74 and 80 onward

Quality management

Our customers' satisfaction is the basis for long-term business 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 BASF's production sites and business units are certified according to ISO 9001.[2] In addition, we also meet industry and customer-specific quality requirements that go beyond the ISO standard.

Customer awards

We again received awards from a number of satisfied customers in 2018. For example, in April 2018 we were named a 2017 General Motors (GM) Supplier of the Year for the thirteenth time since 2002. The award is presented to suppliers who distinguish themselves by meeting performance metrics for quality, execution, innovation and total enterprise cost.

In October 2018, BASF was recognized by technology company 3M for its contribution to improving 3M's competitiveness with the 2017 3M Supplier of the Year Award in the Technology & Innovation category.

BMW honored BASF in November 2018 with a BMW Supplier Innovation Award 2018 as the winner of the Sustainability category. BMW said that BASF achieved the best performance in CO_2 emissions in the report published by the non-governmental organization CDP. BASF's anchoring of the fight against climate change within the company was cited as another reason for the decision. In addition, BASF develops solutions that help its customers reduce CO_2 emissions.

1 The method used to calculate customers in the previous year has been adjusted to the "sold-to" parties of our consolidated companies. The updated figure for 2017 is over 80,000 customers.
2 ISO 9001 is a standard published by the International Organization for Standardization (ISO) and sets out the requirements for a quality management system.

Forecast

Economic Environment in 2019

In a challenging environment characterized by a high level of uncertainty, the global economy is expected to grow by 2.8% in 2019, slower than in 2018 (+3.2%). In the European Union (E.U.), we anticipate weaker increases in both domestic demand and export demand from third countries. The United States will presumably deliver solid growth, although the stimulus effects of the tax reform should be less pronounced than in 2018. Growth in China will continue to cool but remain high compared with the advanced economies. The economic recovery in Brazil is expected to hold up. We expect growth in key customer industries to continue. For the automotive industry, we anticipate a slight recovery after lower production in the previous year. Global chemical production is forecast to grow by 2.7% in 2019, roughly at the same rate as in 2018 (+2.7%). For 2019, we expect an average oil price of $70 per barrel for Brent crude and an exchange rate of $1.15 per euro.

Our macroeconomic forecasts are based on the assumption that the trade conflict between the United States and its trading partners will ease over the course of the year, and that Brexit will occur without wider economic repercussions.

Trends in the global economy in 2019

- **Slower growth forecast for the E.U. and the United States**
- **Growth moderation expected in China**
- **Continuation of recovery in Brazil**

Our forecasts for the **E.U.** assume that the United Kingdom will leave the E.U. in 2019, followed by a transitional period lasting until at least the end of 2020. The slowdown in growth already apparent in 2018 is likely to continue in the E.U. (the E.U. 27 and the United Kingdom[1]); however, we continue to expect moderate growth overall. Both export and domestic demand should see weaker growth. Germany in particular will be negatively impacted by slower growth in demand for investment goods, with GDP growth rates slightly below the E.U. average. As growth of eastern E.U. countries benefited particularly strongly from new inflows of E.U. cohesion and structural funds in 2017 and 2018, growth will presumably decline more strongly than in western Europe. For Russia, we expect weaker GDP growth compared with the previous year.

We are forecasting slower economic momentum for the **United States**, although this will still be significantly above the long-term average. The impetus from the tax reform should slowly taper off. Consumer purchasing power will presumably be curbed by higher prices as a result of the hike in import duties on Chinese goods, while wages continue to see only moderate gains.

Growth in the **emerging markets of Asia** is also expected to weaken slightly. Many Asian markets have close links to China through foreign trade, so the anticipated growth moderation in **China** is a major factor. We expect higher trade tariffs with the United States to dampen export demand and negatively impact investment propensity. However, the Chinese economy should be supported by income and sales tax cuts as well as tax concessions for the private sector. We anticipate growth of just over 6% for China (2018: +6.6%).

In **Japan**, growth is expected to remain at the low prior-year level. Domestic demand should remain stable, although capacity bottlenecks will have a dampening effect on growth. The expected slowdown in China will curb export demand. In addition, the sales tax will be raised in October 2019, which should lead to lower consumer demand in the fourth quarter.

In **South America**, we expect the recovery in Brazil to continue, provided the newly elected president pursues a liberal, reform-oriented economic course. By contrast, the Argentinian economy will likely continue to contract as domestic demand suffers from high inflation.

1 In the rest of this chapter, "E.U." refers to the E.U. 27 and the United Kingdom.

Outlook for gross domestic product 2019

Real change compared with previous year

World	2.8%
European Union	1.4%
United States	2.3%
Emerging markets of Asia	5.8%
Japan	0.8%
South America	1.8%

Trends in gross domestic product 2019–2021

Average annual real change

World	2.9%
European Union	1.5%
United States	2.0%
Emerging markets of Asia	5.7%
Japan	0.7%
South America	2.5%

Outlook for key customer industries

- **Weaker growth expected in global industrial production**

Overall, we expect global industrial growth to be weaker in 2019, at 2.7% (2018: +3.2%). The trajectory should slow in both the advanced economies as well as in the emerging markets.

We expect the **transportation industry** to return to growth after a slight decline in production in the previous year. In the E.U., automotive production will presumably decline again slightly; a slight decline in western Europe should contrast with moderate growth in the eastern E.U. countries. For North America, we are again forecasting weak growth after the slight decrease in 2018. In Asia, too, we anticipate a slight recovery overall, as the expiry of the tax incentives will no longer be felt in China and economic stimuli should take effect. Dynamic growth is again forecast for India. In Japan and South Korea, automotive production should return to positive territory in 2019 after contracting in the previous year. By contrast, growth in South America will likely decline following the strong recovery effects in prior years.

In the **energy and raw materials sector**, we anticipate slightly weaker production growth for 2019. The main driver is the lower growth rate forecast for utilities – which accounts for over 40% of value added in the sector – compared with 2018. This was partly attributable to the extraordinary weather conditions in 2018, which led to unusually high electricity and water consumption.

We anticipate largely stable global growth in the **construction industry** with wide regional variance. Construction in western Europe will soften somewhat, partly due to capacity bottlenecks (Germany) and partly to the limitations of subsidy programs (France). Private sector construction activity in the United Kingdom is expected to remain sluggish due to macroeconomic uncertainty. By contrast, the construction industry in eastern Europe should remain dynamic with strong growth rates, although weaker than in the previous year. We are again seeing a weak development in the United States against a backdrop of rising mortgage rates and construction costs, while growth in Asia is expected to remain stable at a high level, especially in infrastructure. In South America, we anticipate stronger growth in line with the ongoing economic recovery in Brazil.

Growth in consumer goods production should remain stable. Although global GDP growth – the most important demand driver – is likely to decline slightly, demand for consumer goods should stabilize on the back of rising private incomes. The expected regional differences in growth should follow the GDP trends described above.

The **electronics industry** will continue to benefit from increasing digitalization and automation, posting the highest growth rates of all customer industries. Production is concentrated in Asia and North America. However, growth is expected to weaken in both Asia and the United States. Overall, this will lead to a significant slowdown in global growth.

We continue to forecast above-average growth in the **health and nutrition** sector, albeit slightly weaker than in the previous year. The expected decline in growth in the food industry is largely in line with the development of GDP. The pharmaceutical industry will presumably see a stronger decline in growth. Base effects play an important role there, since value creation in a number of countries – including Germany – rose exceptionally strongly in the previous year due to the introduction of new, high-value medications.

We expect stronger growth in **agricultural production** in 2019 compared with the previous year after 2018 yields were negatively impacted by the unusual dry period in central and eastern Europe, parts of North America as well as in Argentina and South Africa.

Outlook for the chemical industry

- **Global growth in chemical industry roughly at level of previous year**

Global chemical production (excluding pharmaceuticals) is expected to grow by 2.7% in 2019, on a level with 2018 (+2.7%). For 2019, we anticipate a similar expansion rate in the advanced economies as in the previous year (2018: +1.5%; 2019: +1.6%) and slightly slower growth in the emerging markets (2018: +3.4%; 2019: +3.3%).

The development of the world's largest chemical market – **China** – has a significant impact on the global growth rate. Our forecast assumes that chemical production in China will grow by 3.6%, about as fast as in the previous year in a slightly weaker global economic environment overall. A stabilization of automotive demand in China should support demand for chemicals. Based on its large share of the global market of around 40%, China alone would therefore still account for almost 60% of global chemical growth. Chemical production growth in the remaining emerging markets of Asia is expected to be similar to that in China.

For the **E.U.**, we anticipate a recovery in chemical production over the course of 2019 following the slump at the end of 2018. However, we only expect production to be flat compared with the full-year 2018. Demand from the automotive industry will presumably continue to decline slightly. Agriculture should see renewed growth. In the construction industry, too, growth is expected to remain solid. Base effects should also have a positive impact.

In the **United States**, we expect slightly lower, but still above-average growth in chemical production in the coming year. Ongoing capacity expansions will strengthen the supply side while on the demand side, industry growth will be slightly weaker.

We expect slightly stronger chemical growth in **Japan**, driven by domestic demand and, in part, by exports to China.

For **South America**, we anticipate an upturn in chemical production in line with the macroeconomic recovery in Brazil.

Outlook for chemical production 2019 (excluding pharmaceuticals)

Real change compared with previous year	
World	2.7%
European Union	0.1%
United States	3.2%
Emerging markets of Asia	3.6%
Japan	2.0%
South America	1.5%

Trends in chemical production 2019–2021 (excluding pharmaceuticals)

Real change compared with previous year	
World	3.0%
European Union	0.8%
United States	2.9%
Emerging markets of Asia	4.2%
Japan	0.8%
South America	2.0%

Outlook 2019

We expect weaker global economic growth in 2019 compared with 2018. At 2.8%, global GDP growth will presumably be slower than in 2018 (+3.2%). Chemical production is expected to increase at a rate of 2.7%, on a level with the previous year (+2.7%). We anticipate an average oil price of $70 for a barrel of Brent blend crude and an exchange rate of $1.15 per euro. Despite the challenging environment characterized by a high level of uncertainty, we aim to grow profitably and slightly increase the BASF Group's sales and income from operations (EBIT) before special items in 2019. The return on capital employed (ROCE) should slightly exceed the cost of capital percentage but decline slightly compared with 2018.

We expect growth in our customer industries to continue. For the automotive industry, we anticipate a slight recovery after lower production in the previous year. Our outlook assumes that the trade conflict between the United States and its trading partners will ease over the course of the year, and that Brexit will occur without wider economic repercussions.

For more information on our expectations for the economic environment in 2019, see page 117 onward

Sales, earnings and ROCE forecast for the BASF Group[1]

- **Slight sales growth, mainly from higher sales volumes and portfolio effects**
- **EBIT before special items slightly above prior-year level**
- **ROCE slightly higher than cost of capital percentage**

We have based the outlook on the segment structure as of January 1, 2019, and adjusted the segment data for 2018 accordingly. In addition to the new segment structure, the composition of a number of divisions has also changed.

For more information on the new segment structure, see The BASF Group on page 19 and Note 4 to the Consolidated Financial Statements from page 211 onward

Our forecast for 2019 takes into account the definitive agreement between BASF and LetterOne to merge their oil and gas businesses. Closing of the transaction is expected in the first half of 2019, subject to the required regulatory approvals. Until closing, the earnings of our oil and gas business will be presented as a separate item, income after taxes from discontinued operations, and will not be included in the sales or EBIT before special items of the BASF Group. After closing, the pro rata share of income after taxes of the joint venture, Wintershall DEA, will be reported as income from companies accounted for using the equity method in the BASF Group's EBIT before special items, presented under Other.

This outlook also includes the acquisition of Solvay's integrated polyamide business, which is expected in the second half of 2019. However, we currently do not expect this transaction to have any material effect on sales, EBIT before special items or ROCE at the level of the BASF Group in 2019.

We anticipate slightly higher sales for the BASF Group in 2019. The main contributing factors should be volumes growth and portfolio effects, especially from the acquisition of significant businesses from Bayer that was closed in August 2018. We expect considerable sales growth in the Agricultural Solutions and Nutrition & Care segments as well as in Other, and slightly higher sales in the Surface Technologies and Materials segments. Sales in the Chemicals segment are expected to be on a level with the previous year. Our planning for the Industrial Solutions segment assumes slightly lower sales due to the transfer of BASF's paper and water chemicals business to the Solenis group as of January 31, 2019.

EBIT before special items will presumably be slightly above the 2018 level. This will largely reflect significantly higher contributions from the Agricultural Solutions, Industrial Solutions, Surface Technologies and Nutrition & Care segments. We are forecasting a slight improvement in earnings in the Chemicals segment. In the Materials segment, by contrast, we anticipate considerably lower EBIT before special items, driven by a decline in margins in the isocyanates business. We also expect the earnings generated by Other to be considerably below the prior-year figure. Positive measurement effects for our long-term incentive program arose in 2018, which we do not expect in 2019.

In 2019, we expect to achieve a ROCE slightly above the underlying cost of capital percentage of 10%. The average cost of capital basis will increase in 2019 due to the full-year inclusion of the assets acquired from Bayer in August 2018. As a result, we expect the BASF Group's ROCE to decline slightly, i.e., at most one percentage point compared with the previous year. In 2018, ROCE amounted to 11.5% adjusted to the new segment structure. Compared with the previous year, we expect a considerable decline in ROCE in the Materials segment (2018: 26.1%) and a slight decrease in the Chemicals segment (2018: 17.7%). By contrast, we anticipate slight year-on-year increases in the Surface Technologies (2018: 4.6%), Nutrition & Care (2018: 11.8%) and Agricultural Solutions (2018: 5.1%) segments, and a considerable increase in the Industrial Solutions segment (2018: 8.7%).

The significant risks and opportunities that could affect our forecast are described in Opportunities and Risks on pages 123 to 130. Achievement of our sales and earnings forecast largely depends on the accuracy of our macroeconomic assumptions for 2019.

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 10% for 2018 and 2019, 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[1,2]

Million €

	Sales		Income from operations (EBIT) before special items	
	2018	Forecast 2019	2018	Forecast 2019
Chemicals	11,694	at prior-year level	1,587	slight increase
Materials	13,270	slight increase	2,400	considerable decline
Industrial Solutions	9,120	slight decline	668	considerable increase
Surface Technologies	13,655	slight increase	690	considerable increase
Nutrition & Care	5,940	considerable increase	736	considerable increase
Agricultural Solutions	6,156	considerable increase	734	considerable increase
Other	2,840	considerable increase	(462)	considerable decline
BASF Group	**62,675**	**slight increase**	**6,353**	**slight increase**

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%).
2 We have based the outlook on the segment structure as of January 1, 2019, and adjusted the segment data for 2018 accordingly. In addition to the new segment structure, the composition of a number of divisions has also changed.

Sales and earnings forecast for the segments

In the **Chemicals** segment, we expect sales to reach the prior-year level in 2019. We anticipate higher volumes, especially of styrenes, plasticizers and oxo alcohols in the Petrochemicals division, and of amines and polyalcohols in the Intermediates division. By contrast, we expect lower volumes of steam cracker products due to scheduled shutdowns of the steam crackers in Port Arthur, Texas; Antwerp, Belgium; and Ludwigshafen, Germany. EBIT before special items will presumably be slightly above the 2018 level: In particular, we are forecasting improved margins in the butanediol value chain in the Intermediates division, as well as for acrylic acid and its derivatives in the Petrochemicals division.

We expect sales in the **Materials** segment to be slightly above the prior-year level in 2019. In the Performance Materials division, we anticipate stronger volumes and higher prices on average. This should more than offset the significantly lower prices in the isocyanates business in the Monomers division as a result of additional capacities from competitors, especially in the Middle East and Asia. In addition, the acquisition of Solvay's integrated polyamide business is expected to deliver a positive contribution in the second half of 2019. We anticipate considerably lower EBIT before special items compared with 2018, driven mainly by the expected decline in margins in the isocyanates business.

Sales in the **Industrial Solutions** segment will likely decrease slightly in 2019. We expect a considerable decline in sales in the Performance Chemicals division due to the transfer of BASF's paper and water chemicals business to the Solenis group as of January 31, 2019. The higher volumes and prices forecast in the Performance Chemicals division's remaining businesses as well as in the Dispersions & Pigments division and will not be able to completely compensate for this. Despite the continued challenging market environment, we anticipate a considerable increase in EBIT before special items for the segment, mainly from higher volumes and stronger margins.

In the **Surface Technologies** segment, sales should rise slightly as a result of volumes growth and higher prices. Despite the challenging market situation, especially in the automotive industry, we expect sales to increase in all divisions. We aim to considerably increase EBIT before special items, primarily with improved margins and strict cost discipline.

For the **Nutrition & Care** segment, we anticipate considerably higher sales than in 2018, largely from volumes growth in both divisions. In the Nutrition & Health division in particular, our planning assumes improved product availability following the restart of the citral plant in Ludwigshafen, Germany, and the ibuprofen plant in Bishop, Texas, as well as the startup of the menthol plant in Kuantan, Malaysia. We also expect EBIT before special items to considerably exceed the prior-year figure, mainly from higher sales volumes. Softer margins for vitamins and the absence of insurance refunds compared with the previous year will have an offsetting effect.

Despite the continuing challenging market environment, we anticipate considerable sales growth in the **Agricultural Solutions** segment due in particular to the businesses acquired from Bayer and higher volumes. We also expect a considerable increase in EBIT before special items overall. In 2019, we will launch a program to boost efficiency to offset factors such as the rise in fixed costs. We will also continue to invest at a high level in research and development and digitalization.

Sales in **Other** are expected to increase considerably in 2019, mainly as a result of higher volumes in raw materials trading. For EBIT before special items, we are forecasting a figure considerably below the previous year due to the positive measurement effects for our long-term incentive program that arose in 2018, which we do not expect in 2019.

Capital expenditures

■ Capex of around €3.8 billion planned for 2019

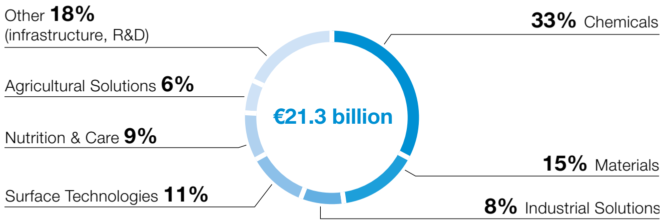
We are planning total capital expenditures (additions to property, plant and equipment excluding acquisitions, IT investments, restoration obligations and right-of-use assets arising from leases) of around €3.8 billion for the BASF Group in 2019. For the period from 2019 to 2023, we have planned capital expenditures totaling €21.3 billion. The investment volume in the coming years thus exceeds that of the planning period 2018 to 2022. Projects currently being planned or underway include:

Capex: selected projects

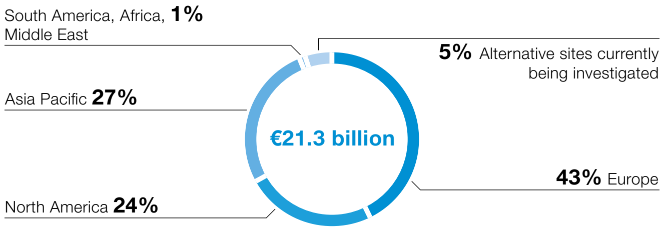
Location	Project
Antwerp, Belgium	Capacity expansion: integrated ethylene oxide complex
Geismar, Louisiana	Capacity expansion: MDI plant
Ludwigshafen, Germany	Replacement: acetylene plant
	Construction: production plant for vitamin A
	Construction: production plant for ibuprofen
Kuantan, Malaysia	Capacity expansion: acrylic acid and butyl acrylate
Mundra, India	Investment: acrylics value chain[1]
Zhanjiang, China	Establishment of an integrated Verbund site

1 In cooperation with Adani Group

Capex by segment 2019–2023



Capex by region 2019–2023



Dividend

We stand by our ambitious dividend policy and offer our shareholders an attractive dividend yield. We aim to increase our dividend each year.

Information on the proposed dividend can be found on page 13

Financing

In 2019, we expect cash outflows in the equivalent amount of around €2.0 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 U.S. dollar commercial paper program at our disposal.

Information on our financing policies can be found on page 54

Events after the reporting period

On January 31, 2019, BASF and Solenis completed the transfer of BASF's paper and water chemicals business to Solenis as announced in May 2018.

The business was allocated to the Performance Chemicals division until this date. As of February 1, 2019, we hold a 49% share in Solenis. The transaction includes production sites and plants of BASF's paper and water chemicals business in Bradford and Grimsby, U.K.; Suffolk, Virginia; Altamira, Mexico; Ankleshwar, India; and Kwinana, Australia. Since closing, we have accounted for our share in Solenis' income after taxes using the equity method due to our significant influence, and included this in EBIT of the BASF Group, presented in Other.

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 business losses. 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 and margin volatility**
- **No threat to continued existence of BASF**

For 2019, we expect the global economy to continue to grow at a slightly slower pace than in the previous year. Important opportunities and risks for our earnings are associated with uncertainty regarding market growth and the development of key customer industries, as well as margin volatility. In particular, a further escalation of the trade conflicts between the United States and its trade partners and a considerable slowdown of the Chinese economy pose significant risks. Such a development would negatively affect demand for intermediate and investment goods. This would impact the emerging markets that export raw materials as well as the advanced economies. This is especially true for Europe. Further risks to the global economy arise from an escalation of geopolitical conflicts.

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 another global economic crisis.

Ultimately, however, residual 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[1]

Possible variations related to:	Outlook – 2019	+
Business environment and sector		
Market growth	■■■■■	■■■□□
Margins	□■■■■	■■■■□
Competition	□□■■■	■■□□□
Regulation/policy	□□□■■	■□□□□
Company-specific opportunities and risks		
Purchasing/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

1 Using a 95% confidence interval per risk factor based on planned values; summation is not permissible.

Risk management process

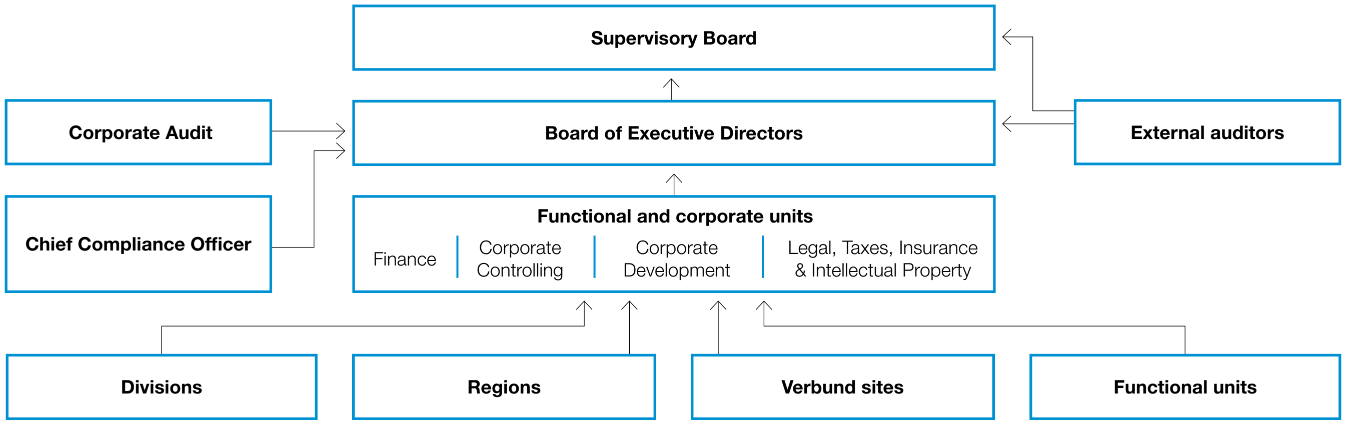
- **Integrated process for identification, assessment and reporting**
- **Decentralized management of specific opportunities and risks**
- **Aggregation at a Group level**

The BASF Group's risk management process is based on the international risk management standard COSO II Enterprise Risk Management – Integrated Framework (2004), 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 units Finance, Corporate Controlling, Corporate Development and Legal, Taxes, Insurance & Intellectual Property, and the Chief Compliance Officer. These units coordinate the risk management process at a Group level and provide the structure and appropriate methodology. Opportunity and risk management is thus integrated into the strategy, planning and budgeting processes.
- A network of risk managers in the business, functional and corporate units as well as in the regions and at the Verbund sites advances the implementation of appropriate risk management practices in daily operations.
- The management of specific opportunities and risks is largely delegated to the business units and is steered at a regional or local level. Risks relating to exchange rates and raw materials prices are an exception. In this case, there is an initial consolidation at a Group level before derivative hedging instruments, for example, are used.
- 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. In the event of significant incidents, the Audit Committee is immediately informed by the Board of Executive Directors.
- The internal auditing 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.

Organization of BASF Group's risk management



Instruments

- The Risk Management Policy, applicable throughout the Group, forms the framework for risk management and is implemented by the business units according to their particular business conditions.
- A catalog of opportunity and risk categories helps to identify all relevant opportunities and risks as comprehensively as possible.
- 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.
- The nonfinancial topics relevant for BASF are addressed by the responsible functional units, which assess the risks identified as being relevant according to impact and probability of occurrence. We identify opportunities and risks that arise in connection with the topics of environment, society and governance with our sustainability management tools. We have established global monitoring systems to check adherence to laws and our voluntary commitments in these areas. These also incorporate our suppliers.

For more information on our sustainability management processes, see page 36 onward

- The BASF Group's management is informed about operational opportunities and risks (observation period of up to one year) in the monthly management report produced by the Corporate Controlling unit. In addition, Corporate Controlling and Finance provide 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 in the strategic business units, the Corporate Development unit conducts strategic opportunity/risk analyses with a 10-year assessment period. These analyses are annually reviewed as part of strategic controlling and are adapted if necessary.
- 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 140 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 Finance division. 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. In the relevant companies, one person is given the responsibility of monitoring the execution of the requirements for an effective control system in financial reporting.

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 once control weaknesses have been identified that have a considerable impact on financial reporting. 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

Development of demand

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 2019 on pages 117 to 119.

We also consider risks from deviations in assumptions. We continue to see a significant macroeconomic risk in a further escalation of the trade conflicts between the United States and its trade partners and an increased slowdown of the Chinese economy, which would have considerable impact on demand for intermediate goods for industrial production as well as investment goods. This would have an effect on emerging markets that export raw materials as well as on advanced economies that specialize in technological goods. Risks to the global economy would also be posed by the possible escalation of geopolitical conflicts.

Should the macroeconomic environment develop more slowly than we predict, we expect a lower oil price. In this case, we also expect the euro to weaken relative to the U.S. dollar in the medium term as compared with our planning assumptions, as the eurozone's economy shows a high level of dependency on exports and, in times of global economic weakness, the U.S. dollar is preferred by portfolio investors as a safe haven.

Weather-related influences can result in positive or negative effects, especially on our crop protection business.

Margin volatility

Margin risks for the BASF Group result on the one hand from a further decline in margins in the Chemicals segment or the isocyanates business. New capacities or raw materials shortages could also increase margin pressure on a number of products and value chains. This would have a negative effect on our EBIT. In addition, the contribution attributable to BASF from the agreed combination of BASF's and LetterOne's oil and gas businesses will only be included in EBIT again on closing of the transaction. This would have a compensating effect on margin pressure in the chemicals business if oil and gas prices rise. The year's average oil price for Brent crude was around $71 per barrel in 2018, compared with $54 per barrel in the previous year. For 2019, we anticipate an average oil price of $70 per barrel. We therefore expect price levels for the raw materials and petrochemical basic products that are important to our business to remain constant or decrease slightly.

Competition

We continuously enhance our products and solutions in order to maintain competitive ability. We watch 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 our continuous process optimization.

Regulation and political risks

Risks for us can arise from intensified geopolitical tensions, new trade sanctions, stricter emissions limits for plants or 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.

Economic and political uncertainties may arise as a result of Brexit. At this point in time, it is not yet clear what the future relationship between the European Union and the United Kingdom will look like post-Brexit and what specific consequences this will have for our sites, our supply chains and the regulatory environment. A cross-divisional Brexit team has been established to prepare the BASF organization for various exit scenarios and enable it to promptly react to political decisions. Together with our operating units, suppliers, customers and logistics partners, we have identified problems and steps to avoid supply chain disruptions, especially in the event of a no-deal hard Brexit with no transition phase. Alternative logistics concepts include, for example, leasing additional warehouse space, establishing consignment warehouses or technical expansions in our ERP systems to be able to react to additional customs requirements on the systems side as well.

Political measures could also give rise to opportunities. For example, we view the worldwide expansion of renewable energy and measures to increase energy efficiency as an opportunity for increased demand for our products, such as our insulation foams for buildings or our solutions for wind turbines. Our broad product portfolio enables us to offer alternatives if chemicals have to be substituted 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. We address the risk of supply interruptions on the procurement and sales side as a result of extreme weather conditions (such as high/low water levels on rivers, hurricanes) by switching to unaffected logistics carriers and the possibility of falling back on unaffected sites within our global Verbund.

Production and investments

We try to prevent unscheduled plant shutdowns by adhering to high technical standards and by continuously improving our plants. We reduce the effects of unscheduled shutdowns 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.

Short-term risks from investments can result from, for example, technical malfunctions or schedule and budget breaches. We counter these risks with highly experienced project management and controlling.

For more information on emergency response, see page 98 onward and basf.com/emergency_response

Acquisitions, divestitures and cooperations

We are constantly watching our environment in order to identify possible 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. In the case of transactions involving the contribution of businesses to an investment accounted for using the equity method, a risk of impairment of these investments can arise. The extent of this risk depends on factors such as the amount of hidden reserves uncovered within the scope of initial measurement of the investment accounted for using the equity method.

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 114
For more information on risks from pension obligations, see page 129

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 process safety and the accuracy of our financial reporting. Unauthorized access to sensitive data, such as personnel records, 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 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.

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 functional units together with the Legal and Finance units. 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 give rise to 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

The management of liquidity, currency and interest rate risks is conducted in the Treasury unit. The management of commodity price risks takes place in the Procurement & Supply Chain Services functional unit or in appropriately authorized Group companies. 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 reduction 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 would result in an increase of around €45 million in the BASF Group's EBIT, 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 trades, we set and continuously monitor limits with regard to the type and scope 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.

For more information on the maturity profile of our financial indebtedness, see the explanations in the Financial Position on page 54 and the Notes to the Consolidated Financial Statements from page 246 onward

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. Due to the global activities and diversified customer structure of the BASF Group, there are no major concentrations of credit default risk. Risks are also limited through the use of credit insurance and bank guarantees.

Impairment risks

Asset impairment risks arise if the assumed interest rate in an impairment test increases, the predicted cash flows decline, or investment projects are suspended. In the current business environment, we consider impairment risks for individual assets such as customer relationships, technologies and trademarks, as well as goodwill, to be nonmaterial.

Long-term incentive program for senior executives

Our senior executives have 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.

For more information on the long-term incentive program, see the Notes to the Consolidated Financial Statements from page 263 onward

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 chemical production (excluding pharmaceuticals) will grow slightly faster than global gross domestic product over the next five years and be slightly below 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 volumes growth that exceeds this market growth. Should global economic growth see unexpected, considerable deceleration, due for example to an ongoing weak period in the emerging markets, protectionist tendencies or to geopolitical crises, the expected growth rates could prove too ambitious. As a result of our high degree of diversification across various customer industries and regions, we would still expect our growth to be above the market average, even under these conditions.

For more information on the corporate strategy, see page 25 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 exit markets in which we see only limited possibilities to stand out from competitors in the long term.

We continuously improve our processes in order to remain competitive through our operational excellence. Our strategic excellence program, which will run from 2019 to 2021, also contributes to this aim. The program will include measures focused on production, logistics, research and development as well as digitalization and automation activities and organizational development. We expect this program to contribute around €2 billion in income each year from 2021 onward.

In order to achieve lasting profitable growth, tap into new market segments and customers, 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.

Innovation

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 more sustainable 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 solutions compared with the rest of our evaluated portfolio. At the same time, as of 2018, 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 must 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.

The central research areas Process Research & Chemical Engineering, Advanced Materials & Systems Research and Bioscience Research serve as global platforms headquartered in our key 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 investigated in both the operational and functional divisions as well as by cross-divisional teams, and tested in dedicated pilot projects. They are supported here by the Digitalization & Information 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, Procurement & Supply Chain Services, Legal, Taxes, Insurance & Intellectual Property. The opportunities and risks of digitalization are steered by the operational and functional divisions.

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.

For more information on portfolio management using the Sustainable Solution Steering method, see page 37 onward
For more information on innovation and digitalization, see page 31 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.

We are continuing to evaluate an investment in a world-scale methane-to-propylene complex on the U.S. Gulf Coast and conduct regular assessments, taking into account raw materials prices and the relevant market conditions.

For more information on our investment plans, see page 122

Acquisitions

In the future, we will continue to refine our portfolio through acquisitions that promise above-average profitable growth as part of the BASF Verbund and help to reach a relevant market position. We also take into account whether they are innovation-driven or offer a technological differentiation, 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 fulfilled, risks could arise, such as the need to impair intangible assets; however, there could also be opportunities, for example, from additional synergies.

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 110 onward

Sustainability

As part of our sustainability management, we also assess the opportunities and risks associated with the topics we have identified as material. These also include the increasing internalization of external effects, through which positive and negative earnings contributions from companies' activities that were previously borne by the community are attributed to these companies.

For example, the material topic "energy and climate" is analyzed to enable us to identify, assess and manage climate-related risks and opportunities. For BASF as an energy-intensive company, these arise particularly from regulatory changes, such as in carbon prices through emissions trading systems, taxes or energy legislation.

For more information on sustainability management, see page 36 onward
For more information on energy and climate protection, see page 103 onward
For more information on opportunities and risks from energy policies, see page 126