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The BASF Group

Global leader

BASF is the world's leading chemical company

In 80+ countries

Employees contribute to our success

Broad portfolio

5 segments
13 operating divisions
86 strategic business units

At BASF, we create chemistry for a sustainable future. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. The approximately 114,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is arranged into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas.

Organization of the BASF Group

- Thirteen divisions grouped into five segments
- Regional divisions, corporate units and research and functional units support our business

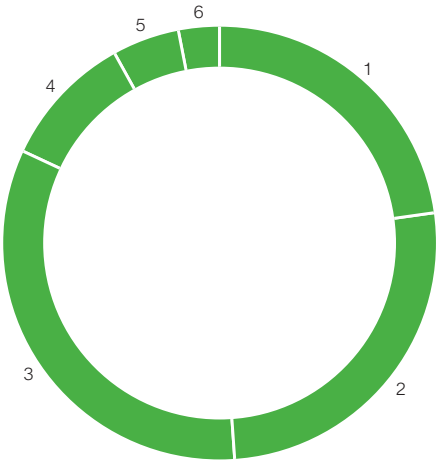
Thirteen divisions divided into five segments bear operational responsibility and manage our 57 global and regional business units. The divisions develop strategies for our 86 strategic business units and are organized according to sectors or products.

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

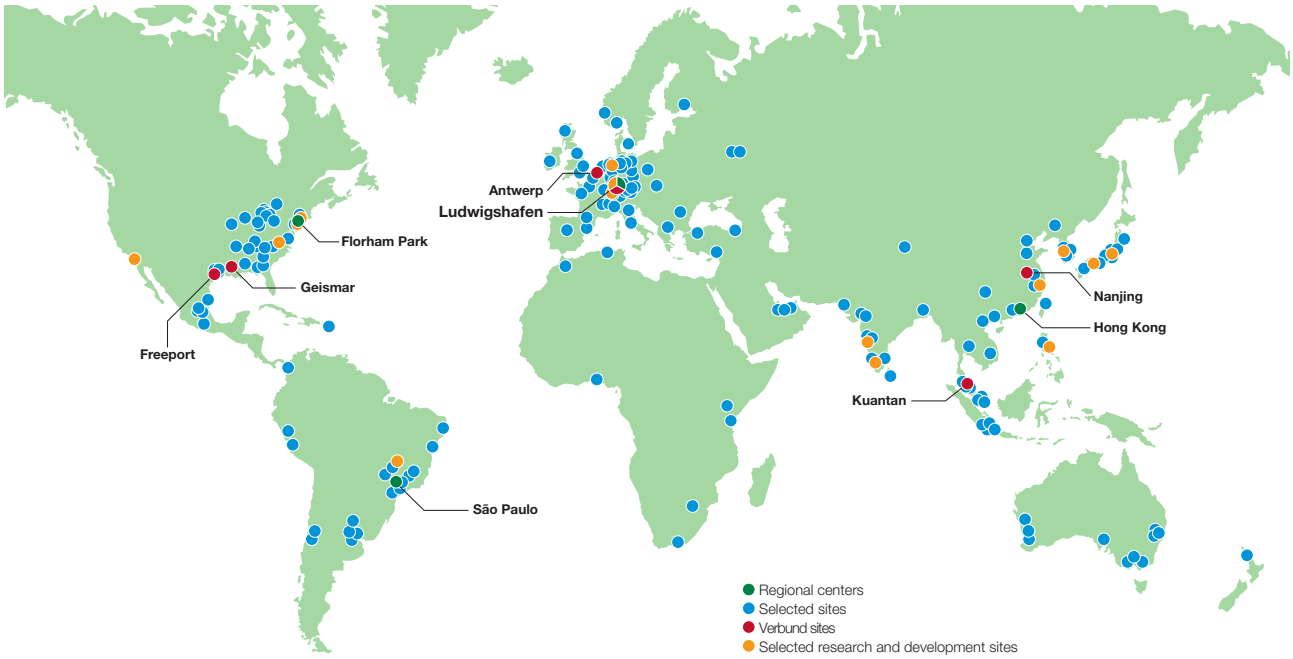
Until the end of 2016, three central divisions, six corporate units and ten competence centers supported the BASF Group's business activities in areas such as finance, engineering, investor relations, communications and research. At the beginning of 2017, we reassembled these into five research units, eight functional units and seven corporate units. We realigned the organizational structures in selected functional units. These include Procurement, Human Resources and Supply Chain Operations & Information Services, along with Environmental Protection, Health & Safety and European Site & Verbund Management. With this organization, we are aligning ourselves more closely to customer and market needs and reducing internal interfaces.

BASF structure
Percentage of total sales in 2016

1	Chemicals	– Petrochemicals – Monomers – Intermediates	23%
2	Performance Products	– Dispersions & Pigments – Care Chemicals – Nutrition & Health – Performance Chemicals	26%
3	Functional Materials & Solutions	– Catalysts – Construction Chemicals – Coatings – Performance Materials	33%
4	Agricultural Solutions	– Crop Protection	10%
5	Oil & Gas	– Oil & Gas	5%
6	Other		3%



BASF sites



Markets and sites

- BASF companies in more than 80 countries
- Six Verbund sites and 352 additional production sites worldwide

BASF has companies in more than 80 countries and supplies products to numerous customers in nearly every part of the world. In 2016, we generated 43% of our sales (excluding Oil & Gas) with customers in Europe. In addition, 26% of sales were generated in North America; 22% in Asia Pacific; and 9% in South America, Africa, Middle East. Viewed over the entire BASF Group, 45% of our sales were to customers in Europe, 25% in North America, 21% in Asia Pacific and 9% in South America, Africa, Middle East.

We operate six Verbund sites and 352 additional production sites worldwide. Our Verbund site in Ludwigshafen is the world's largest integrated chemical complex. This was where the Verbund principle was originally developed and steadily honed before being implemented at additional sites.

Verbund

- Intelligent plant networking in the Production Verbund
- Technology and Know-How Verbund

The Verbund system is one of BASF's great strengths. Here, we add value as one company by using our resources efficiently. The Production Verbund intelligently links production units and energy demand 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 makes use of synergies.

We also make use of the Verbund principle for more than production, applying it for technologies, knowledge, employees, customers, and partners, as well. Expert knowledge is pooled into our global research platforms.

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

Competitive environment

BASF holds one of the top three market positions in around 70% of the business areas in which it is active. Our most important global competitors include AkzoNobel, Clariant, Covestro, Dow Chemical, DSM, DuPont, Evonik, Formosa Plastics, Reliance, SABIC, Sinopec, Solvay and many hundreds of local and regional competitors. We expect competitors from emerging markets to gain increasing significance in the years ahead.

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 some, we concentrate on specific business areas: The Wintershall Group, for example, focuses on oil and gas activities. In the BASF Group Consolidated Financial Statements, 286 companies including BASF SE are fully consolidated. We consolidate eight joint operations on a proportional basis, and account for 34 companies using the equity method.

For more information, see the Notes to the Consolidated Financial Statements from page 172 onward

Compensation Report and disclosures in accordance with Section 315(4) of the German Commercial Code (HGB)

The Compensation Report can be found in the Corporate Governance chapter from page 138 onward, and the disclosures required by takeover law in accordance with Section 315(4) HGB from page 132 onward. They form part of the Management's Report audited by the external auditor.

Declaration of Corporate Governance in accordance with Section 315(5) HGB in connection with Section 289a HGB

The Declaration of Corporate Governance can be found in the Corporate Governance chapter from page 125 onward and is a component of the Management's Report. It comprises:

- Corporate Governance Report (except disclosures pursuant to Section 315(4) of HGB)
- Compliance reporting
- The Declaration of Conformity pursuant to Section 161 of the German Stock Corporation Act

Pursuant to Section 317(2)(4) HGB, information disclosed in accordance with Section 315(5) HGB is not included in the audit conducted by the report auditor.

Our strategy
Corporate strategy

Purpose	Principles	Values
We create chemistry for a sustainable future	As strategic basis for our success on the market	As guideline for our conduct and actions

With the "We create chemistry" strategy, BASF has set itself ambitious goals in order to strengthen its position as the world's leading chemical company. We want to contribute to a sustainable future and have embedded this into our corporate purpose: "We create chemistry for a sustainable future."

In 2050, nearly ten billion people will live on Earth. While the world's population and its demands will keep growing, the planet's resources are finite. On the one hand, population growth is associated with huge global challenges; and yet we also see many opportunities, especially for the chemical industry.

Our corporate purpose

- We create chemistry for a sustainable future

We want to contribute to a world that provides a viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources.

We live our corporate purpose by:
– Sourcing and producing responsibly
– Acting as a fair and reliable partner
– Connecting creative minds to find the best solution for market needs

For us, this is what successful business is all about.

Our leading position as an integrated global chemical company gives us the chance to make important contributions in the following three areas:
– Resources, environment and climate
– Food and nutrition
– Quality of life

We therefore act in accordance with four strategic principles.

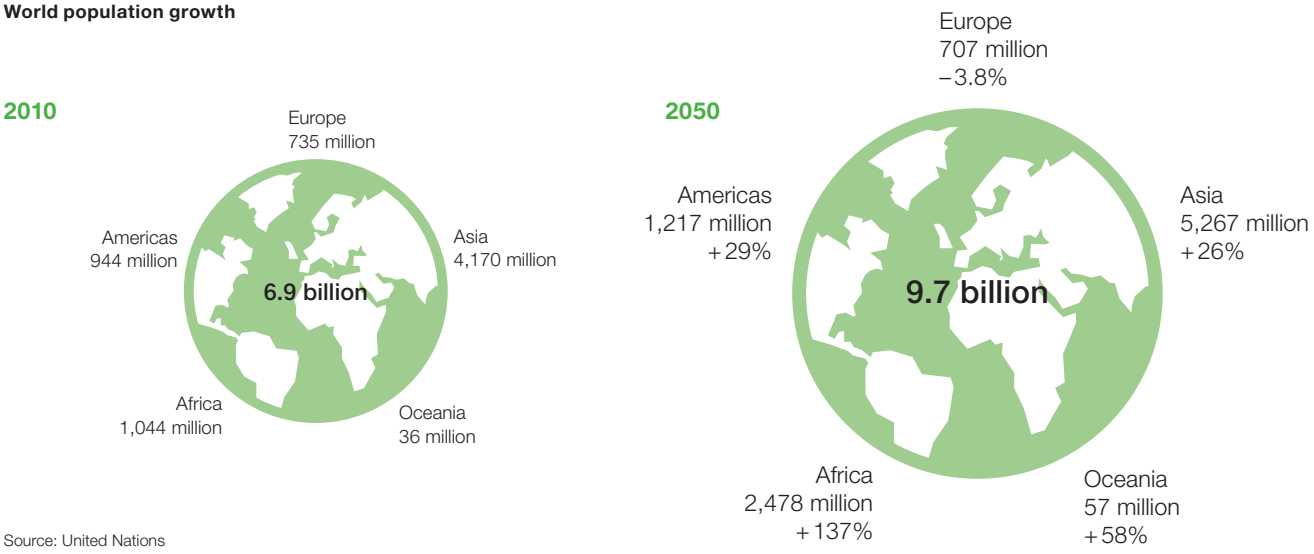
Our strategic principles

- We add value as one company
- We innovate to make our customers more successful
- We drive sustainable solutions
- We form the best team

We add value as one company. Our Verbund concept is unique in the industry. Encompassing the Production Verbund, Technology Verbund and Know-How Verbund as well as all relevant customer industries worldwide, this sophisticated and profitable system will continue to be expanded. This is how we combine our strengths and add value as one company.

We innovate to make our customers more successful. We want to align our business optimally with our customers' needs and contribute to their success with innovative and sustainable solutions. Through close partnerships with customers and research institutes, we link expertise in chemistry,

World population growth



Source: United Nations

biology, physics, materials science and engineering to jointly develop customized products, functional materials, and system solutions as well as processes and technologies.

We drive sustainable solutions. In the future, sustainability will more than ever serve as a starting point for new business opportunities. That is why sustainability and innovation are becoming significant drivers for our profitable growth.

We form the best team. Committed and qualified employees around the world are the key to making our contribution to a sustainable future. Because we want to form the best team, we offer excellent working conditions and inclusive leadership based on mutual trust, respect and dedication to top performance.

For more on innovation, see page 32 onward
For more on business opportunities with sustainability, see page 29 onward
For more on the Best Team Strategy, see page 40 onward

Our values

- Creative
- Open
- Responsible
- Entrepreneurial

Our conduct is critical for the successful implementation of our strategy: This is what our values represent. They guide how we interact with society, our partners and with each other.

Creative: In order to find innovative and sustainable solutions, we have the courage to pursue bold ideas. We link our areas of expertise from many different fields and build partnerships to develop creative, value-adding solutions. We constantly improve our products, services and solutions.

Open: We value diversity – in people, opinions and experiences. That is why we foster dialog based on honesty, respect and mutual trust. We develop our talents and capabilities.

Responsible: We act responsibly as an integral part of society. In doing so, we strictly adhere to our compliance standards. And in everything we do, we never compromise on safety.

Entrepreneurial: All employees contribute to BASF's success – as individuals and as a team. We turn market needs into customer solutions. We succeed in this because we take ownership and embrace accountability for our work.

Our focus areas

- We set ourselves goals along the value chain for our focus areas

We used a materiality analysis to identify and rank relevant sustainability issues. These topics include, for example, energy and climate, water, resources and ecosystems, responsible production, and employment and employability.

Our long-term economic success is dependent on societal acceptance of our business activities. That is why we have formulated clear expectations for our conduct along the value chain:

– We source responsibly.
– We produce safely for people and the environment.
– We produce efficiently.
– We respect people and treat them fairly.
– We drive sustainable solutions.

For more on our materiality analysis, see basf.com/materiality
For more on our goals, see page 26 onward

The BASF brand

- **Above-average awareness of, and trust in, BASF brand in chemical industry**

We rely on a strong brand in order to further expand our position as the world's leading chemical company. Our brand is derived from our strategy and our corporate purpose – "We create chemistry for a sustainable future" – as well as our strategic principles and values.

"Connected" describes the essence of the BASF brand. Connectivity is one of BASF's great strengths. Our Verbund concept – realized in production, technologies, knowledge, employees, customers and partners – 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 consciousness. 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 connectivity, intelligent solutions, value-adding partnerships, an attractive working environment and sustainability. This contributes to our customers' confidence in their buying decisions 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 market research study conducted every two years showed in 2016 that, in terms of awareness and trust, BASF is above the industry average in numerous countries. The study collected data on respondents' aided awareness of BASF and our most important competitors. Our goal is to continue increasing awareness of BASF in all of our relevant markets.

Global standards

- **We act according to clearly defined values and standards of conduct that comply with or go beyond laws and regulations**
- **We review our performance with regular audits**

Our standards fulfill or exceed existing laws and regulations and take internationally recognized principles into account. We respect and promote:

– The ten 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 the environment, 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 external compliance hotlines), close dialog with our stakeholders (such as with employee representatives or international organizations), and the global management process for the respect of 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 monitoring systems to ensure this.

For more on labor and social standards, see page 45
For more on the Responsible Care Management System, see page 96
For more on Corporate Governance, see page 125 onward
For more on Compliance, see page 134 onward

Innovations for a sustainable future

Innovations in chemistry are needed to meet the needs of the growing world population on a long-term basis. The development of innovative products and solutions is, therefore, of vital significance for BASF. In the long term, we aim to continue significantly increasing sales and earnings with new and improved products. Effective and efficient research is therefore indispensable.

We drive intensive research and development activities in our established business areas. One focus of our research is on the enhancement and innovative application of specific key technologies. They pool the diverse competencies of our international Research and Development Verbund to strengthen our competitive ability in the long-term. We also work on specific growth fields in order to develop future business fields for BASF. With our research, we aim to make a decisive contribution to innovative solutions for global challenges and contribute to sustainable development.

Our three global technology platforms are each based in one of the regions particularly significant for us: Process Research & Chemical Engineering (Ludwigshafen, Germany), Advanced Materials & Systems Research (Shanghai, China) and Bioscience Research (Research Triangle Park, North Carolina). We want to continue expanding our research and development activities on a global level, and are also adapting this to the growth in regional markets. The stronger global presence of our research and development opens up new opportunities to actively participate in worldwide innovation processes and gain access to talent.

For more on innovation, see page 32 onward

Business expansion in emerging markets

In the years ahead, we want to grow even more vigorously in the emerging markets and further expand our position there. Today's emerging markets are expected to account for around 60% of global chemical production in 2020. We aim to benefit from the above-average growth in these regions and therefore plan to invest more than a quarter of our capital expenditures[1] there between 2017 and 2021.

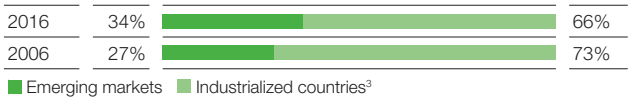
Growth in the emerging markets remained overall stable in 2016 as compared with the previous year. In China, government support measures kept growth from slowing down as much as we had expected. The other emerging markets of Asia were able to largely retain their growth dynamic. Gross domestic product continued to drop in South America. Brazil found itself in a severe recession, while gross domestic product decreased slightly in Argentina, as well. Economic performance in Russia shrank only marginally after sharp declines in the previous year; a contributing factor was the stabilization of oil prices. Overall, the emerging markets of eastern Europe were able to post slight growth once again.

Compared with 2015, sales (excluding Oil & Gas) at our companies headquartered in the emerging markets declined by 3% to €14,849 million. Increased sales volumes could only partly compensate for negative currency and price effects. Measured by customer location, sales (excluding Oil & Gas) in the emerging markets fell by 4% to €18,742 million. This brought sales to customers in emerging markets to around 34% of total sales (excluding Oil & Gas) in 2016. In the years ahead, we want to continue expanding this percentage.

For more on our goals, see page 26 onward

For more on current developments, see the Regional Results on page 91

Sales[2] in emerging markets



[2] Percentage of BASF Group sales (excluding Oil & Gas) by location of customer

[3] Comprises EU15, Norway, Switzerland, United States, Canada, Japan, South Korea, Australia, New Zealand

[1] Excluding additions to property, plant and equipment resulting from acquisitions, capitalized exploration, restoration obligations and IT investments

Goals

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. We are focusing on issues through which we as a company can make a significant contribution.

Goal areas along the value chain

Procurement

	2020 Goal	Status at end of 2016	More on
Assessment of sustainability performance of relevant suppliers[1] according to our risk-based approach; development of action plans where improvement is necessary	70%	32%	Page 92

[1] We define relevant suppliers as those showing an elevated sustainability risk potential as identified by risk matrices and with respect to corresponding country risks. Our suppliers are evaluated based on risk due to the size and scale of our supplier portfolio.

Growth and profitability

As determined in 2015, our aim for the years ahead is, on average, to grow sales slightly faster and EBITDA considerably faster than global chemical production (excluding pharmaceuticals; 2016: 3.4%), and to earn a significant premium on our cost of capital. Moreover, we strive for a high level of free cash flow each year, either raising or at least maintaining the dividend at the prior-year level. The goals for sales and EBITDA are based on the 2015 figures, excluding contributions from the business disposed of in the asset swap with Gazprom in September 2015.

For more on our Results of Operations, see pages 50 to 54

	2016	Change since 2015
Sales	€57.6 billion	(4.6%)[2]
EBITDA	€10.5 billion	5.3%[2]
Dividends per share paid out	€2.90	€0.10
Premium on cost of capital	€1.1 billion	
Free cash flow	€3.6 billion	

[2] Baseline 2015: excluding business transferred to Gazprom

Employees

	2021 Goal	Status at end of 2016	More on
Proportion of women in leadership positions with disciplinary responsibility	22–24%	19.8%	Page 43
	Long-term goals		
International representation among senior executives[3]	Increase in proportion of non-German senior executives (baseline 2003: 30%)	36.4%	Page 43
Senior executives with international experience	Proportion of senior executives with international experience over 80%	84.6%	Page 43
Employee development	Systematic, global employee development as shared responsibility of employees and leaders based on relevant processes and tools	The project has been implemented for around 78,150 employees worldwide.	Page 42

[3] 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.

Production

	2025 Goals	Status at end of 2016	More on
Reduction of worldwide lost-time injury rate per one million working hours	≤0.5	1.4	Page 98
Reduction of worldwide process safety incidents per one million working hours	≤0.5	2.0	Page 99
	Annual goal		
Health Performance Index	>0.9	0.96	Page 99

Product stewardship

	2020 Goal	Status at end of 2016	More on
Risk assessment of products that we sell in quantities of more than one metric ton per year worldwide	>99%	75.4%	Page 101

Energy and climate protection

	2020 Goals	Status at end of 2016	More on
Coverage of our primary energy demand by introducing certified energy management systems (ISO 50001) at all relevant sites[4]	90%	42.3%	Page 104
Reduction of greenhouse gas emissions per metric ton of sales product (excluding Oil & Gas, baseline 2002)	(40%)	(37.2%)	Page 104

[4] The selection of relevant sites is determined by the amount of primary energy used and local energy prices.

Water

	2025 Goal	Status at end of 2016	More on
Introduction of sustainable water management at all production sites in water stress areas and at all Verbund sites (excluding Oil & Gas)	100%	42.6%	Page 107

Products and solutions

	2020 Goal	Status at end of 2016	More on
Increase the proportion of sales generated by products that make a particular contribution to sustainable development ("Accelerators")	28%	27.2%	Page 30

Value-based management

"We add value as one company" is one of the four principles of our "We create chemistry" strategy. To create value in the long term, a company's earnings must exceed the cost of stockholders' equity and borrowing costs. This is why we strive to earn a significant premium on our cost of capital. To ensure BASF's long-term success, we encourage and support all employees in thinking and acting entrepreneurially in line with our value-based management concept. Our goal: to create awareness as to how each and every employee can find value-oriented solutions in the company's day-to-day operations and implement these in an effective and efficient manner.

EBIT after cost of capital

■ Performance and management indicator

Income from operations (EBIT) after cost of capital is a key performance and management indicator for the BASF Group, its operating divisions and business units. This figure combines the company's economic situation 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.

Calculating EBIT after cost of capital

■ Cost of capital determined using cost of capital percentage and cost of capital basis

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 segments – and subtract the cost of capital of the BASF Group from the resulting figure. **Cost of capital** is determined by applying cost of capital 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** (weighted average cost of capital, WACC) is determined using the weighted cost of capital from equity and borrowing costs. 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. EBIT after cost of capital, which we use as a steering parameter, is a pretax figure. Therefore, we use the current average tax rate to derive the pretax cost of capital percentage from the WACC. The projected net expense of Other is already provided for by an adjustment in the cost of capital percentage.

The **cost of capital basis** consists of a segment's operating assets plus the customer and supplier financing not included there. Operating assets comprise the current and noncurrent asset items[1] used by the operating divisions.

Value-based management throughout the company

■ Exercising a value-oriented mindset in day-to-day business by every employee

For us, value-based management means the daily focus placed on value by all of our employees. To this end, we have identified value drivers that show how each and every unit in the company can create value. We develop performance indicators for the individual value drivers that help us to plan and pursue changes.

An important factor in ensuring the successful implementation of value-based management is linking the goals of BASF to the individual target agreements of employees. In the operating units, the most important performance indicator is **EBIT after cost of capital**. By contrast, the functional units' contribution to value is assessed on the basis of effectiveness and efficiency.

All this forms a consistent system of value drivers and key indicators for the individual levels and functions at BASF. In addition to EBIT after cost of capital, **EBIT** and **EBIT before special items** are the most significant performance indicators for measuring economic success as well as for steering the BASF Group and its operating units.

We primarily comment on EBIT before special items on a segment and division level in our financial reporting. **Special items** arise from the integration of acquired businesses, restructuring measures, impairments, gains or losses resulting from divestitures and sales of shareholdings, and other expenses and income that arise outside of ordinary business activities. Adjusting for special items makes EBIT before special items an especially suitable figure for illustrating development over time. In addition to EBIT before special items, we also report on **sales** as a further main driver for EBIT after cost of capital. BASF's nonfinancial targets are focused more on the long term, and are not used for short-term steering.

According to our value-based management concept, all employees can make a contribution in their business area to help ensure that we earn the targeted premium on our cost of capital. We pass this value-based management concept on to our team around the world through seminars and training events, thereby promoting entrepreneurial thinking at all levels within BASF.

For more on the development of the figures outlined in Results of Operations, see page 50 onward

[1] These include fixed assets, intangible assets, investments accounted for using the equity method, inventories, trade accounts receivable, other receivables generated by core business activities, and other assets as well as any assets of disposal groups.

Sustainability management

Sustainability is an integral part of our corporate strategy. Using the various tools of our sustainability management, we carry out our company purpose: "We create chemistry for a sustainable future." Sustainability is integrated into our core business, in line with our strategic principle "We drive sustainable solutions." This is how we seize business opportunities and minimize risks along the value chain.

Strategy

- Recognizing significant topics and trends
- Taking advantage of business opportunities
- Minimizing risks

As the world's leading chemical company, we aim to add value in the long term for our company, the environment, and society. Sustainability is a driver for growth as well as an element of our risk management. That is why we incorporate aspects of sustainability into our decision-making processes and have defined clear responsibilities in our organization.

We have created structures to promote sustainable, entrepreneurial actions all the way from strategy to implementation. The Corporate Sustainability Board is BASF's central steering committee for sustainable development. It is comprised of the heads of our business, corporate and functional units as well as of the 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 science and society contribute important external perspectives to discussions with BASF's Board of Executive Directors, thereby helping us expand our strengths and identify our potential for improvement.

Through our materiality analysis, constant dialog with stakeholders, and our many years of experience, we are continuously developing a better understanding of significant topics and trends as well as potential opportunities and risks along our value chain.

We were already using a materiality analysis back in 2013 to identify such topics as energy and climate, water, resources and ecosystems, responsible production, and employment and employability. A strategic evaluation process built upon this in 2015 and 2016 to define new focus topics along the value chain.

They provide strategic orientation for BASF's commitments in meeting the growing challenges along the value chain:
– We source responsibly.
– We produce safely for people and the environment.
– We produce efficiently.
– We respect people and treat them fairly.
– We drive sustainable solutions.

Relevant topics resulting from these commitments form the focal points of our reporting, which we integrate into our long-term steering processes.

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 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, such as the packaging industry, in order to zero in on taking advantage of new business opportunities.

Our risk management supports our long-term business success. We aim to reduce potential risks in the areas of environment, safety and security, health protection, product stewardship, compliance, and labor and social standards by setting ourselves globally uniform requirements that frequently go beyond legal requirements. Internal monitoring systems and complaint mechanisms enable us to check compliance with these standards: they include, for example, questionnaires, audits and compliance hotlines. All employees, managers, and Board members are required to abide by our global Code of Conduct, which defines a mandatory framework for our business activities.

Our investment decisions for property, plant and equipment and financial assets also involve sustainability criteria. Our decision-making is supported by expert appraisals that assess economic implications as well as potential effects on the environment, human rights or local communities.

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

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

For more on our financial and sustainability goals, see page 26 onward

For more on our production standards, see page 98 onward

For more on standards in our supply chain, see page 92 onward

For more on Compliance and our Code of Conduct, see page 134 onward

Engaging stakeholders

■ **Constant dialog with our stakeholders**

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

To involve our stakeholders even more closely, members of the Board of Executive Directors once again met with the Stakeholder Advisory Council in 2016 to discuss important aspects of sustainability. Topics include further integrating sustainability into our company, as well as our new "Value to Society" approach. This involves evaluating the societal benefits and costs generated by BASF's business activities.

We have a particular responsibility toward our production sites' neighbors. With the established community advisory panels, we aim to promote open exchange between citizens and our site management, and strengthen trust in our activities. In 2016, we developed new, globally applicable requirements for community advisory panels at our sites. These minimum requirements are oriented toward the grievance mechanisms outlined in the U.N. Guiding Principles for Business and Human Rights. We keep track of their implementation through the existing global databank of the Responsible Care Management System.

BASF is involved in worldwide initiatives with various stakeholder groups, such as the U.N. Global Compact. BASF's Chairman of the Board of Executive Directors is a member of the United Nations Global Compact Board. As a member of the U.N. Global Compact LEAD initiative, we support the implementation of the "Agenda 2030" and its Sustainable Development Goals. BASF is also active in local Global Compact networks.

We are part of the Global Business Initiative on Human Rights (GBI). This group of globally operating companies from various branches aims to ensure implementation of the U.N. Guiding Principles on Business and Human Rights. With international experts at the GBI conference in South Africa, we discussed how we can support a mining company and BASF supplier in fulfilling its responsibilities with respect to human rights.

Our lobbying and political communications are conducted in accordance with transparent guidelines and in keeping with our publicly stated positions. BASF does not financially support political parties. In the United States, employees at BASF Corporation have made use of 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.

For more on stakeholder dialog, see basf.com/en/dialog
For more on the Stakeholder Advisory Council, see basf.com/en/stakeholder-advisory-council
For more on our guidelines for responsible lobbying, see basf.com/guidelines_political_communication
For more on our human rights position, see basf.com/humanrights and pages 45 and 134
For more on sustainability in procurement, see page 92 onward

Creating value

■ **Value to Society: method for assessing economic, environmental and social impact of business activities along the value chain**
■ **Evaluating sustainability performance to steer product portfolio**

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 effects of our business activities.

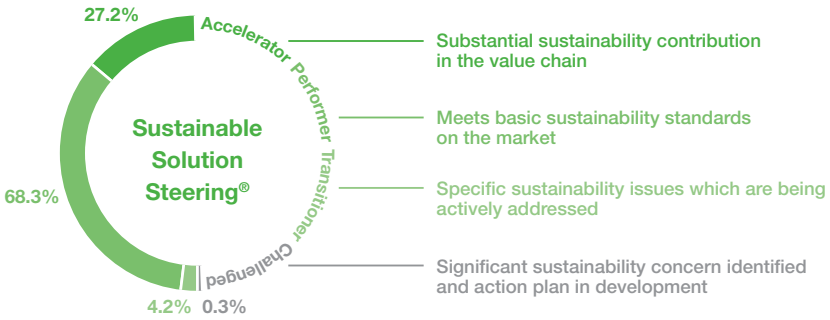
In order to achieve this, we need to understand better than ever how our actions impact society and the environment. We already have many years of experience evaluating our products and processes using such methods as eco-efficiency analyses, the Sustainable Solution Steering® portfolio analysis, or BASF's corporate carbon footprint.

Building on this, BASF has been developing a new method with external experts since 2014 to perform the first 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 on society, along with how these interact.

This transparency supports the integrated character of our actions, contributing to BASF's long-term success. The results of these assessments are helpful in our discussions with stakeholders, in internal progress measurements, and in decision-making processes.

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 experience in networks and are involved in the corresponding standardization processes within the International Organization for Standardization (ISO).

Sustainable Solution Steering®: How BASF's products contribute to sustainability



A significant lever for the targeted steering of our product portfolio, based on the sustainability performance of our products, is the Sustainable Solution Steering® method. By the end of the 2016 business year, BASF had conducted sustainability assessments and ratings for 95.9% of its entire relevant portfolio of more than 60,000 specific product applications – which account for €53.2 billion in sales. We 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 particular contribution to sustainability in the value chain. That is why we want to increase the proportion of sales from Accelerator products to 28% by 2020. In 2016, this figure was at 27.2%.

2020 Goal

Increase proportion of sales generated by Accelerator products to 28%

One of our Accelerator products for the agricultural sector is Limus®, an additive for urea-based fertilizers. Using purely urea-based fertilizers means the loss of a large portion of nitrogen – one of the most important crop nutrients – through the activity of the urease enzyme. Adding Limus® inhibits this enzyme and ensures a constant supply of nitrogen. At the same time, less ammonia is released into the atmosphere. Ammonia contributes to smog, as well as to overfertilization and alternation of the ecosystem. Limus® thus leads to more consistent harvest yields while protecting the environment.

"Transitioners" are products with specific sustainability challenges that are being actively tackled. Due to the adjustment of the portfolio under evaluation, the number of these products rose in 2016. A fuel additive from our Keropur® line is one example of how we enhance the sustainability performance of our products. Such innovative fuel additives increase the efficiency of combustion engines. The result is reduced fuel consumption, and therefore fewer pollutant emissions. Keropur® 3638 is categorized as a Transitioner because it contains a liquid hydrocarbon mixture. This hydrocarbon mixture contains naphthalene, which categorizes it as a CMR (carcinogenic, mutagenic or toxic for reproduction) substance. In order to address some of our customers' occupational safety concerns, a research project was begun and a solution developed. Customers can now obtain the alternative Keropur® 3708, free of CMR substances.

For all products classified as "Challenged," we aim to develop prompt plans of action, even in the case of portfolio revisions and product reassessments. These action plans can include research projects, reformulations or even replacing one product with an alternative product. At the end of 2016, action plans had been created for 100% of Challenged products.

We furthermore promoted sustainability topics in 2016 through various joint projects with partners along the value chain. One such project involved supporting the agricultural trading company AGRAVIS Raiffeisen AG, based in Münster/Hannover, in conducting calculations for the manufacture of sustainable feed mixes. BASF developed an online calculation program that compares various feed mixes for pigs using sustainability criteria along the entire value chain. The underlying eco-efficiency analysis measures various parameters like emissions to water, land use, CO_2 emissions and costs. Customers can use this information to figure out how to reduce their products' environmental impact while keeping an eye on costs. For example, a comparison between conventional and optimized feed mixes showed how impact on the environment can be significantly reduced while production costs remain nearly unchanged. Major factors here included minimizing water and land use. With new combinable feed mixes containing grain by-products and other ingredients, reductions can be attained in the use of arable land for producing feed for hogs.

For more on Value to Society (methodology and results), see basf.com/en/value-to-society

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

For more on our sustainability instruments, see basf.com/en/measurement-methods and page 94

Innovation

Around 10,000	€1,863 million	Around 3,000
Employees in research and development worldwide	Spent on research and development	Projects in research pipeline

A growing need for food, clean water and energy, limited resources and a booming world population – 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 are a prerequisite for innovations as well as an important growth engine for BASF. We work in interdisciplinary teams on innovative processes and products for a sustainable future. This is how we ensure our long-term business success with chemistry-based solutions for almost all sectors of industry.

For BASF, innovation is the key to successfully standing out from the crowd in a challenging market environment. Our innovative strength is based on our global team of highly qualified employees with various specializations. We had around 10,000 employees involved in research and development in 2016. Our three global technology platforms are each run from one of the regions particularly significant for us – 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 2016, we generated sales of over €10 billion with products launched on the market since 2011 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

- **Network with around 600 universities, research institutes and companies**

Our global network of about 600 universities, research institutes and companies forms an important part of our Know-How Verbund. We collaborate with them in many different disciplines. The direct access to external scientific expertise, new technologies and talented minds from various disciplines strengthens our portfolio with creative new projects.

In our excellence program "UNIQUE – The BASF Academic Partnership Program," we are working intensively with fifteen leading universities around the world. BASF also runs four postdoc centers that pool collaborations with several research groups on a regional level. The North American Center for Research on Advanced Materials (NORA) and the California Research Alliance (CARA) are located in North America. The Joint Research Network on Advanced Materials and Systems (JONAS) is active in Europe, while the Network for Advanced Materials Open Research (NAO) covers the Asia Pacific region.

In order to continuously promote exchange with external customers and partners, we have integrated the Creator Space® approach from our 2015 anniversary year into our regular research activities. We use this program to develop innovative ideas.

Strategic focus

- **Enhanced innovation approach with strong focus on customers and markets**
- **Increased use of digital technologies**
- **Globalizing research and strengthening regional competencies**

Our **research pipeline** comprised approximately 3,000 projects in 2016. **Expenses** for research and development amounted to around €1,863 million, slightly below the prior year's level (€1,953 million). This was particularly attributable to the rearrangement of research activities in plant biotechnology and the corresponding adjustment of site structure in North America and Europe. Operating divisions were responsible for 79% of total research and development expenses in 2016. The remaining 21% was allocated to cross-divisional corporate research focusing on long-term topics of strategic importance to the BASF Group. We strive to maintain the recent years' high level of spending on research and development.

Innovations based on chemistry require market-oriented research and development focused on the needs of our customers. That is why our cross-divisional corporate research is closely aligned with the requirements of our operating

divisions. In order to bring promising ideas to market as quickly as possible, we regularly assess our research projects using a multistep process and focus our topics accordingly. Creativity, efficiency and collaboration with external partners are among the most important success factors.

We enhanced our **innovation approach** in 2016 with the aim of increasing our company's power of innovation and securing long-term competitive ability. We aim to achieve this by honing our research focus on topics that are strategically relevant for our business, strengthening our existing scientific processes and methods and introducing new ones, and optimizing organizational structures.

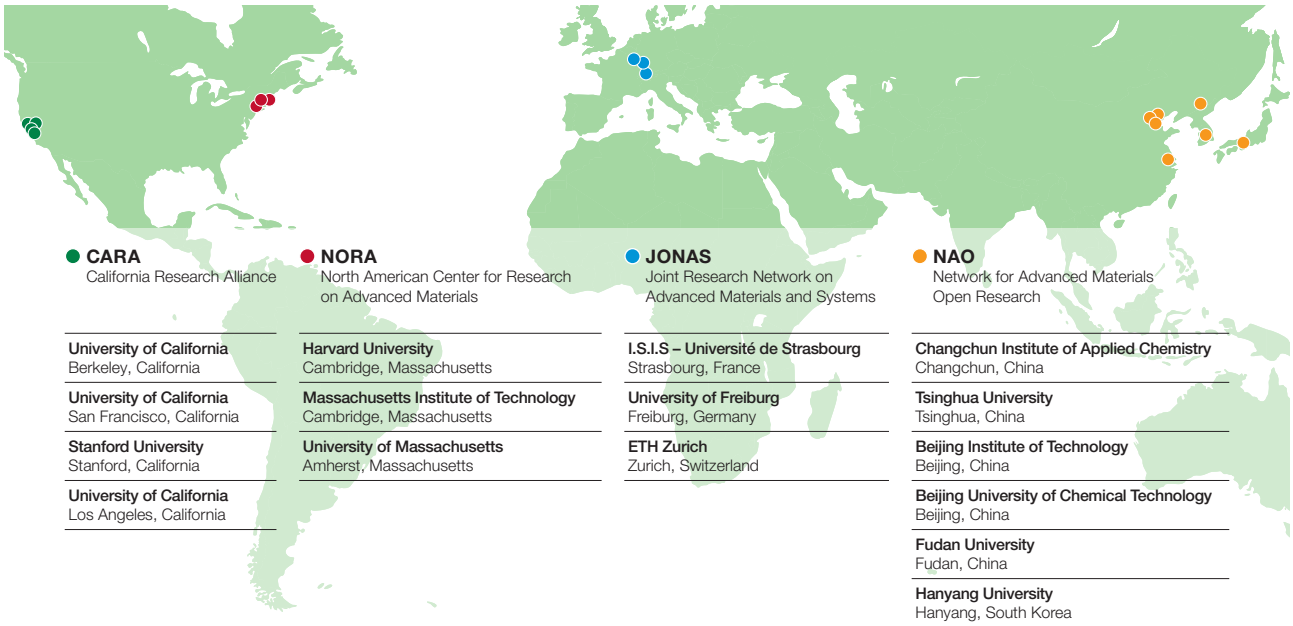
In so doing, we restructured cross-divisional corporate research in 2016 to create more space for the quick review of creative research approaches. At the same time, we tailored our previous technology fields even more toward the needs of the BASF Group. They have been rearranged into multiple, strategic key technologies that are constantly being further developed. We also place our focus on the innovative application of specific key technologies that are of central significance for our operating divisions. Examples include polymer technologies, catalyst processes and strategies for the development of biodegradable and bio-based materials.

In order to develop future business fields with high sales potential for BASF, we develop specific growth fields. These are regularly reviewed in terms of their attractiveness for BASF. When they mature, we transfer them to the operating divisions and promote the development of new approaches with high market potential. In addition, we have set a course for systematically using digital technologies in research and development. In the years ahead, existing expertise in fields like modeling and simulation will be consistently expanded and new digital work areas will be developed.

After rearranging our research activities in plant biotechnology, we undertook further organizational adjustments to our global R+D structures at the end of 2016. Research activities in Singapore were discontinued toward the end of the year due to market developments. We are pursuing the research topics located there at other sites. Research and development activities at the European research sites in Basel and Düsseldorf were restructured in order to be able to support the operating divisions there more effectively.

Our **global research and development presence** is vital to our success. In 2015, we had completed the expansion of the Innovation Campus Asia Pacific in Shanghai, China. A second Innovation Campus Asia Pacific is now being set up in Mumbai, India, in order to continue strengthening our regional research capacities. There, the focus areas in research will be on crop protection and method development.

Global network: postdoc centers



CARA
California Research Alliance

University of California Berkeley, California
University of California San Francisco, California
Stanford University Stanford, California
University of California Los Angeles, California

NORA
North American Center for Research on Advanced Materials

Harvard University Cambridge, Massachusetts
Massachusetts Institute of Technology Cambridge, Massachusetts
University of Massachusetts Amherst, Massachusetts

JONAS
Joint Research Network on Advanced Materials and Systems

I.S.I.S – Université de Strasbourg Strasbourg, France
University of Freiburg Freiburg, Germany
ETH Zurich Zurich, Switzerland

NAO
Network for Advanced Materials Open Research

Changchun Institute of Applied Chemistry Changchun, China
Tsinghua University Tsinghua, China
Beijing Institute of Technology Beijing, China
Beijing University of Chemical Technology Beijing, China
Fudan University Fudan, China
Hanyang University Hanyang, South Korea
Kyoto University Kyoto, Japan

We want to continue advancing our research and development activities in Asia especially, as well as in North America, and are adapting this to the growth in regional markets. This increased presence outside Europe creates new opportunities for fortifying and expanding customer relations and scientific collaborations and for gaining access to talented employees. The result will be to strengthen our Research and Development Verbund and make BASF an even more attractive partner and employer, both on a global level and in the regions.

Ludwigshafen remains the largest site in our Research Verbund. In the nearby BASF agricultural center of Limburgerhof – headquarters of the Crop Protection division – a new research and development center for biological crop protection and seed solutions was opened in April 2016.

The number and quality of our patents also attest to our power of innovation and long-term competitiveness. We filed around 850 new patents worldwide in 2016. For the eighth time in succession, we headed the rankings in the Patent Asset Index in 2016 – a method which compares patent portfolios industry-wide.

For a multiyear overview of research and development expenditures, see the Ten-Year Summary on page 233

Research focus areas – examples

Innovations based in chemistry to answer important questions of the future

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; and quality of life.

The field of efficient energy systems reveals high innovation and market potential. In this context, BASF is working on such topics as the development of **high-temperature superconductors** based on yttrium barium copper oxide, which transmits electricity at low temperatures with negligible loss and enables savings potential in generating and transporting power. Its current-carrying capacity is twenty times greater than that of copper, the most commonly used material in electrical lines. Two milestones have been achieved on the path toward a market launch: BASF and the global energy company American Superconductor Corp. (AMSC) announced a licensing agreement and research cooperation together in March 2016. Furthermore, Deutsche Nanoschicht GmbH, a 100% subsidiary of BASF New Business GmbH, started up a pilot plant for manufacturing high-temperature superconductors in May 2016.

As the market leader in chemicals, BASF holds a special responsibility toward people and the environment. Accordingly, new products undergo comprehensive environmental and toxicological testing before being brought to market. These tasks are appointed to the Bioscience Research technology platform and include the search for new methods to reduce, improve or replace the animal testing required by law. We are the global forerunner in the chemical industry in developing such alternative methods. In May 2016, **LuSens**, an alternative method developed by BASF, was validated by the European Union. LuSens is one component of a three-part testing strategy that enables reliable screening for allergic skin reactions on contact with chemicals.

3-D printing involves the development of innovative materials. Compared with injection molding, 3-D printing offers advantages such as lower costs in small-series production, more time efficiency, and the realization of complex structural elements in a single manufacturing process. In the chemical industry, BASF has a broad material portfolio for 3-D printing at its disposal. BASF New Business GmbH is constructing a development center in Heidelberg, Germany, to develop improved materials and optimize the interplay between materials and 3-D printers, together with partners like printer manufacturer Farsoon Technologies. Furthermore, our Advanced Materials & Systems Research technology platform is active in this field at the sites in Ludwigshafen, Germany; Basel, Switzerland; Wyandotte, Michigan; and Shanghai, China. One attest to BASF's competencies in material development is Ultrasint PA6 X028, launched in April 2016. This powder, based on polyamide 6, is geared toward use in the laser sintering technique widely used in 3-D printing. Compared with conventional polyamides, it provides superior mechanical stability and higher heat resistance. Furthermore, BASF announced its intention in November 2016 to expand its cooperation with American printer manufacturer HP in order to move forward with the development of new 3-D print materials.

In the E.U.-supported **PRODIAS**[1] project, researchers and developers of our Process Research & Chemical Engineering technology platform are working together with partners from industry and academia on methods and processes that allow products based on renewable raw materials to be produced efficiently and with fewer resources, while simultaneously increasing the competitiveness of these products. The biotechnological processes used, like fermentation, mostly take place in diluted aqueous systems that demand energy-intensive steps for separation and purification. Through the use of freeze concentration – a technique typical in the food industry – we managed to concentrate biotechnologically produced products in an especially gentle manner with negligible losses for the first time in 2016.

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

[1] PRODIAS stands for **Pro**cessing **Di**luted **A**queous **S**ystems.

Innovations in the segments – examples

Research and development expenses by segment

1	Chemicals	10%
2	Performance Products	20%
3	Functional Materials & Solutions	21%
4	Agricultural Solutions	26%
5	Oil & Gas	2%
6	Corporate research, Other	21%

Chemicals: In 2016, we established the Amsterdam-based Synvina C.V. joint venture with Avantium to produce and market **furandicarboxylic acid (FDCA) from renewable resources** on an industrial scale. The most significant use of FDCS is the production of polyethylenefuranoate (PEF), a new polymer used for applications such as food and beverage packaging. Compared with conventional plastics, PEF demonstrates higher barrier properties for gases like carbon dioxide and oxygen, leading to a longer shelf life for packaged products. In addition, its higher mechanical strength allows for thinner – and therefore lighter – packaging.

Our new **HydroBlue®90** demonstrates that innovation and enhancement are even possible for products that were patented over 100 years ago. The product originally went to market as an auxiliary agent in dyeing textiles with indigo. Today, HydroBlue®90 ensures consistent high quality in the dyeing process. This stability is important for textile producers, as signs of faulty coloring in denim do not usually appear until after the garment is already finished. New HydroBlue®90 is especially highly concentrated, shelf-stable, odorless and dust-free.

With **Ultramid® C37LC,** BASF launched a new, high-quality copolyamide on the market in 2016. It ensures a stabler and more efficient production process for shrink films used in food packaging. Films produced with Ultramid® C37LC are considerably softer and more transparent than those made from conventional materials. Manufacturers of fishing nets and lines can also further increase the quality of their products using the new plastic.

Performance Products: Flexible food packaging must fulfill the highest functional requirements; at the same time, interest is growing in environmentally friendly solutions. That is why we are constantly enhancing the ink bonding agents of our **Joncryl® FLX** product line and the laminating adhesives of the **Epotal®** range. These water-based products provide a more environmentally friendly alternative to solvent-based systems for flexible packaging. With Epotal®, packaging manufacturers can also shorten the processing time between order placement and delivery.

Lavergy® Pro 104 L is a newly developed protease – or protein-splitting enzyme. Liquid detergents formulated with this enzyme are already powerfully effective at low washing temperatures, removing certain tough stains considerably better than the established market standards. Lavergy® Pro 104 L is even more powerful when combined with our high-performance detergent polymer Sokalan® HP 20. Expertise in both biology and chemistry allows us to offer customers even more opportunities to precisely customize liquid detergent formulations.

Farmers require high-quality feed for their animals. Yet preserved feed, typically in the form of silage, and water are both susceptible to pathogenic microorganisms. Adding our **Lupro-Mix® NA** organic acid mixture inhibits the growth of harmful bacteria and mold, allowing livestock to receive silage and water of the highest quality. Farmers also benefit from the fact that Lupro-Mix® NA is easier and safer to use than comparable products, while remaining nevertheless economical.

Plastic components offer possibilities to make vehicles lighter, more comfortable, and more aesthetically pleasing. Additives like light stabilizers are used to maintain the original properties and appearance of materials and surfaces for as long as possible. **Tinuvin® 880** is a novel light stabilizer that significantly increases the durability of plastic parts exposed to UV radiation and heat, making it suitable for automotive applications that require plastics to stand up to high levels of stress. Tinuvin® 880 can also be used in the construction, agricultural and packaging industries.

Functional Materials & Solutions: To meet ever-tightening exhaust regulations for diesel vehicles, manufacturers employ special catalysts for nitrogen oxides (NO_x) such as lean NO_x trap (LNT) technology, that is, NO_x adsorbers. With **EMPRO® LNT**, BASF has launched a new generation of these catalysts that are especially robust and powerful, even under widely various driving conditions, like city traffic, country roads, or interstate highways.

MasterSuna SBS is a new concrete additive that allows previously unsuitable types of sand to be processed into high-grade concrete. Clay minerals in sand usually prevent concrete superplasticizers from doing their job. With MasterSuna SBS, even sand containing high levels of clay can be used in the production of consistently high-quality concrete. Concrete producers save considerable costs, as they no longer need to pay for the transport of more suitable sands from distant sand pits. Fewer sand pits need to be opened, as well, which helps protect the environment and landscape.

Our **Cool Coatings** automotive coating technology combines innovative functional properties with a sophisticated design that allows for a broad color palette. The coating formulation reflects infrared light, reducing the vehicle's surface temperature by up to 20°C. This passive temperature management reduces the inside temperature by up to 4°C. Cool Coatings thus enables our customers to save on air conditioning, which decreases fuel consumption or, in the case of electric vehicles, increases range.

Ultramid® Advanced N, our new portfolio of heat-resistant polyamides, gives customers in different industries greater freedom for innovation, such as when it comes to developing technically sophisticated end-user products. It allows for the construction of lighter, smaller and more high-performance plastic components for demanding operating conditions, such as in automotive construction, household appliances or entertainment electronics. With **Ecovio® EA**, BASF has developed a high-performance foam that is bio-based and compostable. Its excellent properties make it especially suitable for the transport packaging of valuable, heavy or fragile goods that require high shock resistance and durability.

Agricultural Solutions: We are working with farmers around the globe to improve the quality and yield of their agricultural production while taking into account societal expectations and requirements. To achieve this, we constantly invest in our development pipeline in order to expand our portfolio both in and beyond conventional crop protection – such as in biological solutions. In 2016, we invested €489 million in research and development in the Crop Protection division, representing around 9% of sales for the segment.

Our well-stocked **innovation pipeline** comprises products with a launch date between 2016 and 2026. With a peak sales potential[1] of €3 billion, the pipeline comprises innovations from all business areas. The herbicide **Engenia®** is being introduced to the North American market for the 2017 growing season. It serves as a key component of dicamba and glyphosate-tolerant cropping systems for soy and cotton. We are also planning the launch of the new insecticides **Inscalis®** and **broflanilide**. Inscalis® combats piercing-sucking pests like aphids and whiteflies. An application for approval was submitted in 2016. Broflanilide is effective against chewing insects, like potato beetles and caterpillars, in specialty and field crops; use is also planned in professional pest control. With its novel mode of action, it is highly effective in low doses and will play an important role in resistance management.

We submitted the first approval applications for our new fungicide, **Revysol®**, in 2016. The active ingredient Revysol® is highly effective in combating a number of hard-to-control fungal infections, like Septoria tritici, an agent that causes leaf blotch in wheat. It will be offered in regionally and customer-specific product formulations and used in all important field and specialty crops worldwide. The first market launches are scheduled for the 2019 growing season upon registration with the relevant authorities.

For more on Inscalis®, see page 81

Oil & Gas: The Wintershall Group concentrates its innovation-related activities on improving the success rate of exploration, developing technologies for reservoirs with challenging development and production conditions, and increasing the recovery factor of reservoirs.

In the Düste crude oilfield in Germany, we tested an innovative and environmentally friendly method for increasing the reservoir's recovery factor and have achieved positive initial results. Wintershall developed a concept within the BASF Verbund for **microbial enhanced oil recovery (MEOR)**: We aim to use tiny life forms found in the reservoir, like microbes and microorganisms, to produce more crude oil. Fed nutrients, these multiply and produce various natural substances as metabolic products that can increase the oil recovery factor. Unlike other enhanced oil recovery (EOR) technologies, the use of microbes in MEOR can have several production-increasing effects at the same time. We also successfully managed, for the first time, to model these effects outside of the reservoir, allowing for more efficient use. A larger field test is scheduled to begin in 2017.

[1] Peak sales describes the highest sales value to be expected in one year. For more, see the Glossary on page 239.

Investments, acquisitions and divestitures

€4,314 million
In investments made in 2016

€2,944 million
Used for acquisitions in 2016

Optimization
Of our portfolio through acquisitions and divestitures

In addition to innovations, investments and acquisitions make a decisive contribution toward achieving our ambitious growth goals. We are intensifying our investment in emerging markets and in North America. 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 2017 to 2021, we have planned capital expenditures[1] totaling €19.0 billion. We want to invest more than a quarter of this amount in emerging markets and expand our local presence in order to benefit from the growth in these regions. In North America, investments in new production facilities form the basis of future growth. We also continue to develop our portfolio through acquisitions that promise above-average profitable growth, are driven by innovation, offer added value for our customers, and reduce the cyclicality of our earnings. Investments and acquisitions alike are prepared by interdisciplinary teams and assessed using diverse criteria. In this way, we ensure that economic, environmental and social concerns are included in strategic decision-making.

For more on our investments as of 2017, see pages 123 and 124

Investments and acquisitions 2016 (million €)

	Investments	Acquisitions	Total
Intangible assets	92	2,789	2,881
Thereof goodwill	–	1,552	1,552
Property, plant and equipment[2]	4,222	155	4,377
Total	**4,314**	**2,944**	**7,258**

[2] Including capitalized exploration, restoration obligations and IT investments

Investments

We invested €4,222 million in property, plant and equipment in 2016. Total investments were therefore €1,429 million lower than in the previous year and €531 million above the level of depreciation[3] in 2016. Our investments in 2016 focused on the Chemicals, Performance Products and Oil & Gas segments.

In Ludwigshafen, Germany, we started up further sections of our integrated TDI complex in 2016. TDI production began in August 2016. In November 2016, the TDI plant was temporarily shut down due to a technical defect in one part. Repairwork was ongoing at the time of this report's release. We continued work on revamping the new superabsorbent technology at the site in Antwerp, Belgium, and plan to complete this in 2017.

With our partner, PETRONAS Chemicals Group Berhad, headquartered in Kuala Lumpur, Malaysia, we completed construction on the new aroma ingredients complex at the integrated chemical site in Kuantan, Malaysia. Production facilities for citral and L-menthol will be gradually started up. In June 2016, we began construction of a new automotive coatings plant in Shanghai, China, together with our partner Shanghai Huayi Fine Chemical Co. Ltd., based in Shanghai, China. With these investments, we are expanding our presence in the emerging markets of Asia.

We are constructing an ammonia production plant in Freeport, Texas, together with Yara International ASA, headquartered in Oslo, Norway. At our site in Geismar, Louisiana, we completed the expansion of our butanediol capacities in 2016. The capacity expansion of our dicamba production in Beaumont, Texas, is expected to start up in 2017.

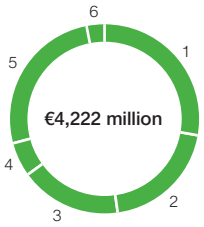
In the Oil & Gas segment, we invested primarily in field development projects in Argentina, Norway and Russia in 2016.

For more on investments within the segments, see page 61 onward

[1] Excluding additions to property, plant and equipment from acquisitions, capitalized exploration, restoration obligations and IT investments
[3] Including impairments and write-ups

Additions to property, plant and equipment[1] by segment in 2016

1	Chemicals	28%
2	Performance Products	20%
3	Functional Materials & Solutions	17%
4	Agricultural Solutions	6%
5	Oil & Gas	26%
6	Other (infrastructure, R&D)	3%



Additions to property, plant and equipment[1] by region in 2016

1	Europe	49%
2	North America	26%
3	Asia Pacific	19%
4	South America, Africa, Middle East	6%

[1] Including capitalized exploration, restoration obligations and IT investments

Acquisitions

We gained €155 million worth of property, plant and equipment through acquisitions in 2016. Additions to intangible assets including goodwill amounted to €2,789 million.

On September 26, 2016, we completed the acquisition of Guangdong Yinfan Chemistry ("Yinfan") in Jiangmen, China, and integrated the business into the Coatings division. This enabled us to add the Yinfan product line to our portfolio of automotive refinish coatings in Asia Pacific and gain access to a state-of-the-art production facility for automotive refinish coatings in China.

The purchase of global surface technology provider Chemetall from Albemarle Corp. in Charlotte, North Carolina, was completed on December 14, 2016. With the acquisition of this business, our Coatings division supplements its portfolio of tailor-made technology and system solutions for surface treatment. The purchase price amounted to $3.1 billion.

Effective January 1, 2017, we acquired the Henkel Group's western European building material business for professional users, broadening the portfolio of our Construction Chemicals division.

For more information on acquisitions, see the Notes to the Consolidated Financial Statements from page 174 onward

Divestitures

We completed the sale of the global polyolefin catalysts business to W.R. Grace & Co., based in Columbia, Maryland, on June 30, 2016. The transaction involved technologies, patents, trademarks and the transfer of production plants in Pasadena, Texas, and Tarragona, Spain. These activities had been assigned to the Catalysts division.

On August 26, 2016, we divested our global photoinitiator business to IGM Resins B.V., based in Wallwijk, Netherlands. The transaction comprised technology, patents, trademarks, customer relationships, contracts and inventories as well as the photoinitiator production site in Mortara, Italy. These activities had been organized under the Dispersions & Pigments division. High-performance photoinitiators for electronics customers were not part of the transaction, as the electronics industry is one of BASF's strategic focus areas.

We sold the Coatings division's business with industrial coatings to the AkzoNobel Group on December 14, 2016. The transaction included technologies, patents, trademarks, customer relationships and inventories as well as the transfer of two production sites in England and in South Africa.

For more information on divestitures, see the Notes to the Consolidated Financial Statements from page 174 onward

Business models and customer relations

Cost-effective	Customized	Innovative
And reliable supplier of classic chemicals	With products and formulations for specific industries	In close partnership with our customers

BASF's customer portfolio ranges from major global customers and medium-sized businesses to local workshops. We align our business models and sales channels with the respective customer groups and market segments. In line with our strategic principle, "We add value as one company," we tightly bundle our products and services to target the specific needs of customers from various sectors and bring innovations more quickly to market.

In the **classical chemicals** business, we mostly sell the chemicals produced in our Verbund in bulk. These comprise basic products from the Chemicals segment, such as steam cracker products, sulfuric acid, plasticizers, caprolactam and isocyanates. For these basic chemicals, our priority is on supplying customers reliably and cost effectively. Marketing is carried out partly via e-commerce.

We create a broad range of **customized products**, particularly in the Performance Products segment – from vitamins, personal care ingredients and color pigments to paper chemicals and plastic additives. In joint projects, we start working closely together with customers already at an early stage in order to develop new products or formulations for a specific industry. A worldwide network of development laboratories allows us to quickly adapt our products to local needs.

We offer **functionalized materials and solutions** tailored to customers' requirements, particularly in the Functional Materials & Solutions and Agricultural Solutions segments. These include, for example, engineering plastics, concrete additives, coatings and crop protection products. We engage in close partnerships with customers and develop innovations together that help them optimize their processes and applications. Our understanding of the entire value chain as well as our global structure and market knowledge are key success factors here.

For information on customer relations in the Oil & Gas segment, see page 84 onward

Industry orientation

- Around half of business units geared toward specific industries
- Industry teams pool cross-unit expertise, knowledge and contacts
- Industry orientation undergoing systematic, structured enhancement

We serve customers from many different sectors with our broad portfolio of diverse competencies, processes, technologies and products. Around half of our business units are oriented toward industries. By combining expertise and resources, we position ourselves as a solution-oriented system provider for our customers.

Yet not all business units can be arranged purely according to industry. That is why BASF has created sector-specific groups for key customer industries – like the automotive, construction and pharmaceutical sectors – or for growth fields such as enzymes. These "industry teams" pool expertise, knowledge and contacts across different units, sharpen our understanding of the value chains in customer industries and work on sector-specific solutions that often could not be developed within one operating division alone. Our innovations are geared specifically toward these needs and offer sustainable solutions for the packaging and print branches, for example. This means combining the expertise of seven divisions into one global industry team. Whether keeping food fresh, manufacturing user-friendly packaging or optimizing costs – we know the needs of the industry. The products and systems developed by these teams comprise tailor-made solutions for paper packaging, along with adhesives and plastics for packaging or coatings. Our portfolio offers value to paper manufacturers in every phase of their production: Process chemicals optimize costs and increase machine efficiency, functional chemicals grant products special properties and finishing chemicals improve the appearance and performance of ready-to-use paper and cardboard.

The close alignment of our business with our customers' needs is an important component of our "We create chemistry" strategy. We will therefore continue the systematic and structured enhancement of our industry orientation in the future.

Working at BASF

113,830	Life-long learning	3,120
Employees around the world	On center stage	Apprentices[1] in around 60 occupations

Our employees carry out the goals of the "We create chemistry" strategy. 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.

Strategy

- **Best Team Strategy focuses on excellent people, workplace and leaders**

The Best Team Strategy is derived from our corporate strategy and contributes greatly to the achievement of our goals. We want to form the best team. To achieve this, we focus on three strategic directions: excellent people, excellent place to work and excellent leaders. Emphasis here is placed on our attractiveness in worldwide labor markets, personal and professional development, life-long learning, and supporting and developing our leaders. We are strongly committed to internationally recognized labor and social standards and strive to respect these worldwide.

Number of employees

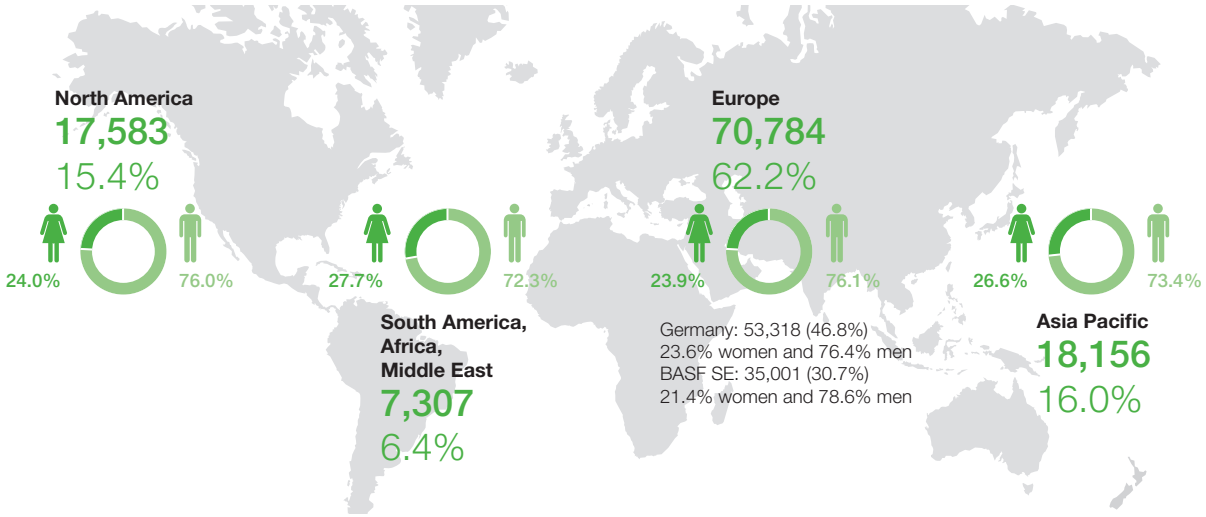
At the end of 2016, BASF had 113,830 employees (2015: 112,435); of these, 3,120 were apprentices (2015: 3,240). We hired 6,957 new employees Group-wide in 2016. Moreover, the acquisition of Chemetall especially added to our workforce. Reductions in headcount were related to events such as the sale of the industrial coatings and polyolefin catalysts businesses.

The average percentage of employees who resigned during their first three years of employment was 1.2% worldwide in 2016. This turnover rate was 0.5% in Europe, 1.5% in North America, 3.2% in Asia Pacific and 1.9% in South America, Africa, Middle East. Our turnover rates are therefore lower than those of many other companies.

BASF Group new hires in 2016

	December 31, 2016	Thereof women %
Europe	3,111	30.8
North America	1,584	31.3
Asia Pacific	1,733	32.1
South America, Africa, Middle East	529	38.9
Total	**6,957**	**31.9**

BASF Group employees by region
(Total: 113,830, thereof 24.6% women, as of December 31, 2016)



[1] At BASF, the apprenticeship program trains students for technical, scientific and business vocations as well as for trade and craft professions.

Competition for talent

- High scores in worldwide employer rankings
- Focus on social media and online marketing

In the global competition for the best employees and leaders, we want to recruit qualified talent in order to achieve our ambitious growth targets. This is why we continuously review measures to make our total offer package attractive for employees. For example, we have now expanded our career website to include a total of 61 countries in 2016. We continue to make use of social networks to reach candidates and ensure an innovative, target-group-appropriate approach through digital media, such as 360-degree videos showcasing selected workspaces. In North America, our online campaign to make BASF an attractive employer for women and minorities was highly successful. We were able to attract and hire new employees for the Innovation Campus Asia Pacific in Shanghai, China, at our "Live Day" virtual career fair in Asia Pacific. In South America, we trained employees in the use of social media as ambassadors of our employee brand.

We were once again able to achieve high scores in employer rankings in 2016. 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, BASF was listed among Forbes' 100 Best Employers for the second time in a row. We are also far ahead of our key competitors in North America on the employer rating website glassdoor.com. In Brazil, BASF was once again named one of the top 150 employers in a ranking by Você SA magazine.

Vocational training

- 3,120 apprentices in around 60 occupations worldwide
- Around €104 million spent on vocational training

As of December 31, 2016, BASF was training 3,120 people in 14 countries and around 60 occupations. We spent a total of around €104 million on vocational training in 2016, as well as about €6 million on the BASF Training Verbund as part of our social commitment in the Rhine-Neckar Metropolitan Region.

In 2016, 837 apprentices started their vocational training at BASF SE and at German Group companies, filling almost all available program slots in Germany. The current shortage of skilled labor nevertheless presents a challenge that we address with various initiatives. In the Rhine-Neckar Metropolitan region, such programs include *Start in den Beruf* and *Anlauf zur Ausbildung*, in which 210 young people in the BASF Training Verbund participated in cooperation with partner companies in 2016. The goal here is to prepare participants for a subsequent apprenticeship within one year, making a contribution to the long-term supply of qualified employees in the region. Because the number of open vocational training placements meanwhile outweighs demand, some slots in these programs remained unfilled in 2016.

BASF launched its new apprenticeship campaign in May 2016, called "Show Us What You've Got!" (*Zeig's Uns!*). It underscores the fact that, for BASF, an applicant's overall impression is not made by technical know-how alone; personal interests and strengths like initiative, creativity and team spirit are also decisive factors.

At the Ludwigshafen site, we also offer a part-time training program for newcomers from other fields, so that they can qualify for a career in chemical production even while working at their current job.

The "Start Integration" program, begun with 50 placements in 2015, is geared toward refugees with a high probability of being granted the right to remain in Germany and aims to integrate them into the labor market in the Rhine-Neckar Metropolitan Region. BASF expanded the program to 300 placements and, for the 2016/2017 apprenticeship year, added three modules – include a one-year career prep course providing instruction in topics like language and intercultural training.

For more information, see basf.com/apprenticeship

BASF Group employees by contract type (total: 113,830)

	December 31, 2016	Thereof women %
Permanent staff	108,376	24.1
Apprentices	3,120	25.5
Temporary staff	2,334	45.3

What we expect from our leaders

- Leaders as role models
- Multifaceted offers for leadership development

Our leaders should be role models for applying our strategy in daily corporate life. We expect them to have a positive influence on shaping day-to-day business, relaying company values, and motivating employees. This includes how challenges are approached and how the leader's area of responsibility is continuously developed. Our leadership culture is founded on BASF's strategic principles and values as well as on the standards of behavior set out by our global Code of Conduct.

We offer our leaders learning and development measures for all phases of their career, coordinating global, regional and local opportunities. These are geared toward strengthening our leaders' competencies and offer chances to network and learn from one another. For example, we began the European Emerging Leader program in 2016, which guides leadership candidates into their roles over a period of 1.5 years. Similar programs are available in other regions, too: In Asia Pacific, for example, we run an internal training and further development course for leaders to become coaches.

Leadership responsibility in the BASF Group

	December 31, 2016	Thereof women %
Professionals[1]	36,909	29.4
(Senior) executives[2]	9,558	19.8

[1] Specialists without disciplinary leadership responsibilities
[2] Employees with disciplinary leadership responsibilities

Learning and development

- Life-long learning concept focuses on on-the-job experience
- Specific further training for employees in production and technical areas
- Development meetings form important element of employee development

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. With the Best Team Strategy and regional learning strategies, we want to establish a new learning culture and enable life-long, self-guided learning. The learning and development options cover a range of learning goals: starting a career, expanding knowledge, personal development, and leadership training. For example, our Learning Campus in Singapore offers development programs for leaders and leadership candidates with a focus on strategy, leadership and innovation. It serves as a platform for new styles of learning and brings together employees from diverse areas – for our goal is to create a common-ground, inspiring learning experience that enables employees to connect with the company and with each other. In this regard, we have also been implementing the "MentForMe" mentoring program step by step since 2016. 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%).

We support employees in production and engineering worldwide with job-specific qualifications and further training. We have further strengthened our in-plant qualification measures with in-plant trainers who promote the continuous professional development of employees in production and engineering through individual learning assignments. Moreover, we expanded our programs on safety culture and knowledge management as well as team and organizational development.

We spent around €69 million on further training in 2016 (2015: €96 million). Each employee spent an average of 2.0 days on further training in 2016. As part of cost management, we decided in 2016 to focus training on business and safety-related courses.

In regular development meetings, held as part of our annual employee dialogs, employees and leaders outline prospects for individual professional development together and determine measures for further training and development. This model was implemented for around 78,150 employees by the end of 2016. We want to conduct development meetings for all employees by the end of 2017.

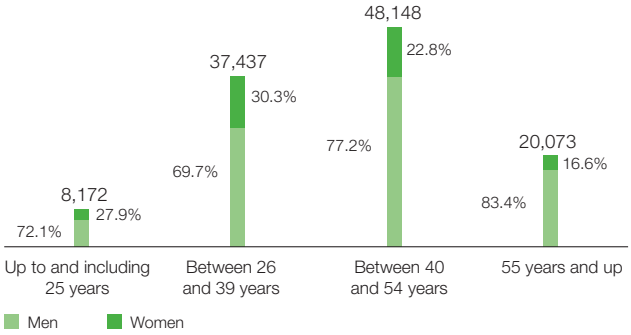
Managing demographic changes

- Leadership duties include "leadership in times of demographic change"

The demographic situation within the BASF Group varies widely by region. The aging population in areas like Germany and North America presents us with challenges. We are also occupied with future issues like new technologies, growing digitalization ("Industry 4.0"), and the ever-increasing delay of retirement. We create a framework to help maintain the employability of our personnel at all stages of life and ensure the availability of qualified employees. Employees and leaders are supported with health and exercise programs, flexible working arrangements, age-appropriate workplaces and demographic analyses. The topic "leadership in times of demographic change" also forms a part of our leadership programs. In addition, we engage in knowledge management and systematic succession planning.

For more on health protection, see page 99

BASF Group employee age structure
(Total: 113,830, thereof 24.6% women, as of December 31, 2016)



Inclusion of diversity

- Promoting diversity as part of company culture
- Global goals for increasing percentage of women in leadership positions

We want to utilize diversity for the development of our business. Promoting diversity is one of the mainstays of our corporate culture. The strong global character of our markets translates into different customer requirements. We want to reflect this diversity in our workforce, as well, in order to even better understand the needs of our customers. The aim is to increase our teams' performance and power of innovation, and boost creativity, motivation and identification with the company. We are further promoting the appreciation and inclusion of diversity. Leaders play an important role here. We support them in strengthening diversity and making the best possible use of it in day-to-day business. For example, specific goals and measures are being developed for such topics as recognizing and developing different kinds of talent.

Since 2015, BASF has set itself global quantitative goals for increasing the percentage of women in leadership positions. In the BASF Group, the global proportion of female leaders with disciplinary responsibility was 19.8% at the end of 2016 (2015: 19.5%). We aim to increase this figure to 22–24% worldwide by 2021, so that the proportion of women in leadership reflects that of women in the global company workforce.

2021 Goal

Proportion of women in leadership positions with disciplinary responsibility 22–24%

Considering the relatively low rate of turnover in the BASF Group's leadership team, this is an ambitious goal. Furthermore, BASF wants to continue increasing the global percentage of senior executives[1] that come from countries other than Germany. This figure was at 36.4% by the end of 2016 (2015: 35.6%).

Moreover, we intend to maintain the proportion of senior executives with international experience at over 80%. We exceeded this figure by the end of 2016, reaching 84.6%. With these goals, we continue to drive our globally integrated approach to promoting diversity and leadership development.

For more information, see basf.com/diversity

For more on diversity in the Board of Executive Directors and the Supervisory Board, see page 130

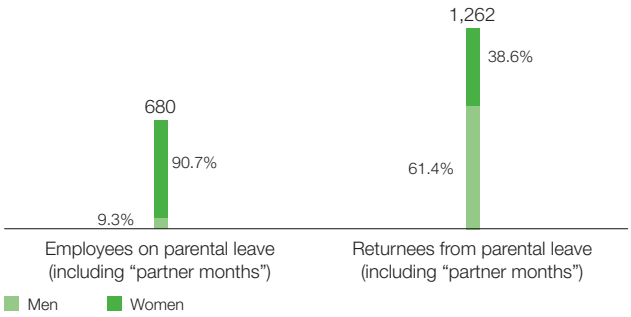
[1] The term "senior executives" refers to leadership levels 1 to 4, whereby level 1 denotes the Board of Executive Directors. In addition, individual employees can attain senior executive status by virtue of special expertise.

Balancing personal and professional life

- **Worldwide offers and opportunities**

Our identity as an employer includes our belief in supporting our employees worldwide in balancing their personal and professional lives. Through various offers and opportunities, we create working conditions that give fair consideration to our employees' individual needs. We want to strengthen their identification with the company and bolster our position as an attractive employer in the competition for qualified personnel. Our offer includes flexible working hours, part-time employment and mobile working. In 2016, a total of 12.0% of BASF SE employees held part-time positions, of which 69.9% were women. Numerous employees also made use of parental leave.

Balancing personal and professional life
(Total BASF SE employees: 35,001, thereof 21.4% women, as of December 31, 2016)



Our regional initiatives specifically address the needs of our employees at a local level. Our Work-Life Management employee center in Ludwigshafen ("LuMit"), provides opportunities for fitness and health, employee assistance, and balancing career and personal life – like the company childcare center, "LuKids," which offers daycare for 250 children. Around 600 employees take advantage of LuMit every day. We also provide social counseling at other sites in Germany, such as those in Münster and Schwarzheide, as well as in Asia, South Africa and North America, to help employees overcome difficult life situations and maintain their employability.

Global Employee Survey

The Global Employee Survey and its follow-up process have been established for the entire BASF Group ever since the first survey in 2008. It was last conducted in 2015. Employees and leaders discussed the results together in all regions, and are now implementing improvement measures. This pertains to topics such as supporting employees in their career development, intensifying feedback, or supporting leaders and their teams in driving change and innovation. We conduct the Global Employee Survey at regular intervals; the next one is scheduled for 2018.

Compensation and benefits

- **Compensation based on employee's position and individual performance as well as company's success**
- **Pay generally comprises fixed and variable components plus benefits**

In addition to market-oriented compensation, BASF's total offer also comprises benefits, individual opportunities for development and a good working environment. Our employees' pay is based on global compensation principles. These take into account an employee's position and individual performance as well as the company's success. Representative analyses of the Ludwigshafen site have shown that there are no systematic differences in pay between men and women, provided the positions and qualifications are comparable. As a rule, compensation is comprised of fixed and variable components as well as benefits that often exceed legal requirements. In many countries, these include company pension benefits, supplementary health insurance, and share programs.

In 2016, the BASF Group spent €10,165 million on wages and salaries, social security contributions and expenses for pensions and assistance (2015: €9,982 million). This represents growth of 1.8% in personnel expenses, primarily as a result of expenses for the long-term incentive program as well as wage and salary increases. Partly countering this rise was the lower average number of employees, in addition to currency effects.

For more information, see the Notes to the Consolidated Financial Statements on page 188

BASF Group personnel expenses (million €)

	2016	2015	Change in %
Wages and salaries	8,170	7,943	2.9
Social security contributions and expenses for pensions and assistance	1,995	2,039	(2.2)
Thereof for pension benefits	627	658	(4.7)
Total personnel expenses	**10,165**	**9,982**	**1.8**

Employees participate in the company's success

- Return on assets determines variable compensation
- "*plus*" share program fosters employees' long-term participation in company

With variable compensation components, we involve employees in the company's success and reward individual performance. The same principles basically apply for all employees. The amount of the variable component is determined by the company's economic success (measured by the return on assets[1] of the BASF Group) as well as the employee's individual performance. Individual performance is assessed as part of a globally consistent performance management process.

In numerous Group companies, employees are offered the chance to purchase shares. The BASF share program "*plus*" sponsors employees' long-term participation in the company through incentive shares: By investing a portion of their compensation in BASF shares, they take part in the long-term development of BASF.

BASF offers its executives the opportunity to participate in a share-price-based compensation program. This long-term incentive (LTI) program ties a portion of their compensation to the long-term performance of BASF shares. In 2016, 92% of the approximately 1,200 eligible executives worldwide participated in the LTI program, investing up to 30% of their variable compensation in BASF shares.

For more information, see the Notes to the Consolidated Financial Statements from page 216 onward

Dialog with employee representatives

Open dialog with employee representatives is an important component of our corporate culture. If restructuring leads to staff downsizing, for example, we work with employee representatives to develop socially responsible implementation measures. This is done in accordance with the respective legal regulations and the agreements reached. The BASF Europa Betriebsrat (European Works Council) addresses cross-border matters in Europe.

Together with employee representatives, we continued to elaborate on the future topics described by the company and works council in the BASF SE 2020 site agreement in 2016. For example, new principles for promoting apprentices were described in BASF SE's "Apprenticeship of the Future." We are engaged in close exchange with employee representatives on the topic of changes through increasing digitalization in order to identify and jointly address challenges.

For more information, see basf.com/employeerepresentation

Global labor and social standards

- Alignment with U.N. Guiding Principles on Business and Human Rights
- Adjusted management process for monitoring adherence to labor and social standards

Our voluntary commitment to respecting international labor and social standards is 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 strives to uphold 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 global management process for the respect of international labor norms.

In 2016, we continued the restructuring of our management process begun in 2015. In the previous year, a global team of experts had already drafted a Group-wide BASF guideline on complying with international labor and social standards[2]. This provided the basis for developing a process that determines potential gaps in complying with these standards. The management process will now be implemented successively around the world. A monitoring system launched in 2016 keeps track of the situation in countries in which BASF is active, and regularly reviews the implementation of set goals and measures. We performed a risk-based analysis of 43 countries by the end of 2016. The remaining countries are scheduled to be reviewed in 2017.

For more on labor and social standards, see basf.com/labor_social_standards

For more on global standards, see page 24

For more on our sustainability-related risk management, see page 29

For more on Compliance, see page 134 onward

[1] To calculate variable compensation, total return on assets is adjusted for special items.

[2] The guideline provides concrete interpretations for the topics outlined in the global Code of Conduct under "Human Rights and International Labor Standards."

Social commitment

New strategy
BASF hones societal activities to have even greater impact

€47.0 million
Spent on donations, sponsorship and BASF Group's own projects

Two pillars
Nonprofit activities and business-oriented projects

We take on social responsibility: We are involved in diverse projects worldwide, especially in the communities where our sites are located. Our main focus is on life-long learning and access to education. In this way, we promote innovative capacity and future viability.

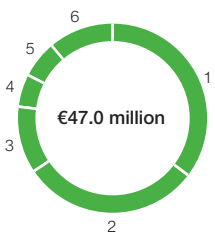
Strategy

In 2016, we revamped our activities in terms of social commitment and designed them to have an even greater impact. The Social Engagement Strategy serves as our launchpad – we use this to strengthen our global approach to the topic. The strategy revolves around support projects having a lasting impact on society and offering learning opportunities for participating cooperation partners and BASF. The common thread throughout all worldwide social commitment activities is provided by the Sustainable Development Goals of the United Nations. Regional emphasis topics help us tailor our engagement toward local needs.

The BASF Group spent a total of €47.0 million supporting projects in 2016; we donated 49.6% of this amount (2015: €56.2 million, 46% of which were donations). The decline in comparison with 2015 is attributable to the previous year's individual special projects in honor of BASF's anniversary. We support initiatives that reach out to as many people as possible and have long-term impact. We foster education, science, social projects, arts and culture, and sports in the communities around our sites. On a regional level, we work together with universities, schools and nonprofit organizations. We support BASF Stiftung, a charitable foundation, in its international projects with various U.N. and nongovernmental organizations.

BASF Group donations, sponsorship and own projects in 2016
(million €)

1	Education	16.7	35.5%
2	Social projects	14.2	30.2%
3	Culture	5.3	11.3%
4	Science	2.7	5.7%
5	Sports	2.9	6.2%
6	Other	5.2	11.1%



Two pillars of social commitment

In its Social Engagement Strategy, BASF combines two pillars under one roof: donations and the company's own nonprofit activities (Corporate Citizenship) along with business-oriented projects (Starting Ventures).

Corporate Citizenship activities aim to help create a livable surrounding region for our sites' neighbors, employees and families. This means supporting numerous projects like the "Connected to Care" program begun in 2015. Employees around the world form teams to carry out volunteer projects together with nonprofit organizations.

With our Starting Venture program, we develop entrepreneurial solutions to support low-income demographic groups in emerging markets in their efforts to improve their quality of life. We achieve this through projects in various customer industries and regions that aim to increase employment opportunities and improve access to products. For example, BASF supports young people from low-infrastructure urban areas in Chile with occupational training in the field of automotive coatings. 75 young people have achieved certification so far and are now in a position to take up employment at our customers. The Starting Venture program thus also contributes to our long-term business success.

BASF Stiftung

The BASF Stiftung, a nonprofit organization, supported a school nutrition project of the United Nations World Food Programme in Colombia in 2016 as part of its humanitarian development work. There, healthy school meals are an important motivation for students – especially from low-income families – to attend school. The project also collaborates with small-holder farmers who supply the participating schools with groceries. The small-holder farmers are given specific training in advance.

In the 2016 year-end donation campaign, the company and its employees gave around €337,000 to BASF Stiftung, which is using the sum to support a World Food Programme initiative to improve living conditions for people in Ethiopia.

For more information, see basf.com/international_donations

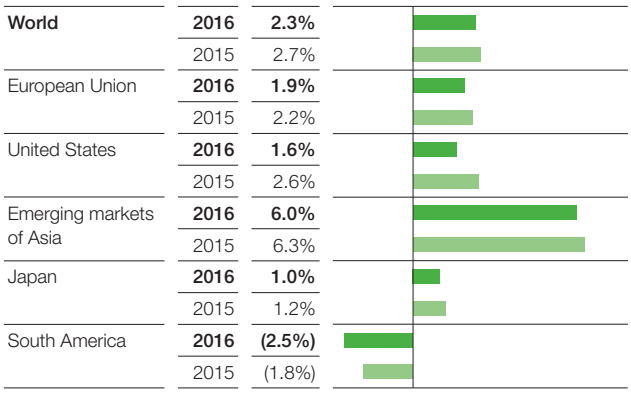
The BASF Group business year
Economic environment

2.3%	1.9%	3.4%
Growth in global gross domestic product	Growth in global industrial production	Growth in global chemical industry

The global economy grew only moderately in 2016 but was subject to regional fluctuations. While growth in the emerging markets remained almost unchanged in comparison with 2015, it decelerated in the industrialized countries due to the U.S. economy's initially weak dynamic. In the European Union, growth in gross domestic product was just marginally below the previous year's level despite the heightened uncertainty before and after the British referendum on leaving the E.U. Gross domestic product in China grew only slightly more slowly thanks to governmental economic measures. Overall, global gross domestic product grew by 2.3%, as we had anticipated, remaining behind the level of 2015 (+2.7%). The average price for a barrel of Brent blend crude oil fell to $44 per barrel (2015: $52 per barrel).

For the outlook for the economic environment in 2017, see page 119 onward

Gross domestic product
(Real change compared with previous year[1])



[1] Figures that refer to previous years may deviate from last year's report due to statistical revisions.

Trends in the global economy in 2016

The global economic environment was marked in 2016 by expansive monetary policy, low raw materials prices that nevertheless stabilized over the course of the year, and a modest growth dynamic. The especially low price of oil during the first half of the year dampened growth in the oil-producing countries and reduced the propensity to invest there, including the United States. Small levels of inflation, historically low interest rates and a weak euro supported growth in Europe.

The currencies of many emerging economies that export raw materials were weaker than in the previous year, but appreciated considerably over the course of 2016. This was due in part to a gradual rise in oil and precious metal prices in addition to the U.S. Federal Reserve's cautious interest rate policy. Economic uncertainty increased considerably as the year progressed, largely as an effect of the British vote to exit the E.U., but also because of continuing geopolitical conflicts and unpredictability before and after the U.S. presidential elections.

Economic trends by region

- **Economic growth somewhat slower in the E.U.**
- **Weaker growth in the U.S.**
- **Slowdown in China lighter than expected; stable growth in emerging markets of Asia**
- **Further decline of GDP in South America**

In 2016, growth in the **European Union**'s gross domestic product slowed slightly, from 2.2% in 2015 to 1.9%. Development in the region continued to be marked by widely divergent trends in 2016: In northwestern Europe, growth rates remained at a solid level overall. In the United Kingdom, the increase in gross domestic product slackened only marginally after the referendum on a British exit from the E.U. Germany's economic growth was at a comparatively robust 1.8% while that of France was more moderate, at 1.1%. In southwestern Europe, Spain continued its dynamic pace (+3.2%). By contrast, Italy (+1.0%) and Portugal (+1.4%) were not able to boost their economies to such a considerable extent. The central and eastern E.U. countries also boasted above-average growth (+2.8%), helped along by low inflation rates, ongoing low unemployment levels and the stable development of exports. In Russia, the economy shrank only slightly (–0.2%) after the previous year's sharp decline (–2.8%), partly thanks to the stabilization in oil prices over the course of the year.

Growth in the **United States** during the first two quarters was considerably below the average for the year. Reasons included weak investment activity in the oil industry and cyclical inventory effects. Private consumption bolstered the economy. In the second half of the year, growth picked up thanks to increased investment and positive development in agricultural exports. Overall, the U.S. economy grew by only 1.6% in 2016 (2015: +2.6%), remaining behind its medium-term pace of around 2%.

Economic output in the **emerging markets of Asia** saw a somewhat slower increase as compared with the previous year (2016: +6.0%, 2015: +6.3%). This was largely attributable to the only slightly slower growth in China (2016: +6.7%; 2015: +6.9%). The construction and automotive industries benefited from government investments as well as impetus provided by monetary and fiscal policy. In this environment, the neighboring Asian countries grew at a relatively stable rate; India once again saw rapid expansion, at 6.8% (2015: +7.9%).

At 1.0%, growth remained modest in **Japan**. The appreciation of the yen against the U.S. dollar (around 10% compared with the previous year) and lower demand from China reduced both the year's average exports and private companies' propensity to invest. Lower imports, weakly growing private consumption, expanding housing investment and public expenditures compensated for these negative effects, so that the Japanese economy's overall growth was about as strong as in the previous year.

Gross domestic product shrank once again in **South America**, by 2.5% (2015: –1.8%). Economic performance in Brazil remained 3.4% behind the previous year (2015: –3.8%). Gross domestic product declined in Argentina, as well, shrinking by 2.3% against the backdrop of high inflation and fiscal consolidation measures (2015: +2.6%). Venezuela and Ecuador suffered from the low price of crude oil; gross domestic product declined in both countries. The other countries in the region grew moderately on average.

Trends in key customer industries

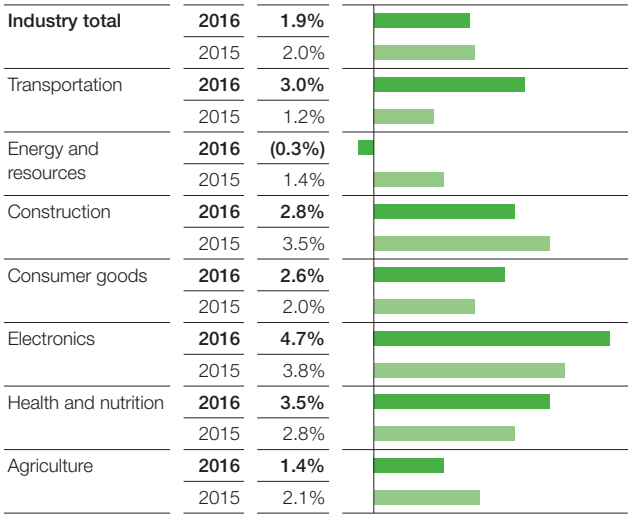
- Global industrial production increases at rate similar to 2015
- Development in key customer industries improves on average

Global industrial production grew by around 1.9% in 2016, about the same as in the previous year (+2.0%). Growth in the advanced economies slowed slightly (2016: +0.8%, 2015: +1.0%) but remained constant in the emerging markets (2016: +3.0%, 2015: +3.0%).

Industrial growth in the European Union increased marginally to 1.4% from 1.3%. In the United States, industrial production nearly stagnated (2016: +0.3%; 2015: +1.3%). At 5.5%, industrial growth in the emerging markets of Asia roughly matched the prior year's level. Industry in China cooled down only slightly, thanks to governmental stimulus. The recession continued in South America: Industrial production shrank in Brazil by 6.0% (2015: –8.2%).

The chemical industry's key customer sectors developed better on average than industrial production. Global **automotive production** grew by 4.5%, outpacing the previous year. In western Europe and North America, the sector continued its economic upswing. Tax incentives in China boosted demand; however, production fell drastically in South America and Russia. The global rate of growth in the **construction industry** was 2.8%, down from the previous year's +3.5%. In western Europe, construction saw slightly higher growth than in 2015; in the eastern countries of the European Union, the expiration of E.U. funding programs led to decreased activity. Growth in the United States slowed considerably. In China, construction volumes rose at around the same rate as 2015 as a result of governmental support measures. Globally, **agriculture** grew by 1.4%, behind the level in previous years; production weakened in South America especially.

Growth in key customer industries
(Real change compared with previous year[1])



[1] Figures that refer to previous years may deviate from last year's report due to statistical revisions.

BASF sales by industry[2]
(Direct customers)

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

[2] Changes in percentages from the previous year are mainly a result of the asset swap with Gazprom.

Trends in the chemical industry

- Global growth corresponds to our expectations

The chemical industry (excluding pharmaceuticals) grew at the rate we had anticipated, by 3.4%. The fastest growth was seen in chemical production in the emerging markets of Asia (2016: +6.3%, 2015: +6.6%). Chemical production increased only marginally in the European Union (2016: +0.4%, 2015: +0.9%). There were substantial regional differences. Production fell considerably in Belgium and the United Kingdom, while the Netherlands saw a sharp increase. Chemical production declined slightly in Germany. Growth in the United States was weaker than in the previous year (2016: +0.6%, 2015: +1.9%[1]). Thanks to significant production expansion in Mexico, overall growth for North America shrank at a slower rate (2016: +0.9%, 2015: +1.8%). South America saw a marginal decline in chemical production (2016: –0.8%, 2015: –3.8%). Production volumes grew slightly in Japan, at 1.5% (2015: +1.6%).

Chemical production (excluding pharmaceuticals)
(Real change compared with previous year[2])

World	**2016**	**3.4%**
	2015	3.6%
European Union	**2016**	**0.4%**
	2015	0.9%
United States	**2016**	**0.6%**
	2015	1.9%
Emerging markets of Asia	**2016**	**6.3%**
	2015	6.6%
Japan	**2016**	**1.5%**
	2015	1.6%
South America	**2016**	**(0.8%)**
	2015	(3.8%)

[2] Figures that refer to previous years may deviate from last year's report due to statistical revisions.

Important raw material price developments

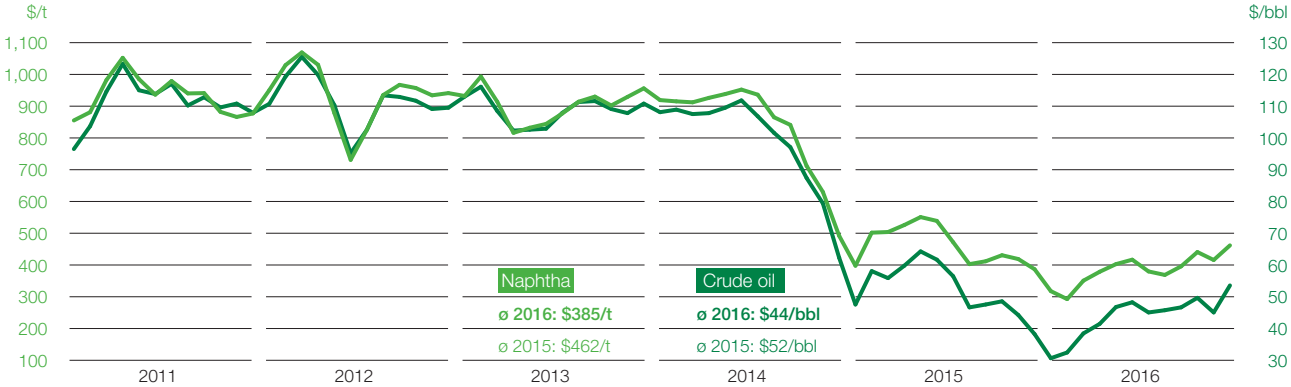
- Prices continue to fall for crude oil and naphtha
- Gas prices below previous year's level, but with wide regional variance

Averaging around $44 per barrel in 2016, the price of Brent blend **crude oil** dropped by about 15% compared with the previous year ($52 per barrel). The oil price fluctuated over the course of the year between $31 per barrel in January and $54 per barrel in December.

The average monthly price for the chemical raw material **naphtha** ranged over the course of 2016 between $293 per metric ton in February and $462 per metric ton in December. At $385 per metric ton, the annualized average price of naphtha in 2016 was below the level of 2015 ($462 per metric ton).

The average **price of gas** in the United States was $2.49 per mmBtu, under the previous year's level ($2.61 per mmBtu). In Europe, the average price of gas on spot markets remained substantially higher, at $4.58 per mmBtu (2015: $6.49 per mmBtu). Gas prices in China averaged around $6.54 per mmBtu nationally (2015: $9.81 per mmBtu), while the average price in the coastal regions was $7.72 per mmBtu (2015: $11.20 per mmBtu).

Price trends for crude oil (Brent blend) **and naphtha** ($/barrel, $/metric ton)



[1] This figure deviates significantly from last year's report due to statistical revisions.

Results of operations

In 2016, our market environment continued to be volatile and challenging; the global economy and the chemical industry saw slower growth. Overall, BASF Group business developments unfolded in line with our expectations. We posted a considerable sales decline compared with the previous year and a slightly lower income from operations (EBIT) before special items. These developments were largely the result of the divestitures completed in 2015 as well as price declines due to further drops in raw material prices. Increased sales volumes and reduced fixed costs helped counter this effect, even allowing us to achieve considerably higher EBIT before special items in the chemicals business[1].

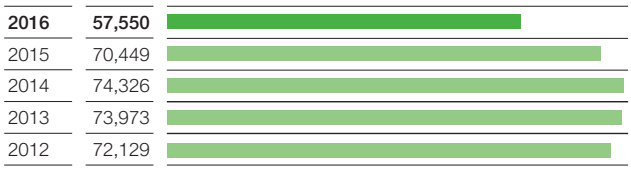
Business reviews by segment can be found from page 59 onward

Sales

- Sales down 18% to €57,550 million

Sales for 2016 decreased by €12,899 million to €57,550 million. This was mainly attributable to the divestiture of the gas trading and storage business as part of the asset swap with Gazprom at the end of September 2015. This business had contributed €10.1 billion to sales in 2015. In addition, lower oil, gas and other raw material prices led to a drop in sales prices, reducing sales in the chemicals business – especially the Chemicals segment – as well as in the Oil & Gas segment. We were able to continually raise sales volumes over the course of the year, and achieved slight volumes growth overall. Volumes grew slightly in the Chemicals, Performance Products and Oil & Gas segments. The Functional Materials & Solutions segment posted a significant increase, and Agricultural Solutions a slight decrease. Currency effects slightly dampened sales.

Sales (million €)



Factors influencing sales of the BASF Group

	Change in million €	Change in %
Volumes	1,689	2
Prices	(3,166)	(4)
Currencies	(767)	(1)
Acquisitions	63	0
Divestitures	(10,718)	(15)
Changes in scope of consolidation	–	–
Total change in sales	**(12,899)**	**(18)**

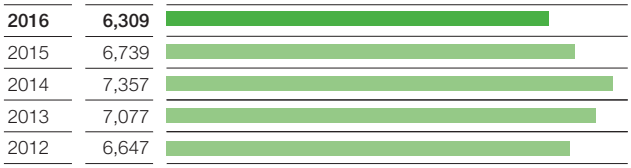
Income from operations

- EBIT before special items 6% below 2015 level, at €6,309 million
- At €6,275 million, EBIT matches prior-year level
- EBIT after cost of capital rises considerably

At €6,309 million, **income from operations (EBIT) before special items** was €430 million below the level of the previous year. This was largely a consequence of the considerable decline in the Oil & Gas segment resulting mainly from falling prices and the divestiture of the natural gas trading and storage business. The activities transferred to Gazprom had contributed around €260 million to EBIT before special items in 2015. In the Agricultural Solutions segment, EBIT before special items matched the previous year's level. We achieved a considerable increase in the chemicals business thanks to sharply improved contributions from the Performance Products and Functional Materials & Solutions segments.

For an explanation of the figure EBIT before special items, see page 28

EBIT before special items (million €)



Special items in EBIT amounted to minus €34 million in 2016, compared with minus €491 million in the previous year.

This development was mainly due to the special items recognized in other charges and income, which amounted to minus €44 million in 2016. In the previous year, other charges and income totaled minus €729 million, mostly comprising impairments on assets in the Oil & Gas segment.

Special charges from various restructuring measures came out to minus €394 million compared with minus €223 million in the previous year.

Divestitures in 2016 resulted in an earnings contribution of €431 million, after €476 million in the previous year, especially from the sale of the industrial coatings business and the polyolefin catalysts business in the Functional Materials & Solutions segment.

Integration costs for acquired businesses amounted to €27 million, compared with €15 million in 2015.

For the definition of special items, see page 28

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

Sales and earnings (million €)

		2016	2015	Change in %
Sales		57,550	70,449	(18.3)
Income from operations before depreciation and amortization (EBITDA) and special items		10,327	10,508	(1.7)
EBITDA		10,526	10,649	(1.2)
EBITDA margin	%	18.3	15.1	–
Amortization and depreciation[1]		4,251	4,401	(3.4)
Income from operations (EBIT)		6,275	6,248	0.4
Special items		(34)	(491)	93.1
EBIT before special items		6,309	6,739	(6.4)
Financial result		(880)	(700)	(25.7)
Income before taxes and minority interests		5,395	5,548	(2.8)
Income before minority interests		4,255	4,301	(1.1)
Net income		4,056	3,987	1.7
Earnings per share	€	4.42	4.34	1.8
Adjusted earnings per share	€	4.83	5.00	(3.4)

Sales and earnings by quarter in 2016[2] (million €)

		1st quarter	2nd quarter	3rd quarter	4th quarter	Full year
Sales		14,208	14,483	14,013	14,846	57,550
Income from operations before depreciation and amortization (EBITDA) and special items		2,843	2,674	2,490	2,320	10,327
EBITDA		2,812	2,790	2,437	2,487	10,526
Amortization and depreciation[1]		946	1,072	973	1,260	4,251
Income from operations (EBIT)		1,866	1,718	1,464	1,227	6,275
Special items		(40)	11	(52)	47	(34)
EBIT before special items		1,906	1,707	1,516	1,180	6,309
Financial result		(188)	(177)	(283)	(232)	(880)
Income before taxes and minority interests		1,678	1,541	1,181	995	5,395
Net income		1,387	1,092	888	689	4,056
Earnings per share	€	1.51	1.19	0.97	0.75	4.42
Adjusted earnings per share	€	1.64	1.30	1.10	0.79	4.83

Sales and earnings by quarter in 2015[2] (million €)

		1st quarter	2nd quarter	3rd quarter	4th quarter	Full year
Sales		20,067	19,078	17,424	13,880	70,449
Income from operations before depreciation and amortization (EBITDA) and special items		2,949	2,952	2,502	2,105	10,508
EBITDA		2,890	2,994	2,872	1,893	10,649
Amortization and depreciation[1]		895	955	983	1,568	4,401
Income from operations (EBIT)		1,995	2,039	1,889	325	6,248
Special items		(75)	(4)	286	(698)	(491)
EBIT before special items		2,070	2,043	1,603	1,023	6,739
Financial result		(164)	(152)	(175)	(209)	(700)
Income before taxes and minority interests		1,831	1,887	1,714	116	5,548
Net income		1,174	1,265	1,209	339	3,987
Earnings per share	€	1.28	1.38	1.31	0.37	4.34
Adjusted earnings per share	€	1.43	1.49	1.07	1.01	5.00

[1] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)

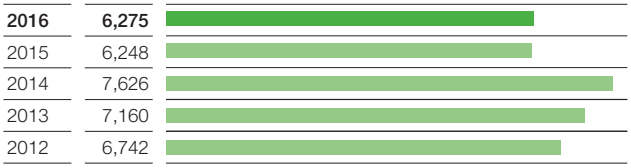
[2] Quarterly results not audited

Special items (million €)

	2016	2015
Restructuring measures	(394)	(223)
Integration costs	(27)	(15)
Divestitures	431	476
Other charges and income	(44)	(729)
Total special items in EBIT	**(34)**	**(491)**
Special items reported in financial result	–	23
Total special items in income before taxes and minority interests	**(34)**	**(468)**

At €6,275 million, **EBIT** for the BASF Group in 2016 matched the level of the previous year (2015: €6,248 million). Included in this figure is income from companies accounted for using the equity method, which rose from €251 million to €307 million.

EBIT (million €)



We once again earned a premium on our cost of capital in 2016. **EBIT after cost of capital** amounted to €1,136 million compared with €194 million in the previous year. The cost of capital fell by €809 million year-on-year. In addition to the reduction of the cost of capital percentage by one percentage point, this was primarily the result of the lower level of tied-up capital in inventories and operating receivables.

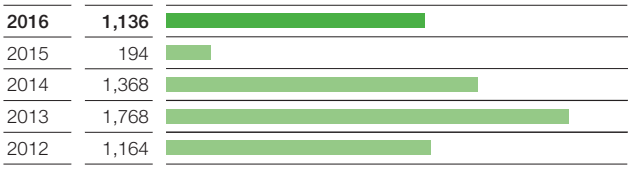
For an explanation of the figure EBIT after cost of capital, see page 28
The calculation of EBIT as part of our income statement is shown in the Consolidated Financial Statements on page 155

EBIT after cost of capital (million €)

	2016	2015
EBIT of BASF Group	6,275	6,248
– EBIT of Other	(1,091)	(985)
– Cost of capital[1]	6,230	7,039
EBIT after cost of capital	**1,136**	**194**

[1] In 2015, the cost of capital percentage was 11%, compared with 10% in 2016.

EBIT after cost of capital (million €)



Financial result and net income

- Financial result considerably below, and net income slightly above, prior year
- Earnings per share rise from €4.34 to €4.42

The **financial result** fell to minus €880 million in 2016, compared with minus €700 million in the previous year.

Income from shareholdings decreased from €9 million in 2015 to minus €17 million, predominantly due to lower income from the disposal of shareholdings.

The interest result declined from minus €425 million in 2015 to minus €482 million. This was predominantly from lower interest income, especially from investments in liquid funds, and higher interest expenses in connection with new bank loans outside of the eurozone.

Other financial result fell from minus €284 million in the previous year to minus €381 million in 2016, due mostly to the decline in interest payments capitalized as construction period interest and higher currency hedging costs.

Income before taxes and minority interests dipped from €5,548 million in 2015 to €5,395 million in 2016.

Income taxes were reduced from €1,247 million in 2015 to €1,140 million in 2016. At 21.1%, the tax rate was below the prior year's level (22.5%) primarily as a result of currency-related deferred tax income in Norway, whereas the previous year had included currency-related deferred tax expenses.

Income before minority interests decreased from €4,301 million to €4,255 million. Minority interests amounted to €199 million, compared with €314 million in 2015.

At €4,056 million, **net income** exceeded the previous year's level of €3,987 million. Earnings per share increased from €4.34 to €4.42.

For information on the items in the statement of income, see the Notes to the Consolidated Financial Statements from page 181 onward
For information on the tax rate, see the Notes to the Consolidated Financial Statements from page 185 onward

Additional figures for results of operations

- EBITDA before special items and EBITDA slightly down
- Adjusted earnings per share dip from €5.00 to €4.83

Aside from EBIT, EBIT before special items, and EBIT after cost of capital – figures drawn upon to steer the BASF Group – we also provide additional performance indicators in this report that are not defined by IFRS. They should not be viewed in isolation, but treated as supplementary information.

EBITDA before special items (million €)

	2016	2015
EBIT	6,275	6,248
– Special items	(34)	(491)
EBIT before special items	**6,309**	**6,739**
+ Amortization, depreciation and valuation allowances on intangible assets and property, plant and equipment before special items	4,018	3,769
EBITDA before special items	**10,327**	**10,508**

EBITDA (million €)

	2016	2015
EBIT	6,275	6,248
+ Amortization, depreciation and valuation allowances on intangible assets and property, plant and equipment	4,251	4,401
EBITDA	**10,526**	**10,649**

Income from operations before depreciation, amortization and special items (EBITDA before special items) and income from operations before depreciation and amortization (EBITDA) are figures that describe operational performance independent of age-related amortization and depreciation of assets and extraordinary valuation allowances (impairments or write-ups). Both figures are therefore particularly useful in cross-company comparisons. EBITDA before special items is also highly useful in making comparisons over time.

At €10,327 million, **EBITDA before special items** in 2016 was down by €181 million compared with the previous year; **EBITDA** amounted to €10,526 million, or €123 million below the level of 2015.

Return on assets (million €)

		2016	2015
Income before taxes and minority interests		5,395	5,548
+ Interest expenses		661	638
Income before taxes and minority interests and interest expenses		**6,056**	**6,186**
Total assets as of January 1		70,836	71,359
Total assets as of December 31		76,496	70,836
Average assets used		**73,666**	**71,098**
Return on assets	%	**8.2**	**8.7**

We calculate return on assets as income before taxes and minority interests, plus interest expenses, as a percentage of average assets used. This figure reflects the return independently of capital structure.

Return on assets was 8.2%, compared with 8.7% in the previous year. The decline was partly attributable to the acquisition of Chemetall in December 2016.

Adjusted earnings per share (million €)

		2016	2015
Income before taxes and minority interests		5,395	5,548
– Special items		(34)	(468)
+ Amortization and valuation allowances on intangible assets		560	801
– Amortization and valuation allowances on intangible assets contained in special items		52	200
Adjusted income before taxes and minority interests		**5,937**	**6,617**
– Adjusted income taxes		1,300	1,716
Adjusted income before minority interests		**4,637**	**4,901**
– Adjusted minority interests		197	312
Adjusted net income		**4,440**	**4,589**
Weighted average number of outstanding shares	in thousands	918,479	918,479
Adjusted earnings per share	€	**4.83**	**5.00**

Compared with earnings per share, this figure has been adjusted for special items as well as amortization of, and valuation allowances (impairments and write-ups) on, intangible assets. Amortization of intangible assets primarily results from the purchase price allocation following acquisitions. The amortization of intangible assets is therefore of a temporary nature. The effects of these adjustments on income taxes and on minority interests are also eliminated. This makes adjusted earnings per share a suitable measure for making comparisons over time and predicting future profitability.

In 2016, **adjusted earnings per share** amounted to €4.83 compared with €5.00 in the previous year.

For more information on the earnings per share according to IFRS, see the Notes to the Consolidated Financial Statements on page 181

Forecast/actual comparison[1]

	Sales		Income from operations (EBIT) before special items	
	2016 forecast	2016 actual	2016 forecast	2016 actual
Chemicals	slight decline	considerable decline	considerable decline	slight decline
Performance Products	at prior-year level	slight decline	slight increase	considerable increase
Functional Materials & Solutions	at prior-year level	slight increase	slight increase	considerable increase
Agricultural Solutions	slight increase	slight decline	slight increase	at prior-year level
Oil & Gas	considerable decline	considerable decline	considerable decline	considerable decline
Other	considerable decline	considerable decline	considerable increase	considerable decline
BASF Group	**considerable decline**	**considerable decline**	**slight decline**	**slight 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%).

Actual development compared with outlook for 2016

In 2016, BASF Group sales and EBIT before special items developed in line with our forecast: Sales declined considerably and EBIT before special items was slightly below the level of 2015. We just barely missed the volumes growth expected in all segments excluding the effects of acquisitions and divestitures: In the Agricultural Solutions segment, volumes were slightly down, while they rose as anticipated in the chemicals business[2] and the Oil & Gas segment. EBIT did not decline slightly as forecast, but rather matched the prior-year level. This was largely the result of special income from the divestitures completed in 2016 in the Functional Materials & Solutions segment. The earnings contribution from the chemicals business increased considerably in 2016, counter to our assumption that it would slightly decline. Mainly because of this, BASF Group EBIT after cost of capital rose considerably rather than decreasing considerably as we had expected.

Sales in the **Chemicals** segment fell considerably in 2016, whereas we had expected the decline to be slight. Increased volumes were able to partly offset for the sharp drop in prices, but less so than we had foreseen. For EBIT before special items, we observed only a slight, rather than considerable, year-on-year decline, essentially through the higher margins for isocyanates in the Monomers division.

Contrary to our expectations, sales in the **Performance Products** segment were slightly below the previous year's level instead of matching it. Volumes growth was less able than we had anticipated to offset price declines and negative portfolio and currency effects. EBIT before special items rose not only slightly, but rather considerably, in the Performance Products segment. In addition to significantly reduced fixed costs thanks to restructuring measures and strict cost management, improved margins also contributed to this development.

In the **Functional Materials & Solutions** segment, we were able to raise sales volumes in all divisions in 2016, more than compensating for price and currency effects. As a result, sales were not at the same level of the previous year, as forecast, but rose slightly instead. EBIT before special items likewise exceeded our expectations, with a considerable rather than slight increase.

For the **Agricultural Solutions** segment, we had anticipated slight growth in both sales and EBIT before special items. Due especially to dampened demand for insecticides in South America and fungicides in Europe, however, we posted a slight decrease in sales volumes instead of the expected increase. Negative currency effects also dampened sales. Through strict cost management, EBIT before special items reached the prior year's level despite the slight decline in sales.

In the **Oil & Gas** segment, sales and EBIT before special items fell considerably as expected. We expanded our production volumes in 2016 in line with our forecast.

Sales in **Other** declined considerably, corresponding to our expectations. EBIT before special items, however, was considerably below rather than considerably above the level of the previous year. This was largely attributable to valuation effects for our long-term incentive program.

In 2016, we invested a total of €3.9 billion in capital expenditures[3], less than the anticipated level of around €4.2 billion. **Investments** in the Oil & Gas and Performance Products segments in particular were below the values considered in our planning.

For information on our expectations for 2017, see page 122 onward

[2] Our chemicals business comprises the Chemicals, Performance Products und Functional Materials & Solutions segments.

[3] Excluding additions to property, plant and equipment resulting from acquisitions, capitalized exploration, restoration obligations and IT investments

Net assets

Assets

	December 31, 2016		December 31, 2015	
	Million €	%	Million €	%
Intangible assets	15,162	19.8	12,537	17.7
Property, plant and equipment	26,413	34.5	25,260	35.7
Investments accounted for using the equity method	4,647	6.1	4,436	6.3
Other financial assets	605	0.8	526	0.7
Deferred taxes	2,513	3.3	1,791	2.5
Other receivables and miscellaneous assets	1,210	1.6	1,720	2.4
Noncurrent assets	**50,550**	**66.1**	**46,270**	**65.3**
Inventories	10,005	13.1	9,693	13.7
Accounts receivable, trade	10,952	14.3	9,516	13.4
Other receivables and miscellaneous assets	3,078	4.0	3,095	4.4
Marketable securities	536	0.7	21	.
Cash and cash equivalents	1,375	1.8	2,241	3.2
Current assets	**25,946**	**33.9**	**24,566**	**34.7**
Total assets	**76,496**	**100.0**	**70,836**	**100.0**

Assets

- Rise in both current and noncurrent assets
- Noncurrent assets especially boosted by Chemetall acquisition

Amounting to €76,496 million, the level of total assets was €5,660 million above that of the previous year.

Noncurrent assets rose by €4,280 million to €50,550 million. The €2,625 million increase in intangible assets was mainly due to the Chemetall acquisition. Additions amounted to €2,881 million, €1,552 million of which was goodwill. Currency effects increased intangible assets by €409 million. Amortization[1] reduced them by €560 million and disposals by €91 million.

The value of property, plant and equipment rose by €1,153 million to €26,413 million. Additions amounted to €4,377 million, €4,222 million of which was to investments, putting them above the level of depreciation[1], which amounted to €3,691 million. Additions from acquisitions amounted to €155 million and arose especially from the Chemetall acquisition. Currency effects increased property, plant and equipment by €570 million. Disposals reduced this item by €242 million, €97 million of which was attributable to divestitures.

Investments accounted for using the equity method rose by €211 million to €4,647 million, primarily as a result of additions and currency effects.

Other financial assets increased by €79 million to €605 million and deferred tax assets rose by €722 million to €2,513 million, especially from the increase in provisions for pensions and similar obligations.

Other receivables and miscellaneous assets were down by €510 million to €1,210 million year-on-year. This was largely the result of a decline in the positive fair value of derivatives and lower receivables from loans as well as a lower level of defined benefit assets.

The value of current assets rose by €1,380 million to €25,946 million. The €1,436 million increase in trade accounts receivable resulted mainly from higher year-on-year sales in the fourth quarter as well as from currency effects. Inventories grew by €312 million; other receivables and miscellaneous assets fell by €17 million. With the acquisition of Chemetall on December 14, 2016, these three items increased by €276 million. Marketable securities rose by €515 million due to the optimization of short-term financial investments.

At €1,375 million, cash and cash equivalents were €866 million below the level of December 31, 2015.

For more on the composition and development of individual asset items, see the Notes to the Consolidated Financial Statements from page 189 onward

[1] Including impairments and write-ups

Financial position

Equity and liabilities

	December 31, 2016		December 31, 2015	
	Million €	%	Million €	%
Paid-in capital	4,306	5.6	4,317	6.1
Retained earnings	31,515	41.2	30,120	42.5
Other comprehensive income	(4,014)	(5.2)	(3,521)	(5.0)
Minority interests	761	1.0	629	0.9
Equity	**32,568**	**42.6**	**31,545**	**44.5**
Provisions for pensions and similar obligations	8,209	10.7	6,313	8.9
Other provisions	3,667	4.8	3,369	4.8
Deferred taxes	3,317	4.3	3,381	4.8
Financial indebtedness	12,545	16.4	11,123	15.7
Other liabilities	873	1.2	869	1.2
Noncurrent liabilities	**28,611**	**37.4**	**25,055**	**35.4**
Accounts payable, trade	4,610	6.0	4,020	5.7
Provisions	2,802	3.7	2,540	3.6
Tax liabilities	1,288	1.7	1,082	1.5
Financial indebtedness	3,767	4.9	4,074	5.7
Other liabilities	2,850	3.7	2,520	3.6
Current liabilities	**15,317**	**20.0**	**14,236**	**20.1**
Total equity and liabilities	**76,496**	**100.0**	**70,836**	**100.0**

Equity and liabilities

- **Equity ratio at 42.6%, compared with 44.5% in previous year**
- **Net debt rises from €12,935 million to €14,401 million**

Equity rose by €1,023 million to €32,568 million compared with the previous year. Retained earnings increased by €1,395 million to €31,515 million. Other comprehensive income was reduced by €493 million to minus €4,014 million, primarily because of the remeasurement of defined benefit plans. The equity ratio was 42.6% (2015: 44.5%).

Compared with the end of 2015, noncurrent liabilities grew by €3,556 million to €28,611 million. Provisions for pensions and similar obligations increased by €1,896 million, mainly as a result of the reduced discount rate in all relevant currency zones. Noncurrent financial indebtedness rose by €1,422 million. A bond issued in 2013 with a maturity until 2021 was tapped, increasing its volume by €300 million to €1 billion; in addition, new bonds in EUR, GBP and HKD were issued with an equivalent value totaling €2.6 billion at the end of the year and maturities between 4 and 15 years, in part to finance the acquisition of Chemetall. Four bonds in EUR and GBP due in 2017 with an equivalent value totaling around €1.4 billion were reclassified to current financial indebtedness. Other provisions rose by €298 million while other liabilities matched the prior-year level. Deferred taxes decreased by €64 million.

Current liabilities grew by €1,081 million to €15,317 million. All items contributed to this development, with the exception of financial indebtedness. Trade accounts payable increased by €590 million, current provisions by €262 million, tax liabilities by €206 million and current other liabilities by €330 million. Current financial indebtedness fell by €307 million. This was largely on account of the €681 million year-on-year decrease in outstanding U.S. dollar commercial paper as of December 31, 2016, as well as the scheduled repayment of EUR bonds totaling €900 million. The previously mentioned reclassification of bonds had a counterbalancing effect.

In total, financial indebtedness grew by €1,115 million to €16,312 million. The average maturity of our financial indebtedness was 5.6 years (2015: 5.2 years). Net debt grew by €1,466 million to €14,401 million. This 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 on the composition and development of individual liability items, see the Notes to the Consolidated Financial Statements from page 196 onward

For more on the development of the balance sheet, see the Ten-Year Summary on page 234

Net debt (million €)

	Dec. 31, 2016	Dec. 31, 2015
Noncurrent financial indebtedness	12,545	11,123
+ Current financial indebtedness	3,767	4,074
Financial indebtedness	**16,312**	**15,197**
– Marketable securities	536	21
– Cash and cash equivalents	1,375	2,241
Net debt	**14,401**	**12,935**

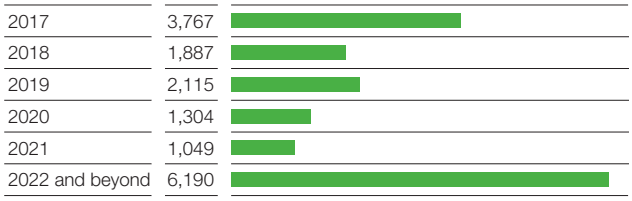
Financing policy and credit ratings

- Financing principles remain unchanged
- "A" ratings confirmed

Our financing policy is aimed at ensuring 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 international capital markets.

We strive to maintain at least a solid "A" rating, which allows us unrestricted access to money and capital markets. Our financing measures are aligned with our operative 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 €)



BASF has good credit ratings, especially in comparison with competitors in the chemical industry. Rating agency Moody's last confirmed their rating of "A1/P-1/outlook stable" on November 28, 2016. Standard & Poor's adjusted their BASF rating from "A+/A-1/outlook negative" to "A/A-1/outlook stable" on March 14, 2016, and confirmed it most recently on August 10, 2016. This adjustment was largely based on the weaker market environment, especially for basic and agricultural chemicals, limited overall volumes growth, and the considerable drop in the price of crude oil. Uncertainty with regard to economic development in China was taken into consideration, as well. Rating agency Scope has also been evaluating our creditworthiness since September 2016. They rated BASF at "A/S-1/outlook stable."

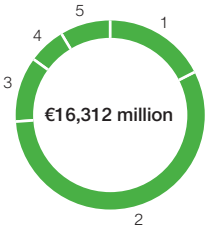
We have solid financing. Corporate bonds form the basis of our medium to long-term debt financing. These are issued in euros and other currencies with different maturities as part of our €20 billion debt issuance program. The goal is to create a balanced maturity profile and diverse range of investors, and to 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. On December 31, 2016, $1,089 million worth of commercial paper was outstanding under this program. 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 credit lines were not used at any point in 2016. Our external financing is therefore largely independent of short-term fluctuations in the credit markets.

Financing instruments (million €)

1	Bank loans	2,855
2	EUR bonds	9,243
3	USD bonds	1,790
4	USD commercial paper	1,033
5	Other	1,391



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 on the financing tools used, see the Notes to the Consolidated Financial Statements from page 208 onward

To minimize risks and exploit 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 Group and limiting interest risks. Interest rate hedging transactions are therefore conducted with banks in order to turn selected liabilities to the capital markets from fixed interest to variable rate or vice versa.

Statement of Cash Flows

■ **Cash provided by operating activities significantly, and free cash flow slightly, down year-on-year**

At €7,717 million, **cash provided by operating activities** in 2016 was €1,729 million below the level of the previous year. Contributing to this was the lower year-on-year level of cash inflow from changes in net working capital, which contains changes in inventories and receivables as well as in operating liabilities and other provisions. This resulted primarily from the targeted reduction of inventories in 2015. Miscellaneous items especially included the transfer of disposal gains into cash used in investing activities. In 2015, this item had primarily included the reclassification of gains from the asset swap with Gazprom.

Cash used in investing activities amounted to €6,490 million in 2016 compared with €5,235 million in 2015. Payments made for property, plant and equipment and intangible assets were at €4,145 million, below both the prior year's level (€5,812 million) and the level of amortization and depreciation of intangible assets and property, plant and equipment and financial assets (€4,291 million).

Acquisitions and divestitures in 2016 resulted in net payments made of €2,164 million compared with €436 million in net payments received in 2015. The acquisition of Chemetall was primarily responsible.

Cash outflow of €181 million from financial assets and other items in 2016 was mainly attributable to the acquisition of marketable securities. In 2015, the decline in loan receivables in particular had led to €141 million in payments received.

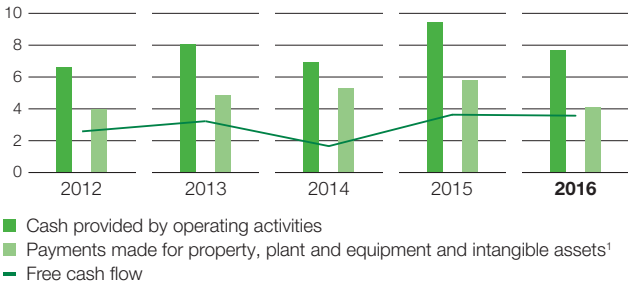
For more on investments and acquisitions, see page 37 onward

Cash used in financing activities amounted to €2,160 million in 2016, compared with €3,673 million in the previous year. Contributions from minority interests to capital increases in Group companies led to a cash inflow of €28 million in 2016. Changes in financial liabilities resulted in cash inflow of €579 million. This was largely the result of issuing new bonds as well as of tapping an existing bond; the scheduled repayment of three bonds and scaling back BASF SE's U.S. dollar commercial paper program both had a counterbalancing effect. In 2016, dividends of €2,664 million were paid to shareholders of BASF SE and €103 million to minority interests.

Cash and cash equivalents fell by €933 million, amounting to €1,375 million as of December 31, 2016.

Free cash flow, which is what remains after subtracting payments made for property, plant and equipment and intangible assets from cash provided by operating activities, fell to €3,572 million compared with €3,634 million in 2015. The decline in cash provided by operating activities was nearly offset by lower payments made for property, plant and equipment and intangible assets.

Cash flow (billion €)



[1] Including investments to the extent that they already had an effect on cash

Statement of cash flows (million €)

	2016	2015
Net income	4,056	3,987
Depreciation and amortization of intangible assets, property, plant and equipment, and financial assets	4,291	4,448
Changes in net working capital	104	1,347
Miscellaneous items	(734)	(336)
Cash provided by operating activities	**7,717**	**9,446**
Payments made for property, plant and equipment and intangible assets	(4,145)	(5,812)
Acquisitions/divestitures	(2,164)	436
Financial assets and other items	(181)	141
Cash used in investing activities	**(6,490)**	**(5,235)**
Capital increases/repayments and other equity transactions	28	66
Changes in financial liabilities	579	(933)
Dividends	(2,767)	(2,806)
Cash used in financing activities	**(2,160)**	**(3,673)**
Net changes in cash and cash equivalents	(933)	538
Cash and cash equivalents at the beginning of the year and other changes	2,308	1,703
Cash and cash equivalents at the end of the year	**1,375**	**2,241**

Business review by segment

Segment overview (million €)

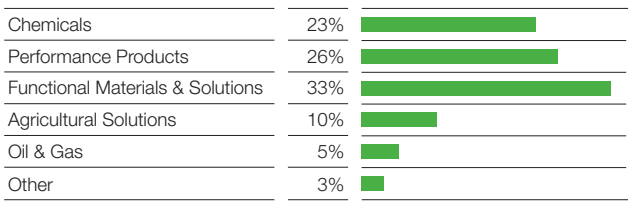
	Sales		Income from operations before depreciation and amortization (EBITDA)		Income from operations (EBIT) before special items	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Chemicals	13,461	14,670	3,169	3,090	2,064	2,156
Performance Products	15,002	15,648	2,522	2,289	1,745	1,366
Functional Materials & Solutions	18,732	18,523	2,906	2,228	1,946	1,649
Agricultural Solutions	5,569	5,820	1,305	1,321	1,087	1,090
Oil & Gas	2,768	12,998	1,596	2,587	517	1,366
Other	2,018	2,790	(972)	(866)	(1,050)	(888)
	57,550	**70,449**	**10,526**	**10,649**	**6,309**	**6,739**

Segment overview (million €)

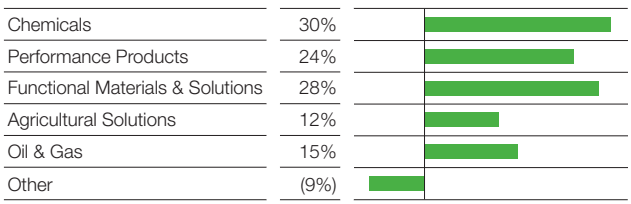
	Income from operations (EBIT)		Assets		Investments[1]	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**
Chemicals	1,983	2,131	13,486	12,823	1,213	1,859
Performance Products	1,648	1,340	14,549	14,232	864	964
Functional Materials & Solutions	2,199	1,607	17,359	13,341	3,679	854
Agricultural Solutions	1,037	1,083	8,899	8,435	266	402
Oil & Gas	499	1,072	12,829	12,373	1,115	1,823
Other	(1,091)	(985)	9,374	9,632	121	111
	6,275	**6,248**	**76,496**	**70,836**	**7,258**	**6,013**

[1] Additons to property, plant and equipment (thereof from acquisitions: €155 million in 2016 and €91 million in 2015) and intangible assets (thereof from acquisitions: €2,789 million in 2016 and €136 million in 2015)

Contributions to total sales by segment



Contributions to EBITDA by segment



Sales[1] (million €)

	1st quarter		2nd quarter		3rd quarter		4th quarter	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Chemicals	3,149	3,866	3,373	3,975	3,377	3,640	3,562	3,189
Performance Products	3,783	4,038	3,846	4,084	3,771	3,899	3,602	3,627
Functional Materials & Solutions	4,408	4,584	4,703	4,916	4,660	4,517	4,961	4,506
Agricultural Solutions	1,780	1,898	1,459	1,678	1,049	1,077	1,281	1,167
Oil & Gas	611	4,993	617	3,668	618	3,606	922	731
Other	477	688	485	757	538	685	518	660
	14,208	**20,067**	**14,483**	**19,078**	**14,013**	**17,424**	**14,846**	**13,880**

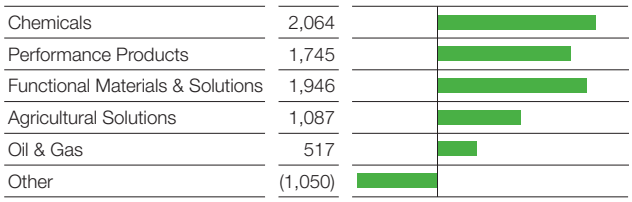
Income from operations (EBIT) before special items[1] (million €)

	1st quarter		2nd quarter		3rd quarter		4th quarter	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Chemicals	465	726	467	548	497	633	635	249
Performance Products	547	515	503	304	464	319	231	228
Functional Materials & Solutions	456	431	535	458	497	371	458	389
Agricultural Solutions	591	574	320	365	97	7	79	144
Oil & Gas	66	437	94	431	194	371	163	127
Other	(219)	(613)	(212)	(63)	(233)	(98)	(386)	(114)
	1,906	**2,070**	**1,707**	**2,043**	**1,516**	**1,603**	**1,180**	**1,023**

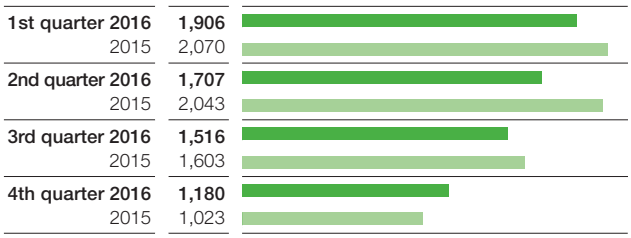
Income from operations (EBIT)[1] (million €)

	1st quarter		2nd quarter		3rd quarter		4th quarter	
	2016	**2015**	**2016**	**2015**	**2016**	**2015**	**2016**	**2015**
Chemicals	468	726	467	548	499	631	549	226
Performance Products	535	491	486	368	458	315	169	166
Functional Materials & Solutions	452	464	531	411	492	366	724	366
Agricultural Solutions	590	573	288	365	93	6	66	139
Oil & Gas	66	436	93	430	178	643	162	(437)
Other	(245)	(695)	(147)	(83)	(256)	(72)	(443)	(135)
	1,866	**1,995**	**1,718**	**2,039**	**1,464**	**1,889**	**1,227**	**325**

EBIT before special items by segment
(million €)



EBIT before special items BASF Group by quarter[1]
(million €)



[1] Quarterly results not audited

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.

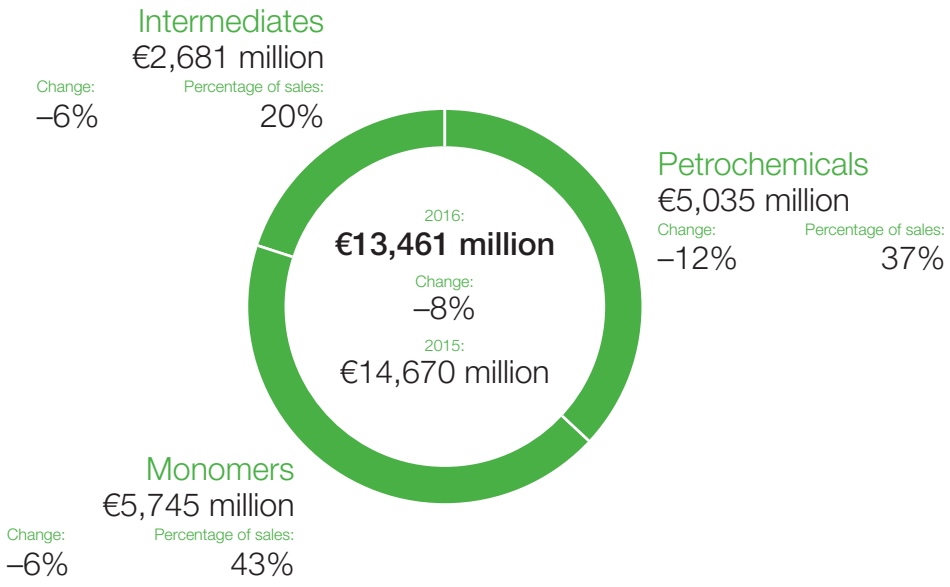
Divisions

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

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

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

Sales



Factors influencing sales

Volumes	3%
Prices	(11%)
Portfolio	0%
Currencies	0%
Sales	**(8%)**

Income from operations before special items
(million €)

2016	**2,064**
2015	2,156

Change:
minus €92 million

How we create value – an example

Biomass Balance Approach

A groundbreaking way of using renewable resources in the Verbund

Value for BASF

Externally certified products since introduction **>40**

Since 2013, we have been in a position to flexibly replace fossil resources in our current Verbund system with sustainably generated bio-based raw materials by feeding raw materials like biogas or bionaphtha right into the beginning of the value chain. The method is independently certified[1] and can be used in existing production facilities. Based on their formulations, we can already allocate and certify the proportion of biomass in more than 40 sales products. Extensions to this portfolio can be accomplished within a short amount of time and enable us to quickly react to growing interest in the use of renewable resources.

For more on the biomass balance approach, see page 94

Value for our customers and the environment

Increased use of renewable in place of fossil raw materials per product up to **100%**

The approach can be applied to many of our products and adjusted to customer specifications. Up to 100% of a product's fossil raw materials can be replaced by sustainably produced biomass while retaining identical product quality. Some of the products already certified include dispersions, superabsorbents and plastics. The certification makes it easier for our customers to place products on the market that have been produced with the help of renewable resources.

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 structure 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 to ensure the growth of the entire BASF Verbund. As a reliable supplier, we market our products to customers in downstream industries. We continually 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 in order 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 classical chemicals business: making use of economies of scale, the advantages of our Verbund, high capacity utilization, continuous optimization of access to raw materials, lean processes, and reliable, cost-effective logistics. Furthermore, we are constantly improving our global production structures and aligning these with regional market requirements.

In Ludwigshafen, we will strengthen the Verbund by replacing our acetylene plant, which occupies a central role for many products and value chains, with a modern, highly efficient plant by 2019.

[1] Certification standard "Renewable raw materials" of the independent inspection authority TÜV SÜD, Munich, Germany

Products, customers and applications

Division	Products	Customer industries and applications
Petrochemicals	Basic products: ethylene, propylene, butadiene, benzene, alcohols, solvents, plasticizers, alkylene oxides, glycols and acrylic monomers Specialties: special plasticizers such as Hexamoll®, Dinch®, special acrylates	Use in BASF-Verbund Chemical and plastics industry, detergent, automotive, packing and textile industries; production of paints, coatings, and cosmetics as well as oilfield, construction and paper chemicals
Monomers	Basic products: 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 Specialties: electronic chemicals[1], metal systems[1]	Use in BASF-Verbund Industries such as plastics, electronics, lumber, 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 *tert*-Butylamine, gas scrubbing chemicals, vinyl monomers, acid chlorides, chloroformates, chiral intermediates	Use in BASF-Verbund Plastics, coatings and pharmaceutical industries, production of detergents and cleaners as well as crop protection products and textile fibers

[1] Transferred to the Dispersions & Pigments division on January 1, 2017

Production capacities of significant products[2]

	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)	■	■	■		1,495,000
Polyamide 6 and 6.6	■	■	■		820,000
Polyamide precursors	■	■			1,010,000
PolyTHF®	■	■	■		350,000
Propionic acid	■		■		150,000
Propylene	■	■	■		2,610,000
Propylene oxide	■				675,000
Sulfuric acid	■				920,000
Plasticizers	■	■			535,000

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

Capital expenditures

Location	Project	Additional annual capacity through expansion (metric tons)	Total annual capacity (metric tons)	Startup
Caojing, China	Expansion: MDI plant[1]	240,000	480,000	2017
Freeport, Texas	Construction: ammonia plant[2]		750,000	2017
Geismar, Louisiana	Expansion: butanediol plant	n/a	160,000	2016
Korla, China	Construction: butanediole plant[3]		100,000	2016
	Construction: PolyTHF® plant		50,000	2016
Kuantan, Malaysia	Construction: 2-ethylhexanoic acid plant		30,000	2016
Ludwigshafen, Germany	Construction: TDI plant		300,000	2015/2016
	Replacement: acetylene plant	n/a	90,000	2019
Pasadena, Texas	Changeover of plasticizers production to dioctyl terephthalate (DOTP)	n/a	n/a	2017

[1] Operated by an associated company with Huntsman, Shanghai Huayi (Group) Company, Shanghai Chlor-Alkali Chemical Co. Ltd. and Sinopec Group Assets Management Corp.

[2] Operated by an associated company with Yara International ASA

[3] Operated by an associated company with Xinjiang Markor Chemical Industry Co. Ltd.

Segment data (million €)

		2016	2015	Change in %
Sales to third parties		13,461	14,670	(8)
Thereof	Petrochemicals	5,035	5,728	(12)
	Monomers	5,745	6,093	(6)
	Intermediates	2,681	2,849	(6)
Intersegmental transfers		4,836	5,300	(9)
Sales including intersegmental transfers		18,297	19,970	(8)
Income from operations before depreciation and amortization (EBITDA)		3,169	3,090	3
EBITDA margin	%	23.5	21.1	–
Amortization and depreciation[1]		1,186	959	24
Income from operations (EBIT)		1,983	2,131	(7)
Special items		(81)	(25)	.
EBIT before special items		2,064	2,156	(4)
EBIT after cost of capital		686	692	(1)
Assets		13,486	12,823	5
Investments[2]		1,213	1,859	(35)
Research and development expenses		182	207	(12)

[1] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)
[2] Additions to intangible assets and property, plant and equipment (including acquisitions)

Chemicals segment

- **Sales decrease by 8% to €13,461 million, due to lower prices**
- **Decline in EBIT before special items by 4% to €2,064 million mainly owing to higher fixed costs**

In the Chemicals segment, sales to third parties decreased by €1,209 million in 2016 to €13,461 million (volumes 3%, prices –11%, portfolio 0%, currencies 0%). The reason for this were lower prices as a result of slumped raw material prices, especially in the Petrochemicals division. We were able to raise our volumes overall.

Income from operations (EBIT) before special items fell by €92 million to €2,064 million, mainly because of higher fixed costs from new production plant startups. Lower margins in the Petrochemicals and Intermediates divisions also dampened EBIT before special items; higher margins for isocyanates in the Monomers division helped slow the decline. EBIT decreased by €148 million to €1,983 million. Special charges came mainly from the overhaul of caprolactam production in Europe.

For the Outlook for 2017, see page 122

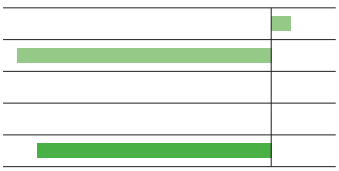
Petrochemicals

- **At €5,035 million, sales down by 12%, mainly due to price declines**
- **EBIT before special items slightly below previous year's value owing to lower margins**

In the Petrochemicals division, sales to third parties fell by €693 million to €5,035 million in 2016, largely owing to sharp declines in sales prices. These were predominantly brought about by raw material prices that were significantly below prior-year levels, especially in the first half of the year. Production was resumed at the Ellba C.V. joint operation plant in Moerdijk, Netherlands, enabling us to slightly increase overall sales volumes. In North America, volumes decreased mainly as a result of lower plant capacity utilization of the condensate splitter as well as of unscheduled shutdowns of the steam cracker in Port Arthur, Texas.

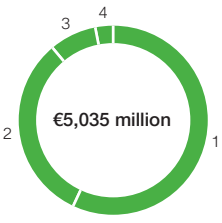
Petrochemicals – Factors influencing sales

Volumes	1%
Prices	(13%)
Portfolio	0%
Currencies	0%
Sales	**(12%)**



Petrochemicals – Sales by region
(Location of customer)

1	Europe	57%
2	North America	32%
3	Asia Pacific	8%
4	South America, Africa, Middle East	3%



EBIT before special items was slightly below the previous year's high level due to lower margins overall. Steam cracker margins fell sharply in North America, while in Europe, they once again matched the high level of 2015. Margins declined in the acrylic monomers and oxo alcohol businesses due to high product availability on the market. Margins developed

positively, however, for steam cracker products in Asia and for ethylene oxide and glycols in Europe, largely driven by product scarcity on the market in the first half of the year.

Monomers

- **Sales decrease by 6% to €5,745 million, mainly on account of lower prices**
- **EBIT before special items considerably higher as a result of increased isocyanate margins**

In the Monomers division, sales to third parties declined by €348 million to €5,745 million in 2016. This was basically the result of lower sales prices brought about by a drop in raw material costs, which particularly weighed down sales in the polyamide value chain. By contrast, prices increased for isocyanates.

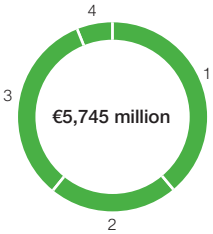
Volumes growth for isocyanates was able to more than compensate for the decline in the caprolactam business; sales volumes grew slightly as a result.

Monomers – Factors influencing sales

Volumes	4%
Prices	(8%)
Portfolio	(1%)
Currencies	(1%)
Sales	**(6%)**

Monomers – Sales by region
(Location of customer)

1	Europe	39%
2	North America	22%
3	Asia Pacific	33%
4	South America, Africa, Middle East	6%



Increased margins for isocyanates, particularly in the fourth quarter of 2016, led to a considerable increase in EBIT before special items. They were able to more than offset lower margins in the polyamide value chain as well as the higher fixed costs arising from the startup of new production plants. Special charges came mainly from the overhaul of caprolactam production in Europe.

In August 2016, we began production at the TDI complex in Ludwigshafen, Germany, and started supplying customers for the first time. The plant's gradual startup had begun in November 2015. Owing to a technical defect in November 2016, the TDI plant was still undergoing repair at the time of this report's publication.

Intermediates

- **Sales decrease by 6% to €2,681 million on account of lower prices**
- **Lower margins primarily responsible for considerable year-on-year decline in EBIT before special items**

Compared with 2015, sales to third parties decreased by €168 million to €2,681 million in the Intermediates division. Sales prices fell once again, due to a sharp drop in raw material prices. In the butanediol and derivatives market, intense competitive pressure from the startup of new capacities in Asia additionally weighed down prices.

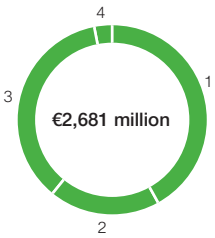
We were able to raise our volumes overall, predominantly driven by higher sales volumes of amines in North America and of polyalcohols, especially neopentylglycol, in Asia.

Intermediates – Factors influencing sales

Volumes	6%
Prices	(12%)
Portfolio	0%
Currencies	0%
Sales	**(6%)**

Intermediates – Sales by region
(Location of customer)

1	Europe	42%
2	North America	19%
3	Asia Pacific	36%
4	South America, Africa, Middle East	3%



EBIT before special items in 2016 was considerably below the previous year's level. This was mainly the result of substantially shrunken margins in the butanediol and derivatives business. Slowing the decline were improved margins in the polyalcohols business. Fixed costs rose year-on-year, mainly as a result of several production plants beginning operation in the second half of 2015. Special charges resulted predominantly from impairments on assets.

We expanded our butanediol capacities in Geismar, Louisiana, in 2016. With our partner PETRONAS, we started up a plant for 2-ethylhexanoic acid in Kuantan, Malaysia; in Korla, China, we have been producing polytetrahydrofuran (PolyTHF®) since July 2016 with our partner Markor.

Performance Products

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

Divisions

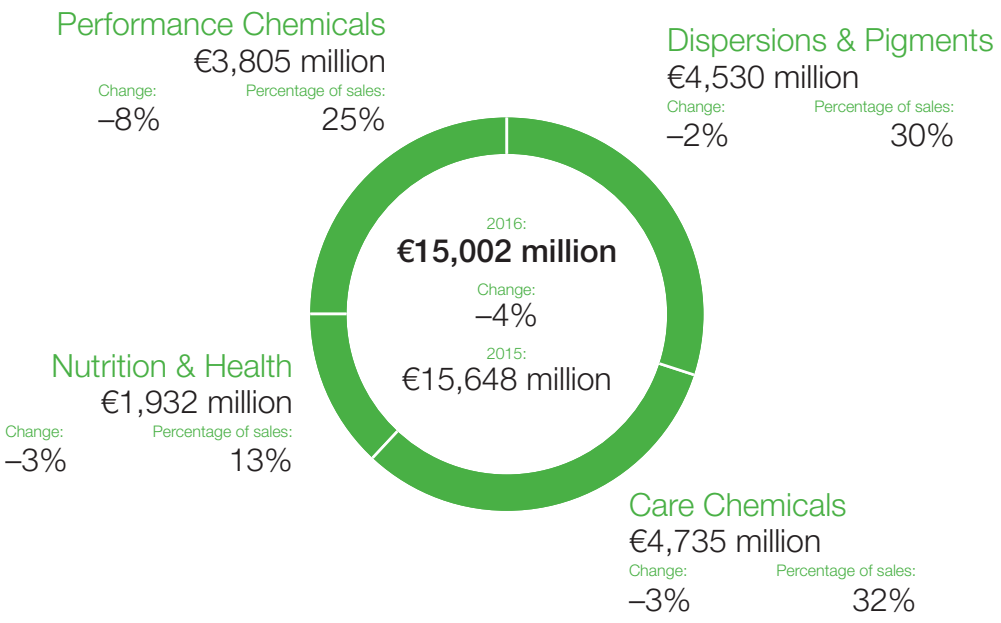
Dispersions & Pigments
Raw materials for the formulation of varnishes, coatings, printing and packaging inks, adhesives and construction materials

Care Chemicals
Ingredients for hygiene, personal care, home care and industrial & institutional cleaning businesses as well as for applications in the chemical industry

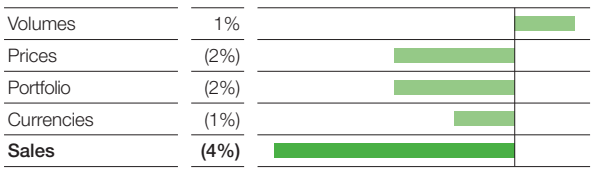
Nutrition & Health
Products for the food and feed industries, the flavor and fragrance industry and the pharmaceutical industry

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

Sales



Factors influencing sales



Income from operations before special items
(million €)

Change:
€379 million

How we create value – an example

Ingredients from RSPO-certified palm kernel oil

Attracting customers as a reliable supplier and supporting more sustainable cultivation

Value for BASF

In 2016, purchase of certified palm kernel oil increased to 158,000 metric tons

The sustainable cultivation of renewable raw materials is gaining in importance. Our customers in the cosmetic and detergents and cleaners industries are therefore increasingly making use of ingredients containing palm kernel oil that has been certified according to the criteria of the Round Table on Sustainable Palm Oil (RSPO). The availability of certified palm kernel oil is limited. And yet we were able to expand our purchasing volumes by around 32,000 to 158,000 metric tons in 2016, nearly doubling sales of certified products based on palm kernel oil. This allows us to meet increasing demand and participate in actively shaping the evolving market.

Value for our customers and the environment

Number of RSPO-certified production sites worldwide 19

With a total of 19 RSPO-certified production sites on four continents, we offer our customers a secure supply worldwide, helping them fulfill the obligations they took on for sustainable palm-based products. Our annual use of palm kernel oil and its derivatives requires an average of 785,000 hectares of cultivated acreage. As one of the largest global processors of palm kernel oil, we will continue our commitment to continuously improving sustainability along the entire value chain.

Strategy

- **Tailor-made products and solutions improve our customers' applications and processes**
- **Global presence ensures reliable supply to customers in all regions**
- **Pigments activities transferred to independent legal entities; new Electronic Materials business unit**

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 key 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.

Industry-specific specialties make up a major part of our product range. These products create additional value for our customers, which allows them to stand out from the competition. We develop new solutions together with our customers and strive for long-term partnerships which create profitable growth opportunities for both sides.

We pursue a different business model 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.

In July 2016, we transferred the global pigments activities to independent legal entities. The largest is BASF Colors & Effects GmbH, headquartered in Ludwigshafen, Germany. This reorganization allows for better adaptation to the challenges facing the pigment industry.

As of January 1, 2017, all resources of the BASF Group for the electronics industry, including the activities of the Monomers division for the semiconductor and display sectors, were combined into a new global business unit, Electronic Materials, allocated to the Dispersions & Pigments division. This will strengthen our position as a strategic partner to the major electronics manufacturers.

We began planning construction of a new vitamin A complex in Ludwigshafen, scheduled to start up in 2020.

Products, customers and applications

Division	Products	Customer industries and applications
Dispersions & Pigments	Polymer dispersions, pigments, resins, high-performance additives, formulation additives, electronic chemicals[1]	Raw materials for paints and coatings, adhesives industry, plastics processing industry, products for construction chemicals, printing and packaging industry, paper industry, specialties for the electronics and other 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 Solvents for crop protection product formulations and products for metal surface treatments Superabsorbents for baby diapers, adult incontinence products and feminine hygiene articles	Cosmetics industry, hygiene industry, detergent and cleaner industry, agricultural industry and technical applications
Nutrition & Health	Additives for the food and feed industries, such as vitamins, carotenoids, sterols, enzymes, emulsifiers and omega-3 fatty acids Flavors and fragrances, such as geraniol, citronellol, L-menthol and linalool Excipients for the pharmaceutical industry and selected, high-volume active ingredients, such as ibuprofen and omega-3 fatty acids	Food and feed industries, flavor and fragrance industry and pharmaceutical industry
Performance Chemicals	Antioxidants, light stabilizers, pigments 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 Auxiliaries for the production and treatment of leather and textiles 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, leather industry as well as paper industry and packaging made of paper

[1] Since January 2017

Production capacities of significant products[2]

	Sites				
Product	Europe	North America	Asia Pacific	South America, Africa, Middle East	Annual capacity (metric tons)
Anionic surfactants	■	■	■	■	600,000
Citral	■				40,000
Chelating agents	■	■		■	170,000
Methane sulfonic acid	■				30,000
Nonionic surfactants	■	■	■		630,000
Organic pigments	■	■	■	■	n/a
Polyisobutene	■		■		215,000
Superabsorbents	■	■	■	■	590,000

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

Capital expenditures

Location	Project	Startup
Antwerp, Belgium	Modification for new superabsorbent technology	2017
Besigheim, Germany	Expansion: production plant for bismuth vanadate pigments	2017
Bradford, England	Construction: production plant for bio-acrylamide	2016
Kuantan, Malaysia	Construction: aroma ingredients complex	2017
	Construction: polyisobutene plant	2017
Ludwigshafen, Germany	Expansion: lubricants plant	2016
	Expansion: production plant for resins (Laromer®)	2016
	Expansion: production plant for pigments (Paliocrom®)	2016
	Expansion: vinyl formamide plant	2016
	Expansion: polyvinylpyrrolidone plant	2017
	Expansion: production plant for resins (Basonat®)	2017
	Construction: production plant for vitamin A	2020
Nanjing, China	Expansion: polyacrylamide plant	2018
Shanghai, China	Modification: polyvinylpyrrolidone plant	2016

Segment data (million €)

		2016	2015	Change in %
Sales to third parties		15,002	15,648	(4)
Thereof	Dispersions & Pigments	4,530	4,629	(2)
	Care Chemicals	4,735	4,900	(3)
	Nutrition & Health	1,932	1,998	(3)
	Performance Chemicals	3,805	4,121	(8)
Intersegmental transfers		465	463	0
Sales including intersegmental transfers		15,467	16,111	(4)
Income from operations before depreciation and amortization (EBITDA)		2,522	2,289	10
EBITDA margin	%	16.8	14.6	–
Amortization and depreciation[1]		874	949	(8)
Income before operations (EBIT)		1,648	1,340	23
Special items		(97)	(26)	.
EBIT before special items		1,745	1,366	28
EBIT after cost of capital		209	(305)	.
Assets		14,549	14,232	2
Investments[2]		864	964	(10)
Research and development expenses		362	383	(5)

[1] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)

[2] Additions to intangible assets and property, plant and equipment (including acquisitions)

Performance Products segment

- **At €15,002 million, sales driven down 4% mainly by prices and divestitures**
- **EBIT before special items improves by 28% to €1,745 million, primarily due to lower fixed costs and higher margins**

At €15,002 million, sales to third parties in 2016 in the Performance Products segment were €646 million below the level of the previous year. This was primarily attributable to falling sales prices and the divestitures completed in 2015 (volumes 1%, prices –2%, portfolio –2%, currencies –1%). The drop in sales prices was largely the result of oil-price-related reductions in raw material costs, in addition to ongoing pressure on prices in the hygiene business. Sharp increases in vitamin prices in the Nutrition & Health division helped counter this development.

In addition, the portfolio measures taken in 2015 — in particular, the divestiture of parts of our pharmaceutical ingredients and services business and the paper hydrous kaolin activities, as well as the sale of the textile chemicals business — led to diminished sales in 2016. Currency effects slightly dampened sales in all divisions. We achieved volumes growth overall in the remaining business.

We raised income from operations (EBIT) before special items by €379 million to €1,745 million. This was mostly due to significantly reduced fixed costs thanks to restructuring measures and strict fixed cost management, in addition to improved margins. At €1,648 million, EBIT exceeded the previous year's level by €308 million. Special charges were predominantly attributable to restructuring measures. Special income arose particularly from the sale of the photoinitiator business.

For the Outlook for 2017, see page 122

Dispersions & Pigments

- **Sales at €4,530 million, 2% below 2015 level mostly owing to lower prices**
- **Considerable increase in EBIT before special items, primarily through higher margins**

At €4,530 million, sales to third parties were €99 million below the level of the previous year in the Dispersions & Pigments division. Lower sales prices weighed down by an oil-price-related drop in raw material costs were the main reason behind this slight decline. We were able to slightly raise overall sales volumes.

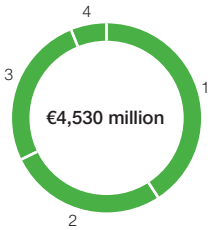
Demand in the dispersions business developed positively, especially in Asia and Europe, but sales as a whole fell on account of price declines. Sales of resins decreased mainly as a result of lower prices. The closure of the production plant in Kankakee, Illinois, also weighed down sales; growth impetus, on the other hand, came from Europe and Asia. In the additives business, rising volumes drove an increase in sales. In July 2016, we transferred our global pigments activities to independent legal entities. Sales in this sector increased slightly thanks largely to the positive business development in Asia; by contrast, sales fell in Europe.

Dispersions & Pigments – Factors influencing sales

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

Dispersions & Pigments – Sales by region
(Location of customer)

1	Europe	41%
2	North America	27%
3	Asia Pacific	26%
4	South America, Africa, Middle East	6%



We considerably improved EBIT before special items in 2016, predominantly thanks to higher margins. We held fix costs at the previous year's level through strict cost discipline. Special charges were below the level of the previous year, and were mostly related to restructuring measures. They were partly offset by gains from the disposal of the photoinitiator business.

Care Chemicals

- **Sales decrease by 3% to €4,735 million, mainly on account of lower prices**
- **EBIT before special items improves considerably thanks to reduced fixed costs**

In the Care Chemicals division, sales to third parties fell by €165 million to €4,735 million in 2016. This was predominantly the result of reduced prices due to lower raw material prices and ongoing intense competition in the hygiene business. Negative currency effects, especially from the Argentinian peso and Brazilian real, additionally dampened sales.

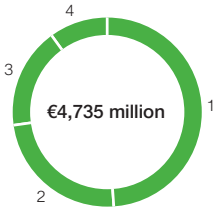
Sales volumes matched the prior-year level in a market environment that remained difficult. We increased sales volumes, especially in our business with ingredients for the detergents and cleaners industry, as well as in the Asia Pacific region. This compensated for lower demand, especially in the hygiene business and in South America.

Care Chemicals – Factors influencing sales

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

Care Chemicals – Sales by region
(Location of customer)

1	Europe	49%
2	North America	24%
3	Asia Pacific	17%
4	South America, Africa, Middle East	10%



We were able to reduce fixed costs through strict cost discipline, thereby more than offsetting the continued pressure on margins that came largely from the hygiene business. As a consequence, EBIT before special items rose slightly compared with the previous year. Special charges were predominantly attributable to restructuring measures.

In the fourth quarter of 2016, we started up the expanded production facility for chelating agents, including Trilon® M, at the site in Ludwigshafen, Germany. We increased production volumes of surfactants in Dahej, India, in 2016. We continued modification work for the new superabsorbent technology at the site in Antwerp, Belgium, and plan to complete this in 2017.

Nutrition & Health

- Sales down by 3% to €1,932 million after divestitures in pharmaceuticals business
- Considerable improvement in EBIT before special items, especially through lower fixed costs and higher margins and volumes

Sales to third parties in 2016 declined by €66 million to €1,932 million in the Nutrition & Health division. This slight reduction came from the sale of parts of our pharmaceutical ingredients and services business at the end of September 2015. We were able to raise volumes in all business areas. Demand grew, especially in the pharmaceuticals and animal nutrition businesses. Sales prices overall were also higher than in the previous year, primarily as a result of significant price increases for vitamins in the animal nutrition business. This allowed us to more than compensate for the decline in prices in the flavor and fragrance business brought about by falling raw material costs.

Nutrition & Health – Factors influencing sales

Volumes	3%
Prices	3%
Portfolio	(8%)
Currencies	(1%)
Sales	**(3%)**

Nutrition & Health – Sales by region
(Location of customer)

1	Europe	40%
2	North America	21%
3	Asia Pacific	29%
4	South America, Africa, Middle East	10%

EBIT before special items improved considerably compared with 2015 due to substantially reduced fixed costs as well as to higher margins and volumes. The reduction in fixed costs was largely thanks to restructuring measures and improved capacity utilization of our production plants. Special charges were primarily related to measures implemented to increase our competitiveness. Special income arose in part from the sale of the sterol site in Pasadena, Texas, in May 2016.

We concluded the modification of our production plant for polyvinylpyrrolidone in Shanghai, China, in 2016. With our partner, PETRONAS, we completed construction of the new aroma ingredients complex at the integrated chemical site in Kuantan, Malaysia. Production facilities for citral and L-menthol will be gradually started up.

Performance Chemicals

- Sales down 8% to €3,805 million, mainly due to lower prices and divestitures
- EBIT before special items rise slightly, mostly through reduction in fixed costs

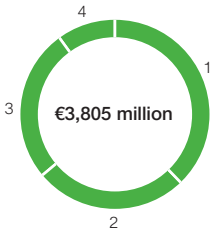
In the Performance Chemicals division, sales to third parties fell by €316 million to €3,805 million compared with 2015. This was largely the result of the lower sales prices brought about by a sharp drop in raw material prices, as well as the sale of the paper hydrous kaolin activities and the textile chemicals business. Negative currency effects additionally weighed down sales. We were able to raise our volumes overall, with growth impetus coming particularly from the plastic additives business and from the region Europe. Demand for oilfield and mining chemicals declined, however, in an environment fraught with lower oil and raw material prices.

Performance Chemicals – Factors influencing sales

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

Performance Chemicals – Sales by region
(Location of customer)

1	Europe	38%
2	North America	26%
3	Asia Pacific	26%
4	South America, Africa, Middle East	10%



We achieved a slight rise in EBIT before special items compared with the previous year. This was mainly due to lower fixed costs resulting from restructuring measures and strict cost discipline. Special charges arose partly on account of these restructuring measures.

At the Bradford, England, site, in 2016 we started up a world-scale bio-acrylamide production plant employing a new enzymatic catalysis process. This will strengthen our polymer production network and increase our competitiveness.

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

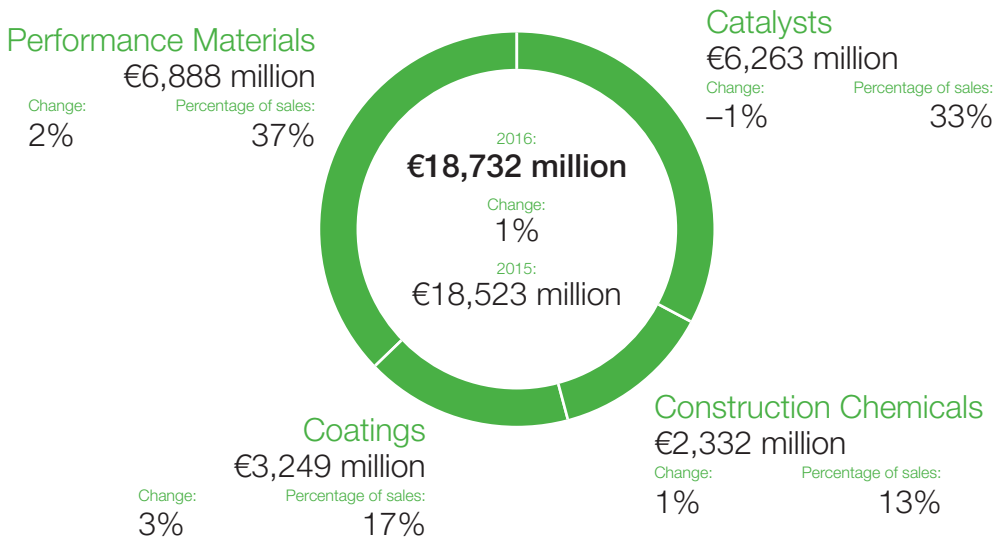
Catalysts
Automotive and process catalysts, battery materials, precious metal trading

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	7%
Prices	(5%)
Portfolio	0%
Currencies	(1%)
Sales	**1%**

Income from operations before special items
(million €)

2016	**1,946**
2015	1,649

Change:
€297 million

How we create value – an example

Ultraviolet (UV) primer filler

New automotive refinish product for shorter processing time in the workshop

Value for BASF

Expected average sales growth per year through 2021 >19%

Repairing paint damage requires a series of time-consuming steps: For example, primer and filler need to be applied separately, and each needs time for drying and cooling. Our product eliminates one step for steel surfaces, as it serves as both primer and filler. It can also be cured with UVA light, which, unlike conventional methods, generates no heat and thus requires no cooling time. After the successful launch in 2016, we expect annual sales of this UV primer filler to grow by more than 19% on average from 2017 to 2021.

Value for our customers

Time saved in painting up to 65%

The new UV primer filler allows our customers to save up to 65% of their time in repairing paint damage, depending on the surface material and paint shop equipment. Especially smaller and medium-sized repairs can be conducted more economically. The use of UVA light is also considerably more energy-efficient than other curing methods and prevents plastic parts, like bumpers, from warping. We market the UV primer filler under our brand names Glasurit® and R-M®.

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 use BASF's expertise as the world's leading chemical company to 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 contribute to sustainable development. Our specialties and system solutions enable customers to stand out from the competition.

One focus of our strategy is the ongoing optimization of our product portfolio and structures according to different regional market requirements as well as trends in our customer industries. We are positioning ourselves to grow profitably and faster than the market.

We aim to secure our leading market position in Europe, to profitably expand our position in the North American market and to selectively extend our activities in the growth regions of Asia, South America, Eastern Europe and the Middle East.

At the end of 2016, we acquired surface technology provider Chemetall from Abermarle Corp., Charlotte, North Carolina, thereby enhancing our coatings portfolio and supporting our aim to grow profitably in innovative and solution-focused businesses closer to end users.

Products, customers and applications

Operating division	Products	Customer industries and applications
Catalysts	Automotive and process catalysts 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 and industrial 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, wind power industry
Performance Materials	Engineering plastics, biodegradable plastics, standard foams, foam specialties, polyurethanes, epoxy systems for fiber-reinforced composites	Automotive manufacture, electrical engineering, packaging, games, sports and leisure, household, mechanical engineering, construction, medical technology, sanitation and water industry, solar thermal energy and photovoltaics, wind power industry

Capital expenditures

Location	Project	Startup
Caojing, China	Construction: chemical catalysts plant	2017
	Construction: automotive coatings plant	2017
Carmona, Philippines	Construction: concrete admixtures plant	2016
Chennai, India	Construction: plant for mobile emissions catalysts	2016
Colombo, Sri Lanka	Construction: concrete admixtures plant	2016
Gimcheon, South Korea	Construction: plant for Ultraform®	2018
Hanoi, Vietnam	Construction: concrete admixtures plant	2016
Klang, Malaysia	Capacity expansion: plant for flooring solutions	2016
Kolkata, India	Construction: concrete admixtures plant	2016
Rayong, Thailand	Construction: plant for mobile emissions catalysts	2018
Shanghai, China	Capacity expansion: plant for Cellasto®	2016
	Construction: technical competence center for automotive coatings	2018
Schwarzheide, Germany	Capacity expansion: compounding plant for Ultramid® and Ultradur®	2017
Totsuka, Japan	Optimization: coating production	2016
Yeosu, South Korea	Capacity expansion: plant for Ultrason®	2017

Segment data (million €)

		2016	2015	Change in %
Sales to third parties		18,732	18,523	1
Thereof	Catalysts	6,263	6,306	(1)
	Construction Chemicals	2,332	2,304	1
	Coatings	3,249	3,166	3
	Performance Materials	6,888	6,747	2
Intersegmental transfers		736	873	(16)
Sales including intersegmental transfers		19,468	19,396	0
Income from operations before depreciation and amortization (EBITDA)		2,906	2,228	30
EBITDA margin	%	15.5	12.0	–
Depreciation and amortization[1]		707	621	14
Income from operations (EBIT)		2,199	1,607	37
Special items		253	(42)	.
EBIT before special items		1,946	1,649	18
EBIT after cost of capital		813	96	.
Assets		17,359	13,341	30
Investments[2]		3,679	854	331
Research and development expenses		393	392	0

[1] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)

[2] Additions to intangible assets and property, plant and equipment (including acquisitions)

Functional Materials & Solutions segment

- **Sales grow by 1% to €18,732 million**
- **EBIT before special items increases by 18% to €1,946 million as a result of higher contributions from all divisions**

In the Functional Materials & Solutions segment, sales to third parties increased by €209 million to €18,732 million. By increasing volumes in all divisions, we were able to more than compensate for lower prices and mildly negative currency effects (volumes 7%, prices –5%, portfolio 0%, currencies –1%). The volumes growth was mainly attributable to higher demand for our products for the automotive industry. Business with the construction industry saw sales volumes at a high level overall.

Income from operations (EBIT) before special items grew by €297 million to €1,946 million compared with 2015. All divisions contributed to this considerable earnings increase, with particular support from higher margins in the Performance Materials division. Special income in 2016 especially pertained to the sale of the industrial coatings business as well as the divestiture of the business with polyolefin catalysts. EBIT rose by €592 million to €2,199 million.

For the Outlook for 2017, see page 122

Catalysts

- **Sales decline by 1% to €6,263 million, mainly due to lower prices**
- **EBIT before special items improves considerably, mostly through contribution from mobile emissions catalysts**

In the Catalysts division, sales to third parties declined in 2016 by €43 million to €6,263 million. This was predominantly the result of price decreases due to lower precious metal prices. Currency effects and the sale of our business with polyolefin catalysts had a negative impact on sales.

We achieved significant volumes growth, especially through increased volumes of mobile emissions catalysts. Greater demand for refinery catalysts and battery materials also contributed to this development. Lower volumes of chemical catalysts slowed this growth. In precious metal trading, sales declined by €52 million to €2,336 million due to lower prices.

Catalysts – Factors influencing sales

Volumes	9%
Prices	(8%)
Portfolio	(1%)
Currencies	(1%)
Sales	**(1%)**

Catalysts – Sales by region
(Location of customer)

1	Europe	42%
2	North America	29%
3	Asia Pacific	22%
4	South America, Africa, Middle East	7%

We considerably raised EBIT before special items year-on-year, mainly thanks to the higher contributions from the mobile emissions catalysts business. In addition, we were able to reduce fixed costs through strict cost discipline. Special charges resulted primarily from asset impairments and special income from the sale of the polyolefin catalysts business in June 2016.

Construction Chemicals

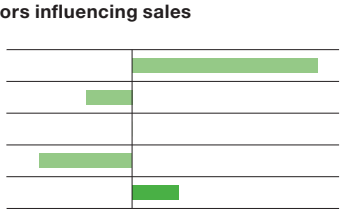
- **Sales rise by 1% to €2,332 million as a result of increased sales volumes**
- **Slight growth in EBIT before special items, thanks primarily to higher sales volumes**

In the Construction Chemicals division, sales to third parties reached €2,332 million, an increase of €28 million over 2015. Negative currency effects in all regions and lower prices overall were more than offset by higher sales volumes.

In Europe and North America, sales grew as a result of this volumes increase; prices remained stable. In the region South America, Africa, Middle East, lower volumes and negative currency effects were the main factors behind a drop in sales. Demand declined in Saudi Arabia especially, as the number of public construction projects fell due to low oil prices. Falling prices were largely responsible for reduced sales in Asia. We were able to increase volumes in the region.

Construction Chemicals – Factors influencing sales

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



Construction Chemicals – Sales by region
(Location of customer)

1	Europe	35%
2	North America	32%
3	Asia Pacific	18%
4	South America, Africa, Middle East	15%

Income from operations before special items was slightly higher than the level of 2015, primarily as a result of volumes growth.

Coatings

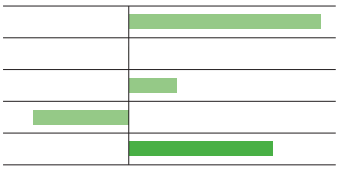
- **Sales increase by 3% to €3,249 million**
- **EBIT before special items considerably up, especially in automotive OEM coatings**

In the Coatings division, sales to third parties in 2016 grew by €83 million to €3,249 million. Higher sales volumes in North America and Asia were able to more than compensate for a volumes decline in South America. Prices remained stable overall; negative currency effects in all businesses had a dampening effect on sales.

Sales of automotive OEM coatings grew slightly thanks to higher volumes in North America and Asia. In the automotive refinish coatings business, we observed a slight sales decline as higher prices could only partly offset negative currency effects and slightly lower volumes. The slight sales growth in the industrial coatings business was attributable to higher volumes. Sales fell slightly in the decorative paints business in Brazil, despite significantly increased sales prices. This was mostly the result of overall weak demand as well as negative currency effects.

Coatings – Factors influencing sales

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



Coatings – Sales by region
(Location of customer)

1	Europe	39%
2	North America	20%
3	Asia Pacific	24%
4	South America, Africa, Middle East	17%

We were able to raise EBIT before special items considerably in 2016, especially through the contribution from automotive OEM coatings. Special income came from the sale of the industrial coatings business in December 2016.

Since December 14, 2016, the Coatings division has included the Chemetall business, which was acquired from Albemarle. This has had no significant influence on the result for the reporting year 2016.

Performance Materials

- **Sales grow by 2% to €6,888 million through higher volumes**
- **EBIT before special items rises considerably due to stronger margins and specialties business**

The Performance Materials division raised its sales to third parties by €141 million to €6,888 million in 2016. This was largely thanks to sharp volumes growth, primarily in Asia and Europe. Prices fell as a result of lower raw material prices. Negative currency effects and portfolio measures additionally dampened sales.

Our businesses with the automotive industry developed positively thanks to significantly higher demand in Asia. We were especially able to achieve substantial volumes growth for polyurethane systems, engineering plastics and the special elastomer Cellasto®.

In the consumer goods industry, sales were slightly down, primarily on account of lower prices while volumes remained stable. We particularly achieved higher volumes of engineering plastics, thermoplastic polyurethanes and biopolymers, while demand ebbed slightly for polyurethane systems.

Sales to the construction sector also declined as a result of falling prices and the divestiture of our white expandable polystyrene (EPS) business in North and South America in March 2015. Volumes development was positive for polyurethane systems and functional foams.

Performance Materials – Factors influencing sales

Volumes	8%
Prices	(4%)
Portfolio	(1%)
Currencies	(1%)
Sales	**2%**

Performance Materials – Sales by region
(Location of customer)

1	Europe	47%
2	North America	23%
3	Asia Pacific	27%
4	South America, Africa, Middle East	3%

EBIT before special items considerably exceeded that of the previous year. Contributing significantly to this were higher margins due to lower raw material prices and the positive development of our high-margin specialties business. Despite higher production costs from new plant startups, including the capacity expansion for Cellasto® in Shanghai, China, we were able to reduce fixed costs compared with 2015.

Agricultural Solutions

The Agricultural Solutions segment consists of the Crop Protection division. We develop and produce innovative solutions for the improvement of crop health and yields, and market them worldwide.

Indications and sectors

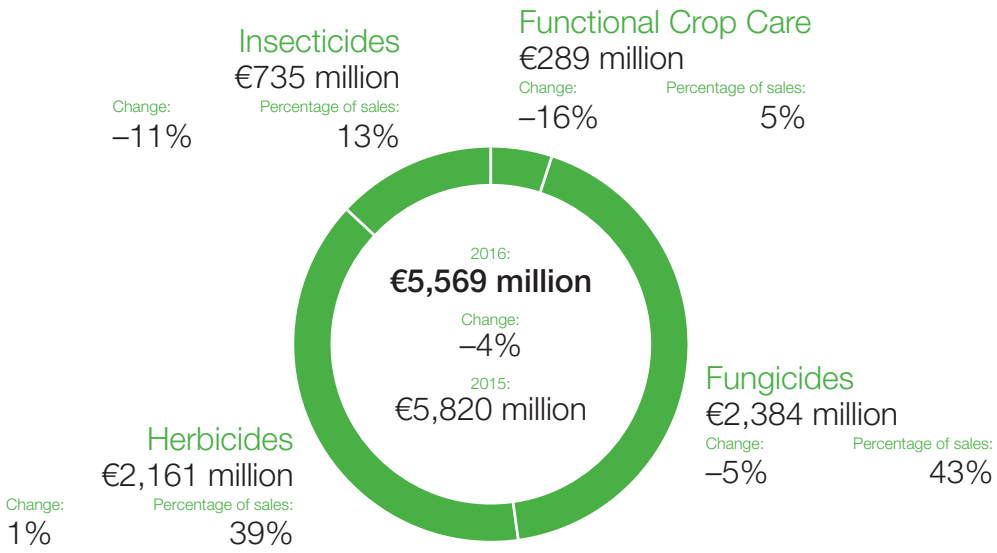
Fungicides
Protecting crops against harmful fungi

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

Sales



Factors influencing sales

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

Income from operations before special items
(million €)

2016	**1,087**
2015	1,090

Change:
minus €3 million

How we create value – an example

Inscalis®

Innovative insecticide solution for use with numerous plants

Value for BASF

Peak sales potential

>€100 million

Inscalis® is an innovative solution of a new chemical class for combating piercing and sucking pests. Inscalis® will play an important role in BASF's insecticide portfolio, and be used for various plants in numerous countries starting at the end of the decade. We expect peak sales potential of more than €100 million.

Value for our customers and the environment

Advantages compared with conventional insecticides

3-fold

Inscalis® offers a three-fold advantage compared with conventional insecticides. Effective in low doses, it is also characterized by low toxicity for beneficial insects such as bees and an alternative mode of action for combating the most important pests. For farmers, this means greater flexibility in application and higher yields with better quality.

Strategy

- Helping to feed a growing world population
- Long-term innovation strategy ensures future growth
- Development of solutions that go beyond conventional crop protection

Our strategy is based on long-term market trends. A key challenge of the future will be to ensure sufficient food for a growing world population. This means that farmers around the world need to increase their yields – and yet the natural resources for doing so, such as water and arable land, are limited. We see it as our duty to provide farmers with professional support in producing more – and more nutritious – food as efficiently as possible.

We are committed to the responsible treatment of our products and the environment. We offer our customers a broad portfolio of integrated solutions and constantly invest in our development pipeline to create chemical and biological innovations in crop protection.

Our research and development activities range from solutions for guarding plants against fungi, insects and weeds, to seeds and soil management, to plant health. For example, the Functional Crop Care business unit not only provides products for improving seeds and innovations for better soil management, but also biological and chemical technologies that make plants better able to withstand stress factors like heat, cold and nutrient deficiency.

We are intensifying our investment in growth markets and continuing to expand our good position in our core markets. In collaboration with seed companies, we benefit from the technological competence of our crop protection research. In addition, we work together with external partners to be able to offer the best solutions for our customers. With our own projects, jointly with partners like John Deere and in collaboration with farmers, we drive the development of integrated IT applications for modern, sustainable agriculture. One example is the Maglis® digital platform developed by BASF. Since its launch at the beginning of 2016, the BASF team has used Maglis® to support farmers in collecting, interpreting and monitoring a range of agricultural data. This enables them to optimize management and make better decisions in cultivating and marketing crops.

Products, customers and applications

Indications and sectors	Applications	Example products
Fungicides	Protecting crops from harmful fungal infections; improving plant health	Boscalid, metiram, dimethomorph, Initium®, metrafenone, F 500®, Xemium®, AgCelence® (umbrella brand)
Herbicides	Reducing competition from weeds for water and nutrients	Kixor®, dicamba, pendimethalin, imazamox, topramezone, Clearfield® herbicide tolerance system, dimethenamid-P
Insecticides	Combating insect pests in agriculture and beyond, such as in the fields of public health, professional pest control and landscape maintenance	Fipronil, alpha-cypermethrin, chlorfenapyr, teflubenzuron, Nealta®, Termidor® to guard against termite infestation, Interceptor® mosquito nets to protect against malaria
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	Vizura®, Limus®, Systiva®, Vault® HP, Nodulator® PRO, Flo Rite®, Integral®, Serifel®

Investments

In 2016, we invested €205 million in property, plant and equipment. Most of this investment amount is attributable to the expansion of dicamba production capacity in Beaumont, Texas. We also increased capacities for the fungicide Xemium® and enlarged a formulation plant for fungicides in Tarragona, Spain. Furthermore, we are continuing to invest in innovative solutions that go beyond classic crop protection. One example from the area of Functional Crop Care is our new research and development center for biological crop protection and seed solutions in Limburgerhof, Germany, which combines expertise in chemical and biological solutions. In order to continue meeting the ongoing high demand for our innovative products in the future, we will invest around €840 million in developing and expanding our infrastructure and in our production and formulation capacities for active ingredients between 2017 and 2021.

Plant biotechnology at BASF

BASF's activities in the field of plant biotechnology are part of the Bioscience Research technology platform. Research and development expenses, sales, earnings and all other data are not included in the Agricultural Solutions segment; they are reported in Other.

With our network of research sites, we help farmers meet the growing demand for increased agricultural productivity as well as better nutrition. As part of the regular review of our portfolio, we focused our research activities in 2016 on projects with the highest business and technological potential. These projects included the development of crops characterized by higher yields and stress resistance, herbicide tolerance, or resistance against certain diseases. Part of this realignment involved adapting our site structure in North America and Europe; around 350 of approximately 750 positions were cut. Our product marketing takes place in part together with leading seed providers.

Segment data (million €)

		2016	2015	Change in %
Sales to third parties		5,569	5,820	(4)
Intersegmental transfers		33	28	18
Sales including intersegmental transfers		5,602	5,848	(4)
Income from operations before depreciation and amortization (EBITDA)		1,305	1,321	(1)
EBITDA margin	%	23.4	22.7	–
Depreciation and amortization[1]		268	238	13
Income from operations (EBIT)		1,037	1,083	(4)
Special items		(50)	(7)	.
EBIT before special items		1,087	1,090	0
EBIT after cost of capital		172	154	12
Assets		8,899	8,435	6
Investments[2]		266	402	(34)
Research and development expenses		489	514	(5)

[1] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)
[2] Additions to intangible assets and property, plant and equipment (including acquisitions)

Agricultural Solutions segment

- **Lower volumes and currency effects lead to 4% decline in sales to €5,569 million**
- **At €1,087 million, EBIT before special items matches prior-year level**

In the Agricultural Solutions segment, sales to third parties in 2016 fell by €251 million to €5,569 million as a result of lower sales volumes and negative currency effects. The challenging market environment for crop protection products particularly dampened demand for insecticides in South America and for fungicides in Europe. Prices matched the level of 2015 (volumes –2%, prices 0%, currencies –2%).

In **Europe**, sales declined by €149 million to €1,958 million. This was mainly attributable to weaker demand for fungicides in the first half of the year. Especially in Germany and Poland, volumes fell as a result of unfavorable weather conditions and our customers' high inventory levels. Price increases, primarily in central and eastern Europe, including Russia, were unable to offset the lower volumes and negative currency effects.

Sales in **North America** decreased by €69 million to €1,801 million, predominantly because of lower prices, especially for fungicides in the United States. Higher demand for fungicides and insecticides in the United States and for herbicides in Canada helped support volumes development.

At €549 million, sales in **Asia** exceeded the previous year's level by €24 million. We were able to raise sales volumes in all indications, largely driven by substantially higher demand for herbicides in India and the overall positive volumes development in Indonesia and Australia. Currency effects slightly dampened sales.

In **South America**, sales fell by €57 million to €1,261 million, basically due to lower insecticide volumes in Brazil. This was primarily attributable to our customers' high inventory levels and critical economic situation, as well as the shrinking market for insecticides in the region. Price increases were unable to fully compensate for the drop in volumes.

Strict cost management enabled us to reduce fixed costs in the Agricultural Solutions segment. Thanks to this development, income from operations (EBIT) before special items matched the previous year's level at €1,087 million despite the sales decline. Due to special charges from the optimization of our production structure, EBIT decreased by €46 million to €1,037 million.

For the Outlook for 2017, see page 122

Crop Protection – Sales by region
(Location of customer)

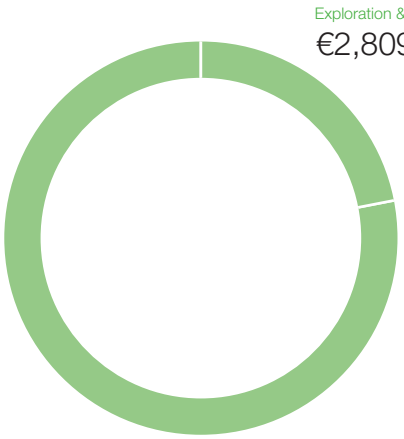
1	Europe	35%
2	North America	32%
3	Asia Pacific	10%
4	South America, Africa, Middle East	23%

Oil & Gas

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 – focus regions in which Wintershall has a high level of regional and technological expertise. We are also active in the transport of natural gas in Europe with our Russian partner Gazprom.

Sales

2015:
€12,998 million



Change:
–79%

2016:
€2,768 million

Factors influencing sales

Volumes	3%	
Prices/currencies	(3%)	
Portfolio	(79%)	
Sales	**(79%)**	

Income from operations before special items
(million €)

2016	**517**	
2015	1,366	

Change:
minus €849 million

How we create value – an example

Optimized oil treatment and storage

Reconstruction and process optimization of tank farm in Barnstorf

Value for BASF

Reduction of investment costs around 25%

An innovative construction concept enabled us to save around 25% in investment costs while reconstructing our tank farm in Barnstorf, Germany. Typical construction methods would have meant replacing the previous twelve crude oil and water tanks with five new ones, and building individual facilities for separating the oil from associated substances and storing it. Because our new tanks allow both at the same time, four new tanks were sufficient. These can be employed more flexibly and economically and ensure lower maintenance costs.

Value for the environment

Reduction of annual energy demand around 95%

The new, optimized tanks are especially safe and do not require large concrete containment systems underneath. Instead, the oil tanks feature an accessible annular gap, while the water tanks are constructed with vacuum-monitored double walls. This increases their energy efficiency: Thanks to the thermally insulating air layer in the annular gap and the especially well insulated double floor, the amount of energy needed to heat the oil tanks has been reduced by around 95% over the course of a year.

Strategy

- **Growth through exploration, acquisitions, strategic partnerships and technological expertise**
- **Contribution to securing Europe's natural gas supply**

In the future, crude oil and natural gas will continue to contribute significantly toward covering the rising energy demand of a growing world population. That is why we invest in the exploration and production of oil and gas, primarily in our core regions Europe, North Africa, Russia and South America. We want to establish the Middle East as another core region in our portfolio.

Selected collaborations and strategic partnerships, innovative technologies and the responsible development and production of hydrocarbons all form the basis of our growth-oriented strategy. Through the continuous optimization of our cost structure and portfolio of oil and gas activities, we ensure our future competitive viability, even in times when oil and gas prices are low. Measured by production volumes, gas activities comprised around 70% of our portfolio.

Handling hydrocarbons in a responsible manner demands special measures for the protection of people and the environment. We therefore carefully assess the potential effects of every project before we begin. Together with experts, contractors and relevant stakeholders, we develop methods and carry out measures for using resources even more efficiently and minimizing impact on the environment. This includes acting in accordance with international agreements, legal requirements and our own, self-imposed high standards.

Wintershall's natural gas trading and storage activities were transferred to Gazprom with the swap of assets of equal value completed in September 2015, and are no longer part of our portfolio. Our cooperation with Gazprom in the natural gas transport business continues unaltered. With western Europe's long-term demand for natural gas steadily on the rise, while its local production simultaneously decreases, securing sufficient imports is gaining in importance.

Exploration & Production

- **Active portfolio management, including expansion of our position in Norway**

Europe: The Mittelplate field off the North Sea coast is the cornerstone of our crude oil production in Germany. We own a 50% share in the next development phase of this largest known oil deposit in the country. We are expanding production in Emlichheim by drilling twelve new wells, two of which started producing between September and December 2016. Wintershall is assessing a redevelopment of the Suderbruch oilfield with two exploration wells. We continued the field test for increasing recovery rates using the biopolymer Schizophyllan at the Bockstedt oilfield.

In Norway, we were able to expand annual production to 80,000 barrels of oil equivalent (BOE) per day. The further development of fields in which we hold a stake included the installation of two subsea tiebacks in the Norwegian Sea for the Wintershall-operated Maria field in the summer of 2016. These were connected at a depth of 300 meters to the nearby platforms Kristin, Heidrun and Åsgard B, enabling us to use the existing infrastructure for production in the Maria field, in which Wintershall holds a 50% share. Wintershall also has shares in the Ivar Aasen offshore platform installed and started up in 2016. In January 2016, Wintershall obtained shares in seven new exploration licenses on the Norwegian continental shelf from the Norwegian Ministry of Petroleum and Energy. Wintershall will take over operatorship of four licenses.

As part of ongoing portfolio optimization, Wintershall Norge AS agreed with Statoil Petroleum AS (both based in Stavanger, Norway) on the sale of its 25% share in the Byrding field on the Norwegian continental shelf. The field, also known by its previous name, Astero, was discovered in 2005 and is located in the Troll/Fram region of the North Sea. Wintershall Norge furthermore divested its 10% share in the Yme license – also on the Norwegian continental shelf – to OKEA AS, an oil company based in Trondheim, Norway.

In Denmark, we are continuing the transition from the development to the production phase of the Ravn field. The crude oil is to be transported through a subsea pipeline from an unmanned production platform to the A6-A platform 18 kilometers away in the German North Sea. Ravn will be the first field in Denmark that Wintershall Noordzee B.V. (Rijswijk, Norway) transfers to the production phase as operator. The Danish energy ministry granted Wintershall three new licenses in the Danish North Sea at the beginning of 2016. Wintershall is the operator in all three licenses.

Russia: The Yuzhno Russkoye natural gas field in western Siberia, in which we have a 35% economic interest, has been operating at plateau production since 2009. We hold a 50% stake in the development of Block IA of the Achimov formation in the Urengoy field in western Siberia. The gradual development of this field was continued and 78 wells were producing at the end of 2016. We will develop blocks IV and V of the Achimov formation together with Gazprom.

North Africa / Middle East: In Libya, we are the operator of eight oilfields in the onshore concessions 96 and 97. Due to difficult political conditions, we were only able to start producing in concession 96 again on September 16, 2016, at a low level of 35,000 BOE a day. No production took place in concession 97 in 2016. At the Al Jurf oilfield off the coast of Libya, in which we have a stake, operations could be continued without interruption.

In Abu Dhabi, we began drilling our second appraisal well as operator in the development of the Shuwaihat sour gas field in November 2016. It is Wintershall's first offshore exploration well in the Shuwaihat field.

Wintershall signed a memorandum of understanding in April 2016 with the National Iranian Oil Company on a potential collaboration.

South America: We hold shares in a total of fifteen onshore and offshore fields in Argentina. In February 2016, the offshore field Vega Pléyade, operated by Total Austral S.A., began production off the coast of Tierra del Fuego. We drilled additional wells as an operator in the Vaca Muerta shale formation in the Neuquén province, as stipulated in the joint operation agreement between Wintershall Energía S.A. (Buenos Aires, Argentina) and Gas y Petróleo del Neuquén S.A. (Neuquén, Argentina).

For information on current reserves, see pages 88 and 223

Capital expenditures

Location	Project	Plateau/peak production per year[1]	Startup
Argentina	Development of Vega-Pléyade field	9 million BOE	2016
North Sea, Norway	Development of Maria field	7 million BOE	2018
	Development of Edvard Grieg field	5 million BOE	2015/2018[2]
	Development of Aasta Hansteen field	12 million BOE	2018
Siberia, Russia	Achimgaz, development of Achimov horizon in Urengoy natural gas and condensate field	43 million BOE	2008/2020[2]

[1] BASF's share in barrels of oil equivalent (BOE)

[2] Year completed

Natural Gas Transport

- **Mostly regulated business with stable conditions**
- **Joint activities with Gazprom**

The highly regulated natural gas transport sector is characterized by stable conditions and yields based on approved costs and tariffs. Our organizational structure allows us to meet the unbundling requirements set down by the German Energy Act: As a holding company for the German subsidiaries in natural gas transport, WIGA Transport Beteiligungs-GmbH & Co. KG (WIGA) mainly fulfills a reporting and financing capacity. GASCADE Gastransport GmbH, OPAL Gastransport GmbH & Co. KG, and NEL Gastransport GmbH all act as independent companies under the umbrella of the holding company.

The companies under the WIGA umbrella operate a 3,300-kilometer long-distance network that includes the pipeline links to the Nord Stream Pipeline, the Baltic Sea Pipeline Link (OPAL) and the North European Gas Pipeline (NEL).

We hold a 15.5% share in the Nord Stream Pipeline through Nord Stream AG, based in Zug, Switzerland, which is accounted for in the BASF Group's financial statements using the equity method. Other shareholders are Gazprom (51%) and E.ON (15.5%), as well as N.V. Nederlandse Gasunie and ENGIE (9% each). With a total capacity of 55 billion cubic meters of natural gas per year, this pipeline, which stretches from Russia to the German coast over the Baltic Sea, helps shore up supply security in Europe.

The contracts signed in 2015 to join the companies involved in the Nord Stream 2 AG were canceled in September 2016 after withdrawal of the antitrust clearance application in Poland. BASF continues to firmly believe in the significance of this project for Europe, and is evaluating possibilities to support the endeavor. The project is being developed by Nord Stream 2 AG, a project company in which Gazprom holds 100% of the shares.

Segment data[1] (million €)

		2016	2015	Change in %
Sales to third parties		2,768	12,998	(79)
Intersegmental transfers		331	766	(57)
Sales including intersegmental transfers		3,099	13,764	(77)
Income from operations before depreciation and amortization (EBITDA)		1,596	2,587	(38)
EBITDA margin	%	57.7	19.9	–
Depreciation and amortization[2]		1,097	1,515	(28)
Income from operations (EBIT)		499	1,072	(53)
Special items		(18)	(294)	94
EBIT before special items		517	1,366	(62)
EBIT after cost of capital		(744)	(443)	(68)
Assets		12,829	12,373	4
Investments[3]		1,115	1,823	(39)
Research and development expenses		39	50	(22)
Exploration expenses		94	195	(52)
Net income[4]		362	1,050	(66)

[1] Supplementary information on the Oil & Gas segment can be found from page 221 onward.
[2] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)
[3] Additions to intangible assets and property, plant and equipment (including acquisitions)
[4] More on this figure can be found in the reconciliation reporting for Oil & Gas in the Notes to the Consolidated Financial Statements on page 179.

Oil & Gas segment

■ **Sales decline by 79% and EBIT before special items down by 62% due to discontinuation of contributions from gas trading and storage business as well as to lower oil and gas prices**

In the Oil & Gas segment, sales to third parties decreased by €10,230 million to €2,768 million year-on-year (volumes 3%, prices/currencies –3%, portfolio –79%). Owing to the asset swap with Gazprom completed at the end of September 2015, contributions from the natural gas trading and storage business and from Wintershall Noordzee B.V. ceased as of the fourth quarter of 2015. These activities had contributed €10.1 billion to sales in 2015. In the continuing oil and gas business, we raised volumes by 15% compared with 2015, while price and currency effects came out to minus 15%. The price of a barrel of Brent blend crude oil averaged $44 in 2016 (2015: $52). Gas prices on European spot markets dropped 29%, also a sharp fall compared with the previous year. Both oil and gas prices recovered significantly toward the end of 2016 as compared with the beginning of the year.

Oil & Gas – Sales by region
(Location of customer)

1	Europe	80%
2	North America	0%
3	Asia Pacific	0%
4	South America, Africa, Middle East	20%

Income from operations (EBIT) before special items declined by €849 million to €517 million in 2016. This was primarily the result of falling oil and gas prices, in addition to the divestiture of our gas trading and storage business to Gazprom. The activities transferred to Gazprom had contributed around €260 million to EBIT before special items in 2015. In addition, as we had expected, the earnings contribution from our share in the Yuzhno Russkoye natural gas field was lower: A contractual agreement with our partner Gazprom stipulated that the excess amounts received over previous years be compensated in 2016. Positive effects came from comprehensive measures aimed at optimizing exploration and technology projects as well as the successful implementation of operational cost-saving measures. EBIT declined by €573 million to €499 million. Net income declined by €688 million to €362 million.

For the Outlook for 2017, see page 123

We increased our crude oil and natural gas production by 12 million barrels of oil equivalent (BOE) to 165 million BOE. In the search for new crude oil and natural gas deposits, we finished drilling a total of 14 exploration and appraisal wells in 2016, of which 9 were successful. Our proven crude oil and natural gas reserves fell by 7% compared with the end of 2015, to 1,622 million BOE. We replenished 26% of the volumes produced in 2016. The reserve-to-production ratio is around 10 years (2015: 11 years). This is based on Wintershall's production in 2016 and refers to the reserves at year-end.

Other

Data for Other[1] (million €)

	2016	2015	Change in %
Sales	2,018	2,790	(28)
Income from operations before depreciation and amortization (EBITDA)	(972)	(866)	(12)
Amortization and depreciation[2]	119	119	–
Income from operations (EBIT)	(1,091)	(985)	(11)
Special items	(41)	(97)	58
EBIT before special items	(1,050)	(888)	(18)
Assets[3]	9,374	9,632	(3)
Investments[4]	121	111	9
Research and development expenses	398	407	(2)

[1] Information on the composition of Other can be found in the Notes to the Consolidated Financial Statements from page 178 onward.

[2] Amortization of intangible assets and depreciation of property, plant and equipment (including impairments and write-ups)

[3] Contains assets of businesses recognized under Other as well as reconciliation to assets of the BASF Group

[4] Additions to intangible assets and property, plant and equipment (including acquisitions)

Sales in Other fell by €772 million to €2,018 million compared with 2015. Lower prices and volumes in the raw materials trading business were primarily responsible, along with the expiration of supply contracts in connection with the disposal of our share in the Ellba Eastern Private Ltd. joint operation in Singapore at the end of 2014.

Income from operations before special items in Other declined by €162 million to minus €1,050 million. This was largely attributable to valuation effects for our long-term incentive program. Positive currency effects helped slow the decline.

Regional results

Regions (million €)

	Sales by location of company			Sales by location of customer			Income from operations by location of company[1]		
	2016	2015	Change in %	2016	2015	Change in %	2016	2015	Change in %
Europe	27,221	38,675	(30)	26,039	36,897	(29)	3,632	4,174	(13)
Thereof Germany	17,540	28,229	(38)	7,412	13,483	(45)	1,582	2,303	(31)
North America	14,682	15,665	(6)	14,042	15,390	(9)	1,113	1,295	(14)
Asia Pacific	11,512	11,712	(2)	12,165	12,334	(1)	1,098	445	147
South America, Africa, Middle East	4,135	4,397	(6)	5,304	5,828	(9)	432	334	29
	57,550	**70,449**	**(18)**	**57,550**	**70,449**	**(18)**	**6,275**	**6,248**	**0**

[1] For purposes of increased clarity in the presentation of regional results, income from operations (EBIT) before special items was replaced by EBIT, a figure directly derivable from the Consolidated Financial Statements, as of the second quarter of 2016. Neither EBIT before special items by region nor EBIT by region is drawn upon for internal management decisions.

Europe

- **At €27,221 million, sales down by 30% compared with previous year**
- **Additional investments initiated at Ludwigshafen Verbund site**

In 2016, sales at companies headquartered in the region Europe amounted to €27,221 million, 30% below the previous year's level. This was mainly attributable to the considerable decline in sales in the Oil & Gas segment following the disposal of our gas trading and storage business to Gazprom in September 2015.

Despite strong volumes growth, the Chemicals segment posted a considerable drop in sales due to lower sales prices brought about by decreased raw material prices. Sales in the Performance Products segment declined slightly, largely on account of lower prices and the disposal of portions of our pharmaceutical ingredients and services business. In the Functional Materials & Solutions segment, significantly higher volumes were able to more than compensate for price declines, resulting in a sales increase. Despite increased sales prices, a combination of lower volumes and negative currency effects resulted in a considerable drop in sales in the Agricultural Solutions segment. Sales declined considerably in Other.

Income from operations (EBIT) fell by 13% year-on-year to €3,632 million, primarily owing to the decrease in the Oil & Gas segment. Contributions were also smaller from the Chemicals and Agricultural Solutions segments, as well as from Other. The Performance Products and Functional Materials & Solutions segments, however, raised their EBIT.

We are strengthening our market position through further investments at the Ludwigshafen Verbund site, such as the replacement of our acetylene plant with a state-of-the-art, highly efficient production facility, and the expansion of capacities for resins.

North America

- **Sales down 6% from the previous year to €14,682 million**
- **Ongoing investments in production plants, such as for ammonia and herbicides**

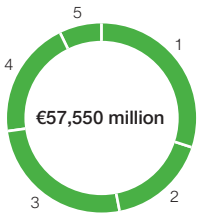
Sales at companies headquartered in North America were down by 6% compared with 2015 in both euro and local currency terms, amounting to €14,682 million. This was largely due to decreased sales prices brought about by lower raw material prices, especially in the Chemicals segment. Sales volumes remained stable overall. Rising volumes in the Functional Materials & Solutions segment were able to offset the lower volumes in the Chemicals and Performance Products segments.

EBIT fell 14% to €1,113 million compared with the previous year. Significantly increased contributions from the Performance Products and Functional Materials & Solutions segments were only partially able to compensate for the sales and margin-related earnings decline in the Chemicals segment.

In this region, we continue to focus on innovation, attractive market segments and cross-business initiatives in order to grow profitably. At the same time, we ares increasing our operational excellence through continuous improvement. Investments in new production facilities form the basis for future growth. For example, we are building a new ammonia plant in Freeport, Texas, with Yara; expanding production capacities for our dicamba and dimethenamid-P herbicides in Beaumont, Texas; and modifying the plant in Pasadena, Texas, to produce our Palatinol® DOTP plasticizer so we can meet growing demand in North America. Beyond that, we aim to gradually expand the production capacity of MDI at our Geismar, Louisiana, Verbund site.

Sales by region
(Location of company)

1	Germany	30%
2	Europe (excl. Germany)	17%
3	North America	26%
4	Asia Pacific	20%
5	South America, Africa, Middle East	7%



Income from operations by region
(Location of company)

1	Germany	25%
2	Europe (excl. Germany)	33%
3	North America	18%
4	Asia Pacific	17%
5	South America, Africa, Middle East	7%

Asia Pacific

- **Sales 2% below 2015 level at €11,512 million**
- **Local production expanded through new plants in China and Malaysia**

At €11,512 million, sales at companies headquartered in the Asia Pacific region fell by 2% in 2016; in local currency terms, sales matched the level of the previous year.

Low oil and raw material prices weighed on sales, especially at the beginning of the year. While sales prices did substantially recover over the year, they still showed an overall decline for 2016. Sales were also dampened by negative currency effects and portfolio measures such as the sale of the textile chemicals business in June 2015, parts of our pharmaceutical ingredients and services business in September 2015, and the polyolefin catalysts business in July 2016. Sales in Other decreased considerably. Volumes growth of around 5% in this region was only partially able to offset these effects. We raised sales volumes in all segments.

EBIT in the region grew by 147% to €1,098 million. This was mainly due to higher volumes and margins in all segments. Through strict cost management, fixed costs rose only slightly compared with the previous year, despite the startup of several new plants.

As part of our regional strategy, we want to further increase the proportion of sales from local production in Asia Pacific in the years ahead. We once again made progress toward this goal: In Korla, China, we started up a polytetrahydrofuran (PolyTHF®) plant with our partner Markor, and in Shanghai, China, we completed the modification of the polyvinylpyrrolidone plant. In Kuantan, Malaysia, we and our partner PETRONAS started up a production plant for 2-ethylhexanoic acid and finished construction of the new aroma chemicals complex. Further endeavors, such as catalyst production plants in Caojing, China, and Rayong, Thailand, are currently under construction and progressing on schedule.

South America, Africa, Middle East

- **Sales down 6% to €4,135 million**
- **Production plant for 2-ethylhexyl acrylate now in operation in Guaratinguetá, Brazil**

At €4,135 million, sales for companies headquartered in South America, Africa, Middle East fell 6% below the level of 2015. In local currency terms, sales were up by 2%.

Gross domestic product shrank in South America primarily as a consequence of the continuing recession in Brazil as well as the economic environment and structural reforms in Argentina. Our sales declined slightly under these conditions. Price increases enabled us to partly offset negative currency effects, especially from the depreciation of the Argentinian peso, and weaker sales volumes. Sales declined in the chemicals[1] and crop protection businesses but rose in the Oil & Gas segment.

Companies in Africa and in the Middle East posted a considerable sales decrease owing to currency effects and downward pressure on prices. The drop in sales in South Africa was primarily due to the depreciation of the rand; this particularly affected the Functional Materials & Solutions segment. In the Middle East, a slump in selling prices affected by falling raw material prices negatively impacted our business in the Performance Products and Functional Materials & Solutions segments.

EBIT grew by 29% to €432 million, supported especially by the higher contribution from the chemicals business.

In South America in 2016, we continued implementing a series of structural measures that increase our productivity and sharpen the focus on our customers' needs. We have expanded our production in Guaratinguetá, Brazil, with the startup of a 2-ethylhexyl acrylate plant that will allow us to tap into the region's growing demand.

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

Responsibility along the value chain
Suppliers

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

Strategy

With our sustainability-oriented supply chain management, we contribute to risk management by clarifying our expectations and standards for our suppliers, and by supporting them in carrying out our specifications. We count on reliable supply relationships and want to make our suppliers' contribution to sustainable development transparent. In order to achieve this, we set ourselves an ambitious goal: By 2020, we aim to evaluate the sustainability performance of 70% of the BASF Group's relevant suppliers[1] pursuant to our risk-based approach and develop action plans for any necessary improvements. The proportion of evaluated relevant suppliers was at 32% by the end of 2016. Furthermore, our Procurement competence center supports BASF's business units in developing solutions to stand out from the competition in addressing customers' market-specific requirements.

2020 Goal

Percentage of relevant suppliers evaluated for their sustainability performance 70%

Worldwide procurement

From our suppliers, we obtain raw materials, technical goods, and services – from technical to logistics and building facility services. BASF acquired raw materials, goods and services for our own production totaling approximately €34 billion in value from more than 70,000 suppliers around the world in 2016. Around 90% of this was locally sourced. With regard to our suppliers, there were no substantial changes in our value chain in 2016.

What we expect from our suppliers

- Global Supplier Code of Conduct
- Country-specific risk analysis forms basis of new supplier selection

Both new and existing suppliers are selected and evaluated not only on the basis of economic criteria, but also on 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 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. The Code is available in 26 languages.

A country-based risk analysis forms the basis of our selection process for new suppliers. As a result of the country-related risks identified in South America and Asia, we queried around 2,100 suppliers in 2016 on their commitment to the values of our Supplier Code of Conduct. We moreover provided training to a total of 267 suppliers with an elevated sustainability risk, especially in Asia and South America, in 2016.

In addition, we instructed 292 procurement employees on sustainability-oriented supplier management. These are ways in which potential supply chain risks can be identified and minimized together with our suppliers.

Evaluating our suppliers

- "Together for Sustainability" initiative aims to harmonize and standardize supplier assessments and audits
- 104 raw material supplier sites audited

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 initiative's members conducted a total of 1,773 sustainability assessments and 241 audits in 2016. Membership has tripled since the initiative was founded; there were 19 members in 2016.

[1] We define relevant suppliers as those showing an elevated sustainability risk potential as identified by risk matrices and with respect to corresponding country risks. Our suppliers are evaluated based on risk due to the size and scale of our supplier portfolio.

We conducted a Supplier Day in Mumbai, India, in 2016 as part of the TfS initiative. TfS also provided training to suppliers at the annual China Petroleum and Chemical Industry Federation (CPCIF) Conference in Shanghai, China, in order to strengthen awareness for sustainability in the region.

Using TfS evaluations, we pursue a risk-oriented approach with clearly defined, BASF-specific follow-up processes. We drive these processes through a sustainability-oriented IT tool. Suppliers with an elevated sustainability risk are identified using risk matrices. Furthermore, our purchasers indicate the suppliers for whom they see a potentially elevated sustainability risk. We additionally check various information sources to see if any suppliers have been observed in connection with negative sustainability incidents. Based on these analyses, we audited a total of 104 raw material supplier sites on sustainability standards and had 551 sustainability assessments conducted by an external service provider in 2016.

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 occurred in two cases in 2016. We use this approach to evaluate suppliers with an elevated sustainability risk at least every five years. The approach itself is reviewed every two years to identify possibilities for optimization.

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

Supplier training

In 2016, we continued our collaborations in China and Brazil to instruct suppliers on sustainability standards. We have developed a training program for China together with the East China University of Science and Technology in Shanghai. In Brazil, we are pursuing the same approach together with the Espaço Eco® Foundation. Through these cooperations, 267 suppliers received training in 2016.

Audit results

Our audits have revealed some deviations with respect to working hours and payment of the minimum wage, especially in China. Here, we have called for improvements on the part of our suppliers. None of our 2016 audits identified instances of child labor. For the suppliers we reviewed, persons under 18 were excluded from overtime and dangerous work; we found one case of unauthorized night work. We did not find any incidences of forced labor in 2016.

In August 2012, during an extended mining strike involving workers of the London-based platinum supplier Lonmin Plc in Marikana, South Africa, the conflict escalated and culminated in a violent confrontation between mine workers and armed South African police. Lonmin mine workers were among the fatalities. In June 2015, the Farlam Report commissioned by the South African government was released on the incidents.[1]

BASF undertook a thorough examination of the issues raised. We intensified our regular exchange with both Lonmin and with local stakeholders, such as leading industry and human rights representatives. Discussions included Lonmin's measures for improving the living conditions of its workers.

At the end of 2015, BASF had an Environment, Social, Governance audit conducted at Lonmin by an internationally recognized audit firm, in accordance with enhanced TfS requirements. In the process, deficits were detected in areas such as the grievance process for workers and residents, as well as safety and security. Based on the results, BASF enhanced the questionnaire and expanded it with a view to industry-specific challenges in the mining sector. A follow-up audit conducted in January 2017 is currently being evaluated. We will use our sphere of influence within the platinum value chain to create awareness for industry-specific challenges and develop approaches for solutions together.

For more on suppliers, see basf.com/suppliers

[1] The Farlam Report found that the actions of the South African police forces and the striking miners were the primary cause of the violence. The Report also questioned whether Lonmin had used its best endeavors to prevent the incident.

Raw materials

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 strategy: The by-products of one plant often serve as feedstock elsewhere, thus helping us to use raw materials more efficiently. In 2016, BASF purchased a total of around 30,000 different raw materials from more than 6,000 suppliers. Some of our most important raw materials are naphtha, natural gas, methanol, ammonia and benzene. In addition to fossil resources, we also employ renewable raw materials. We use these to manufacture products that either cannot be made with fossil resources, or only at significantly greater expense. Renewable raw materials also give us the opportunity to expand our raw material basis. Depending on the application, the better solution can be fossil or renewable raw materials; renewable raw materials are not per se sustainable, but can contribute to sustainability by, for example, reducing greenhouse gas emissions.

Renewable resources

- Joint venture with Avantium
- Numerous projects to improve sustainability along the value chain

In 2016, around 5.4% 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 in reaction technology and preparation.

We also further established our "biomass balance" approach on the market in 2016. 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 is certified by an independent third party (TÜV Süd). Our Verbund production ensures that the properties 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 40 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.

Together with Avantium, BASF established the Amsterdam-based Synvina C.V. joint venture in 2016 to produce and market furandicarboxylic acid (FDCA) from renewable resources. FDCA is a key chemical component of polyethylenefuranoate (PEF), which will also be marketed by the joint venture. PEF has a broad application profile and is especially suitable for producing certain food packaging materials, such as films and plastic bottles. Compared with conventional plastics, PEF demonstrates higher barrier properties for gases like carbon dioxide and oxygen, leading to a longer shelf life for packaged products. In addition, its higher degree of mechanical strength allows for thinner – and therefore lighter – packaging. We also offer our customers 1,4-butanediol (BDO) on a commercial scale using sugars as a renewable feedstock, based on a licensing agreement with the company Genomatica Inc., headquartered in San Diego, California. We use BDO to produce bio-based polytetrahydrofuran 1000 (PolyTHF® 1000), which primarily serves as a chemical component in thermoplastic polyurethane (TPU), an ingredient used to manufacture skis and roller skates, shoe soles, dashboard films in the automotive industry, and other products.

Palm oil, palm kernel oil, and their derivatives are some of our most important renewable raw materials. We want to ensure that the raw materials stem from sustainable, certified sources and actively support the Roundtable on Sustainable Palm Oil (RSPO). Based on the voluntary commitment to sustainably source palm oil products that we expanded in 2015, we increased our purchase of certified palm kernel oil by around 32,000 metric tons to 158,000 metric tons in 2016. In addition, our new BASF Palm Sourcing Policy addresses the requirements for protecting and preserving forests and peatland, along with the involvement of local communities in decision-making processes, and we began its implementation together with our suppliers in 2016.

We have intensified our dialog with partners along the value chain. In order to involve smallholder farmers and improve their living conditions, BASF and Henkel are working together with the development organization Solidaridad to provide training for around 5,500 farmers in Indonesia. BASF also advanced the RSPO certification of its sites for cosmetic ingredients. In 2016, 19 production sites worldwide were already RSPO certified. Our goal is to only source palm oil and palm kernel oil with RSPO certification, provided it is available on the market. This voluntary commitment has been expanded to include the most important intermediate products based

on palm oil and palm kernel oil up to 2025; these include fractions and primary oleochemical derivatives as well as edible oil esters.

We successfully completed our joint project with Cargill and the German governmental agency for international cooperation (Gesellschaft für Internationale Zusammenarbeit, or GIZ) on the sustainable production of coconut oil in the Philippines in 2015. Since then, small-holder farmers have been producing the world's first Rainforest Alliance-certified dried coconut meat (copra), from which the oil is extracted. In a follow-up project, BASF is working together with Cargill, Proctor & Gamble and the GIZ to support the expansion of a certified and transparent supply chain for coconut oil in the Philippines and Indonesia. The project is being financed in part by the "develoPPP.de" program of the German Federal Ministry for Economic Cooperation and Development (BMZ). The project is also expected to result in improved income and living standards for around 3,600 small farmers.

BASF signed a contract in 2016 together with Arkema and Jayant Agro, along with the non-governmental organization Solidaridad, to promote sustainability in the castor oil supply chain. With the Sustainable Castor Initiative – Pragati, the project members want to improve the livelihood of castor oil farmers and their employees in India by helping them optimize their yield and reduce the impact on the environment. Furthermore, a sustainability code is being developed that will enable Indian farmers to offer the first certified sustainable castor oil on the global market. The project is initially scheduled to run for three years.

For more on the Biomass Balance Approach, see page 62

For more on palm (kernel) oil, see page 68

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

Mineral raw materials

We procure a number of mineral raw materials, like precious metals, that we use to produce process and mobile emissions catalysts. In suspected cases, we track the origins of minerals – as defined in the Dodd-Frank Act – to see if they come from mines in conflict regions. We reserve the right to conduct an external audit 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 the Congo or its neighboring countries.

BASF is observing the current development of a European regulation on conflict minerals that creates obligations for importers and processors of mineral raw materials originating from conflict regions.

Environment, health, safety and security
Responsible Care Management System

We act responsibly as an integral part of society and have set out the framework for our voluntary commitments in our Responsible Care Management System. We never compromise on the safety and security of our employees, contractors and neighbors as well as our facilities, transportation and products, and the environment.

Strategy

- **Worldwide safety initiatives foster awareness of workplace safety**
- **Ambitious goals for safety, security, health and environmental protection**

BASF's Responsible Care Management System comprises the global rules, 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. At our sites, we cover energy and climate protection through, for example, our energy management.

We regularly conduct audits to monitor our performance and progress. We use the findings from these audits for continual improvement.

We set ourselves ambitious goals for safety, security, health and environmental protection. Our policies and requirements are constantly updated.

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; appropriate measures are derived according to specific cause analyses. We foster awareness of workplace safety in every individual with our worldwide safety initiatives.

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

Audits

- **121 safety, security, health and environmental protection audits performed at 80 sites**

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. 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 conduct follow-up audits on their implementation.

Our internal audit system complies with the standards for external auditing procedures ISO 19011 and OHSAS 18001. Worldwide, 155 BASF production sites are certified in accordance with ISO 14001 (2015: 180)[1]. In the BASF Group in 2016, 121 environmental, safety and security audits were carried out at 80 sites, along with 37 short-notice audits on various topics at 33 sites. We audited 30 sites with respect to occupational medicine and health protection.

For more on occupational safety and health protection, see page 98 onward

Costs and provisions for environmental protection in the BASF Group (million €)

	2016	2015
Operating costs for environmental protection	1,011	962
Investments in new and improved environmental protection plants and facilities[2]	206	346
Provisions for environmental protection measures and remediation[3]	588	538

[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.

[1] In addition to changes in the site portfolio, the decrease mainly resulted from the sites' aim to be certified in accordance with ISO 50001 due to our energy efficiency goal.

Transportation and storage

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

In 2014, we had already nearly achieved the BASF Group goal of reducing the number of worldwide transportation accidents per 10,000 shipments by 70% from 2003 to 2020. Therefore, in our reporting on transportation incidents, we have focused since 2015 on dangerous goods spillages that significantly impacted the environment. We report on dangerous goods leaks of BASF products in excess of 200 kilograms on public transportation routes, provided BASF arranged the transport.

Transportation incidents

We recorded two incidents in 2016 with spillage of more than 200 kilograms of dangerous goods (2015: 2). None of these transportation incidents had a significant impact on the environment (2015: 0).

Accident prevention and emergency response

- Dangerous goods inspections expanded in contract management system
- Inspection program introduced for container barges

In order to ensure that our processes are even safer and create globally uniform standards, we introduced extended dangerous goods checks into our order management system in 2016.

We broadened the training opportunities for our employees and added new e-learning modules, such as the introduction of a multilingual training module in Europe on the road transportation of hazardous goods.

We stipulate worldwide requirements for our logistics service providers and assess them in terms of safety and quality. In 2016, we evaluated around 370 companies in all regions. Our experts use our own evaluation and monitoring tools as well as internationally approved schemes.

We added container barges to our existing inspection program in 2016. This includes not only evaluating the vessels themselves, but also the management systems of the shipping companies to review their safety standards.

We regularly evaluate the risks in transporting raw materials with high hazard potential using our global guideline. It is based on the guidelines of the European Chemical Industry Council, CEFIC.

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 2016, we provided assistance to other companies in 176 cases worldwide. We apply the experience we have gathered to set up similar systems in other countries: For example, we intensified our activities in South America in 2016.

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

Production

We never compromise on safety. For occupational and process safety as well as health and environmental protection and corporate security, we rely on comprehensive preventive measures as well as on the involvement 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 damage and protect information and company assets. In this way, we help prevent injury, production outages and environmental damage.

Strategy

- Global safety standards
- Strengthening risk awareness

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 health protection. A worldwide network of experts supports us in their implementation. Tried-and-true processes and solutions are documented and made globally available through networks and structured exchange. We regularly conduct audits on safety, security, health and environmental protection in order to monitor progress toward our goals. Risk-conscious working behavior is promoted for every individual through measures like systematic hazard assessments, specific qualification measures and global safety initiatives. Based on our corporate values, leaders serve as safety role models for our employees. Together, they contribute to the constant development of our safety culture.

Global safety initiative

- Process safety and information protection at Global Safety Days

With our global safety initiative begun in 2008, we have created the conditions necessary for the continuous development of a safety culture. Process safety and information protection were the main theme of our 2016 Global Safety Days, carried out in more than 860 activities at around 350 sites. Topics included product spillage prevention; reducing environmental, health and safety hazard potential; and proper conduct in handling sensitive information. More than 75,000 employees and contractors around the world took active part. This commitment and vigorous exchange make a major contribution to our safety culture. At the Ludwigshafen site, employees and contractors can obtain continuous further education on diverse safety and security topics at our training center. The training center was opened as part of our 2010 safety initiative; more than 19,000 participants received training there in 2016.

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

Occupational safety

- Employees and contractors worldwide instructed on safe behavior
- Fire at North Harbor in Ludwigshafen

We have made it our goal to reduce the worldwide lost-time injury rate per one million working hours to 0.5 at most by 2025. To this end, we promote risk-conscious behavior and safe working practices for every individual, particularly through regular communication, systematic risk assessments, specific qualification measures and our worldwide safety initiatives.

We recorded around 118,000 enrollments in occupational safety training courses worldwide in 2016. These seminars comprise not only legally stipulated instructions, but also courses on safe procedures to strengthen our employees' risk-aware behavior and prevent work-related accidents.

2025 Goal

Reduction of worldwide lost-time injury rate
per one million working hours

≤0.5

In 2016, 1.4 work-related accidents per one million working hours occurred at BASF sites worldwide (2015: 1.4), raising the rate of chemical-related accidents to 9% (2015: 8%). The rate of work-related accidents per one million working hours for contractors was at 1.5 in 2016 (2015: 1.4[1]). Unfortunately, there were four incidents in 2016 with a total of seven fatalities (2015: two fatal work-related accidents). BASF is performing a comprehensive analysis of the incidents and using the findings to derive appropriate measures.

During maintenance work in Camaçari, Brazil, an employee of a crane company suffered fatal injuries when the crane he was operating tipped over. In May, an employee of an external company hired by BASF to perform maintenance work in Yeosu, South Korea, died from the effects of phosgene exposure. The cause of the accident was investigated by BASF and the relevant Korean authorities. In February 2017, the court responsible for the case ruled that the accident was attributable to carelessness on the part of individual employees.

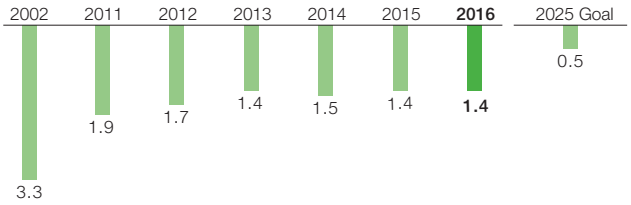
[1] The 2015 figure was adjusted to reflect a revised hour-counting method for contractors in Asia.

Although the court did not identify any technical or process defects, a small monetary penalty was nevertheless imposed on BASF. After the accident, BASF reviewed the safety measures and processes at all of its isocyanate production sites worldwide and once again clarified these to employees. An employee of a subcontractor succumbed to his injuries after falling through a roof opening in Kuan Yin, Taiwan, in July.

In October, three employees of the BASF fire department lost their lives in an accident at the North Harbor of the Ludwigshafen site, along with one barge crewman on a tanker moored in the harbor. BASF had contracted a specialist company for pipeline construction to perform scheduled preventive maintenance on an emptied and secured propylene line at the North Harbor. Several pipeline sections were to be replaced. A fire broke out during the work, leading to an explosion and ensuing fires in other pipelines. Six of the severely injured were discharged from the hospital in December; another was kept in the hospital for inpatient treatment. Light injuries were sustained by 22 people in the accident. The district attorney's office of the city of Frankenthal is investigating the accident. BASF is supporting assessors and authorities in their inspections and has also hired an independent expert to analyze the causes of the accident.

For more on the fire in Ludwigshafen, see basf.de/fire-northharbor
For more on occupational safety, see basf.com/occupational_safety

Lost-time injury rate per one million working hours



Health protection

- Focus in 2016: heart attack and stroke prevention
- Global standards for occupational medicine and health protection

Our worldwide standards for occupational medicine and health protection are specified in a directive that is implemented by a global network of experts. Our global health management serves to promote and maintain the health and productivity of our employees. This was supported by numerous emergency drills and health promotion measures in 2016.

We measure our performance in health protection using the Health Performance Index (HPI). The HPI comprises five components: confirmed occupational diseases, medical emergency drills, 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 were once again able to fulfill the ambitious goal of exceeding 0.9 each year (2015: 0.97). Our 2016 global health campaign for employees centered on heart attack and stroke prevention. To obtain a self-evaluation of their heart's age and their risk of heart attack and stroke, our employees filled out around 32,000 questionnaires worldwide. The offer included personal recommendations for individual risk factors and contact with a physician in the case of increased risk.

Annual goal

Health protection
Health Performance Index
Maximum score 1.0

>0.9

Our 2017 global health campaign will focus on the lungs and respiratory system. We raise employee awareness of these 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 on occupational medicine, health promotion campaigns and the HPI, see basf.com/health

Process safety

- Expanded initiative for reducing process safety incidents
- Enhanced training methods

We use the number of process safety incidents as a key performance indicator, following to a large extent the definition set by the European Chemical Industry Council (CEFIC). In 2016, we recorded 2.0 process safety incidents per one million working hours worldwide (2015: 2.1). We pursue continual improvement by investigating every incident in detail, analyzing root causes and using the findings to derive suitable measures. We set ourselves the goal of reducing process safety incidents to a rate of no more than 0.5 per one million working hours by 2025.

2025 Goal

Reduction of worldwide process safety incidents
per one million working hours

≤0.5

To this end, we continued our worldwide initiative focusing on plant maintenance, repair and operation. This initiative produced a catalog of successful practices for preventing process safety incidents that has been available in several languages to all production plants worldwide since 2016.

Our globally implemented management system for process safety provides 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 for every plant that considers the key aspects of safety, health and environmental protection – from conception to startup – and stipulates specific protection measures for each. We continued to review this management system in all regions in 2016.

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 hazard potential. We use globally standardized software to track these safety assessments. One module of this program – already used in many of our plants – checks the timely implementation of stipulated measures, supporting our employees in production. We supplemented this in 2016 by updating a global recommendation for prioritizing safety measures.

To strengthen risk awareness, we enhanced our training methods, introduced global recommendations for training measures and instructed around 13,000 course participants.

For more on process safety, see basf.com/process_safety

Emergency response

- Regular review of emergency systems
- Global qualification program for emergency response teams

In order to ensure uniformly high standards around the world for safety, security, health and environmental protection, we continued to implement our requirements for emergency response planning and fire prevention in the BASF Group in 2016. We work, for example, with site-specific emergency response plans and actively involve situation-related partners and suppliers as well as cities, communities and neighboring companies.

We regularly check our emergency systems and drill procedures with employees, contractors and local authorities. Through 173 drills and simulations in 2016, we instructed participants in our emergency response measures. One topic, for example, revolved around collaboration between production facilities and the fire department.

Through our SPIDER Emergency Response and Information Center Verbund, our specialists from the site fire department, emergency medical team, site security, and environmental protection can work together quickly and reliably across different sites around Europe. Our central emergency response supports local emergency response units around the world and around the clock.

We have been using the KATWARN system at the Ludwigshafen site since 2015, an app-based warning system that serves as an additional information channel to quickly inform site employees and neighbors of dangerous situations. We are constantly improving its use.

We developed a global qualification program in 2016 to train our emergency response teams. All over the world, mentors from the BASF SE fire department support local emergency response instructors at the sites with their knowledge, contributing to safety.

For more on emergency response, see basf.com/emergency_response

Corporate security

- Worldwide network of information protection officers

We protect our employees, sites and company know-how against third-party interference, and establish the necessary framework worldwide with our uniform concepts. Audits enable us to check the implementation of these measures.

New online training courses are available to our employees to prepare them for travel. Business travelers, transferees, and employees in countries with elevated security risks are informed about appropriate protection measures and individually counseled where necessary. After any major incident, we now have the possibility of more quickly and accurately locating employees in the affected regions through a travel research system that was globally standardized in 2016.

Aspects of human rights related to site security, such as the right to liberty and security of person, are a component of the global qualification requirements of our security personnel. Respect for human rights is a mandatory element of any contract with service providers of the BASF Group who are active in this area. Our investment projects include performing comprehensive analyses of potential risks. In 2016, we standardized the use of security services at further European sites in order to increase effectiveness and efficiency.

Due to the increasing risks associated with the use of information technology, a global campaign for employees is drawing attention to how we can even better protect our company knowledge. For example, a global phishing simulation further strengthened our employees' awareness of risks. Our worldwide network of information protection officers comprises more than 650 employees. They support the implementation of our uniform requirements and conduct seminars on secure behaviors. We provided information protection instruction to more than 27,000 participants in 2016. In addition, we published standardized Group-wide recommendations for the protection of information and knowledge.

For more on corporate security, see basf.com/corporate-security

Product stewardship

We review the safety of our products from research and development through production and all the way to our customers' application. We work continuously 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 ensure uniformly high standards for product stewardship worldwide and our voluntary initiatives go beyond legal requirements. We monitor the compliance of our guidelines with regular audits.

We provide extensive information on our chemical sales products to our customers with safety data sheets in more than 40 languages. This is achieved with the help of a global database 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-specific or application-specific product requirements.

The Care Chemicals division, for example, is involved in the European Federation for Cosmetic Ingredients, EFfCI. Together with other producers of cosmetic ingredients, we discuss the best way to cover our customers' demand for information. The aim is to enable them to ensure the safety of the cosmetic products they manufacture in accordance with current scientific knowledge. This includes knowledge that extends back along the value chain to the production processes of the chemical raw materials used.

The Intermediates division supports information exchange with customers who manufacture ingredients for personal end-user products. For example, BASF customers such as industrial producers of raw materials for consumer goods are specifically addressed and advised by BASF's experts as soon as a change is observed in the risk assessment of materials used in the production process.

With our global risk assessment goal, we are supporting the implementation of initiatives such as the Global Product Strategy (GPS) of the International Council of Chemical Associations (ICCA). GPS is establishing worldwide standards and best practices to improve the safe management of chemical substances.

In addition, we are also involved in workshops and training seminars in developing countries and emerging markets. In 2016, for example, we conducted training sessions for chemical industry representatives on GPS in China, India and Kenya on safe chemical management. In order to facilitate public access to information, we are participating in the setup of an ICCA online portal that provides more than 4,600 GPS safety summaries.

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

Global goal

By 2020, we will conduct risk assessments for all substances and mixtures BASF sells worldwide in quantities of more than one metric ton per year. We already reached 75.4% of this goal in 2016 (2015: 67.8%). 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 Goal

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

>99%

REACH and other legal requirements

- **Third registration phase of REACH in progress**

We are working continuously on registering substances produced in annual volumes between one and one hundred metric tons for the third phase of the E.U. chemicals regulation, REACH. We have already registered over 250 substances to this end. Moreover, our REACH activities are increasingly determined by E.U. authorities' decisions on additional studies in connection with the evaluation of submitted dossiers. Independently of this, BASF is also obligated to continuously update the registration dossiers it has submitted. The number of updates has meanwhile exceeded the number of registrations, although over 90% of the updates are undertaken on our own initiative and not as a response to official inquiry.

We apply the experience we have gathered with REACH to fulfill new legal requirements around the world, such as in Korea, Taiwan and Turkey. In 2016, we submitted more than 8,000 preregistrations in Taiwan in order to secure our business activities there.

In an increasingly political agrochemical environment, we are facing a rise in both regulatory requirements and the number of additional studies required to obtain or extend approval for crop protection products.

Environmental and toxicological testing

Use of alternative and complementary 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 already in the research and development phase of our products. 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 and complementary methods, and we use them wherever it is possible and approved by the authorities. We use alternative and complementary methods in more than a third of our tests. Currently, 30 replacement and supplementary methods are being used in our labs and another 12 are in the development stage. BASF spent €3.0 million toward this purpose in 2016. One focus area of our research in 2016 and subsequent years is the development of alternative methods for testing the potential of substances that negatively affect organisms' growth and development.

In 2016, our Experimental Toxicology and Ecotoxicology department began work 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 on alternative methods, see basf.com/alternative_methods

Management of new technologies

Continual safety research on nano- and biotechnology

Technologies such as nanotechnology or 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. We are constantly expanding our knowledge of nanomaterial safety. Over recent years, we have conducted more than 240 toxicological and ecotoxicological studies and participated in over 30 different projects related to the safety of nanomaterials. We published the results in over 100 scientific articles. One important finding is that toxicity is determined not by the size of the particles but by the intrinsic properties of the substance.

The European Chemicals Agency (ECHA) as well as the OECD and national authorities are currently developing regulatory concepts to test and assess nanomaterials. We contribute our expertise through various working groups, such as the Partner Expert Groups (PEGs) of the ECHA or the Business and Industry Advisory Group (BIAC) of the OECD. These regulatory concepts are all based on a new approach for the targeted investigation of nanomaterials. We developed them together with the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC) and other experts and expanded them further using concrete examples in 2016.

An important prerequisite for the consistent application of regulatory specifications for nanomaterials is their clear identification. Together with partners, we have developed a tiered, efficient measurement method in various E.U. projects that is currently being validated for use in REACH.

Transparency is another issue. In our Nano dialog forum, we meet with environmental and consumer agencies to discuss questions on nanomaterial safety and transparency and develop joint recommendations for political representatives. We wrapped up another series of talks in BASF's Nano dialog forum with a report and an event in Brussels in 2016.

BASF makes successful use of biotechnology. We produce a range of established products with the help of biotechnological methods. This provides us with a great wealth of 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 guided by the code of conduct set out by EuropaBio, the European biotechnology association that actively supports a science-based, transparent and predictable regulatory framework. The association addresses society's ethical concerns, and promotes better mutual understanding of such issues through dialog.

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

Energy and climate protection

Suppliers → Production → Customers

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**

We want to reduce greenhouse gas emissions in our production and along the entire value chain. To this end, we have thoroughly analyzed the greenhouse gas emissions from our production in the past few years and implemented comprehensive reduction measures. This is how, for example, we have been able to reduce nitrous oxide emissions by more than 95% since 1997.

Comparisons with European emissions trading benchmarks show that our greenhouse gas-intensive chemical plants operate at above-average efficiency. To supply our production sites with energy, we rely on highly efficient combined heat and power plants with gas and steam turbines, and on the use of heat released by production processes. Around 50% of BASF Group emissions in 2016 resulted from steam and electricity generation in our power plants as well as in our energy suppliers' power plants.

Our success also depends on the long-term security and competitiveness of our energy supplies. Furthermore, we are committed to energy management that helps us analyze and further improve the energy efficiency of our plants.

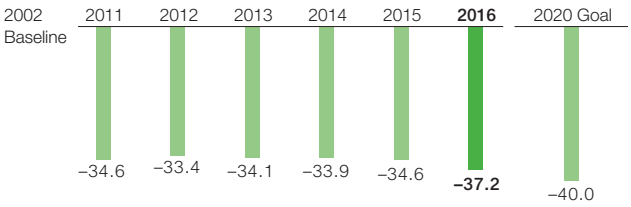
We offer our customers solutions that help prevent greenhouse gas emissions and improve energy and resource efficiency. Around half of our total annual research and development spending goes toward developing these products and optimizing our processes.

Our climate protection activities are based on comprehensive emissions controlling. 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. Reporting to CDP entails an annual analysis performed by our experts of the opportunities and risks that climate change poses for BASF. BASF achieved a score of A- in CDP's rating for 2016, 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.

We advocate climate protection by supporting initiatives to this end. The G20 Summit will take place in Hamburg in July 2017, an annual meeting between leaders of state and government of the most influential industrialized countries and emerging markets. Companies from 20 countries – the Business 20 (B20) – are working on recommendations for these political leaders. BASF is leading the working group on energy, climate and resource efficiency. The group especially aims for a political environment that enables companies like BASF to make essential contributions to climate protection using their power of innovation.

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

Reduction of greenhouse gas emissions per metric ton of sales product in BASF operations excluding Oil & Gas[1, 2] (%)



[1] The figure for 2011 was not adjusted to reflect the scope of consolidation pursuant to International Financial Reporting Standards 10 and 11. For more information on our data collection methods, see page 4.

[2] The figures for the 2011 and 2012 business years were not adjusted to the currently applied factors for global warming potential. For more information on our data collection methods, see page 104.

BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol[1] (1,000 metric tons of CO_2 equivalents)

BASF operations including Oil & Gas	2002	2015	2016
Scope 1[2]			
CO_2 (carbon dioxide)	14,634	16,496	16,215
N_2O (nitrous oxide)	6,407	600	528
CH_4 (methane)	244	88	45
HFC (hydrofluorocarbons)	61	119	87
SF_6 (sulfur hexafluoride)	0	1	0
Scope 2[3]			
CO_2	5,243	3,795	3,884
Total	**26,589**	**21,099**	**20,759**
Sale of energy to third parties (Scope 1)[4]			
CO_2	347	1,071	1,161
Total	**26,936**	**22,170**	**21,920**

[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] Emissions of N_2O, CH_4, HFC und SF_6 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 (2015 and 2016 emissions). HFC (hydrofluorocarbons) are calculated using the GWP factors of the individual components.

[3] Location-based approach. Information on the calculation of market-based Scope 2 emissions can be found in the GRI and Global Compact Index; see basf.com/en/gri_gc

[4] Includes sale to BASF Group companies; as a result, emissions reported under Scope 2 can be reported again in some cases.

Global goals

- Reduction of greenhouse gas emissions per metric ton of sales product
- Introduction of energy management systems in accordance with ISO 50001

We aim to reduce our greenhouse gas emissions per metric ton of sales product by 40% by 2020, compared with baseline 2002. In 2016, we achieved a reduction of 37.2% (2015: reduction of 34.6%). Since 1990, we have been able to lower our overall greenhouse gas emissions from BASF operations (excluding Oil & Gas) by 50.2% and even reduce specific emissions by 75.4%.

We set ourselves a new energy efficiency goal in 2015 covering both the chemicals and the oil and gas businesses. By 2020, we want to have introduced certified energy management systems (DIN EN ISO 50001) at all relevant production sites[5]. Taken together, this represents 90% of BASF's primary energy demand. 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.

2020 Goal

Reduction of greenhouse gas emissions per metric ton of sales product
Baseline 2002
BASF operations excl. Oil & Gas

–40%

2020 Goal

Coverage of our primary energy demand through certified energy management systems at all relevant sites
BASF operations incl. Oil & Gas

90%

In 2016, workshops were conducted in all regions to introduce our energy management systems. This is how, for example, an energy savings potential of over €1 million per year was identified during system implementation at three pilot plants at the largest South American site in Guaratinguetá, Brazil. It is already starting to be realized. All energy efficiency measures are recorded and analyzed in a global database and made available to Group sites as best practices. Currently, over 100 measures are being pursued to reduce energy consumption and increase competitive ability. External audits in accordance with ISO 50001 were already conducted at the first two Chinese sites in the Shanghai metropolitan region in 2016. At the moment, 31 sites are certified worldwide, representing 42.3% of our primary energy demand.

[5] The selection of relevant sites is determined by the amount of primary energy used and local energy prices.

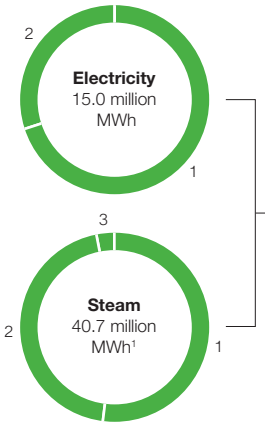
Energy supply of the BASF Group 2016

Electricity supply

1	Internally generated	70%
2	Purchased	30%

Steam supply

1	Internally generated	52%
2	Waste heat	45%
3	Purchased	3%

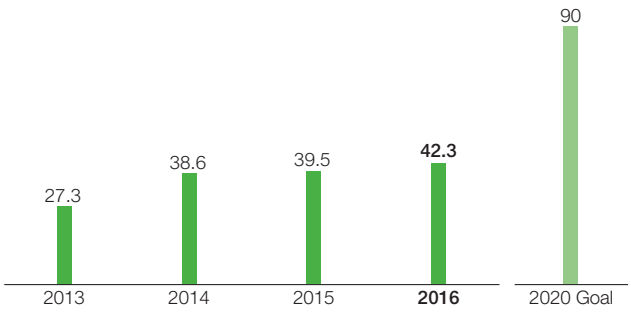


Fossil and residual fuels used for power generation in power plants of the BASF Group

83.6%	**Natural gas**	31.4 million MWh
0.4%	**Heating oil**	0.1 million MWh
2.2%	**Coal**	0.9 million MWh
13.8%	**Residual fuels**	5.2 million MWh
	Total:	37.6 million MWh

[1] Conversion factor: 0.75 MWh per metric ton of steam

Certified energy management systems (ISO 50001) introduced 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 our combined heat and power plants enable us to fulfill around 70% of the electricity demand of the BASF Group. Compared with separate methods of generating steam and electricity, we saved 14.0 million MWh of fossil fuels and prevented 2.8 million metric tons of carbon emissions in 2016. 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 19.0 million MWh in 2016, which translates to 3.8 million metric tons less of CO_2 released to 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 6.6 million metric tons of carbon emissions in 2016.

We were able to further optimize the resource and energy consumption of our production in numerous projects around the world in 2016. New highly efficient combined heat and power plants started up at the German sites in Düsseldorf-Holthausen and Illertissen as well as at Pontecchio Marconi in Italy. Furthermore, process improvements at many additional sites have led to savings in steam and electricity.

We also rely on locally available energy sources for energy supply at our sites. Especially in the growing Asian market, we and our energy suppliers also utilize coal as an energy source since the more climate-friendly natural gas is not available in sufficient quantities at competitive prices.

We are exploring the use of renewable energies. These can only become a permanent part of our energy mix if they are competitive in terms of supply security and cost. Our research also contributes to increasing the efficiency of technologies for the use of renewable energy sources.

Key indicators for energy and climate protection in BASF operations excluding Oil & Gas

	Baseline 2002[1]	2015	2016
Greenhouse gas emissions[2] (million metric tons of CO_2 equivalents)	24.713	20.133	19.976
Specific greenhouse gas emissions (metric tons of CO_2 equivalents per ton of sales product)	0.897	0.587	0.564
Primary energy demand[3] (million MWh)	55.759	57.262	57.423
Energy efficiency (kilograms of sales product per MWh)	494	599	617

[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; information on market-based Scope 2 emissions can be found in the GRI and Global Compact Index; see basf.com/en/gri_gc

[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

Carbon footprint and climate protection products

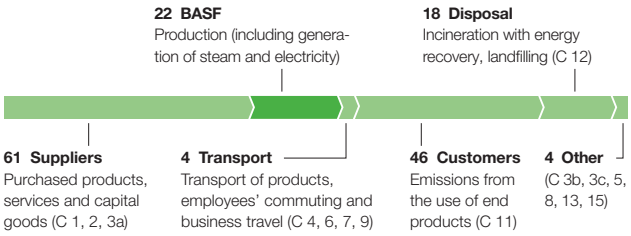
- Reporting on greenhouse gas emissions along the entire value chain
- Customers' use of climate protection products sold in 2016 avoids 540 million metric tons of CO_2 equivalents

BASF has been publishing a comprehensive corporate carbon footprint since as early as 2008. This reports on all 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 155,000 metric tons in 2016.

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. One example is our Green Sense® Concrete technology for sustainable construction: The optimization of the concrete's composition allows for reduced greenhouse gas emissions compared with conventional concrete production.

Greenhouse gas emissions along the BASF value chain in 2016[4]
(million metric tons of CO_2 equivalents)



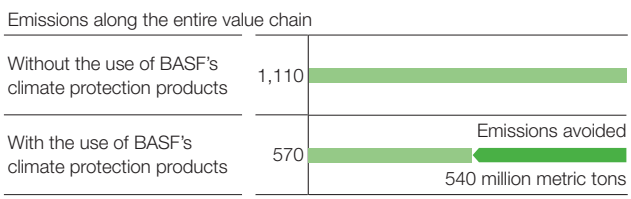
[4] According to Greenhouse Gas Protocol, Scope 1, 2 and 3; categories within Scope 3 are shown in parentheses

An analysis of 24 climate protection product groups revealed that customers' use of products sold in 2016 helped to avoid 540 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, 11% of the emissions avoided were attributable to BASF in 2016. The calculation of avoided greenhouse gas emissions was based on the chemical industry standard of the International Council of Chemical Associations (ICCA) and the World Business Council for Sustainable Development (WBCSD).

For more on our emissions reporting, see basf.com/corporate_carbon_footprint

For more on the sustainability analysis of our product portfolio, see page 30 onward

Prevention of greenhouse gas emissions through the use of BASF products (million metric tons of CO_2 equivalents)



Water

Suppliers — Production — Customers

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

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, or 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.

Together with the city of Guaratinguetá, Brazil, and the Fundação Espaço ECO®, we are engaged in the restoration of the local river basin at our site in Guaratinguetá, Brazil, which provides 90% of the local population's water supply. These efforts aim to improve water quality and increase its availability.

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

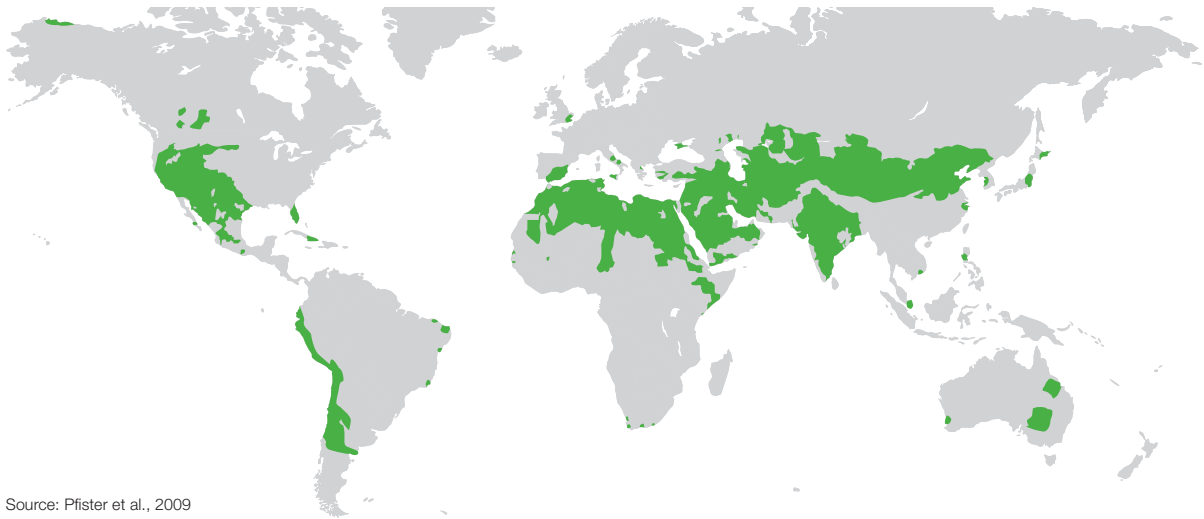
In order to ensure transparency in our reporting on water, we once again took part in CDP reporting in 2016. According to CDP, an international nonprofit organization, BASF is a world leader in sustainable water management and was included for the first time in CDP's Water A List. Of the 607 companies evaluated, only 24 of them received the top score of "A" – among them, BASF. 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.

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

Global goal

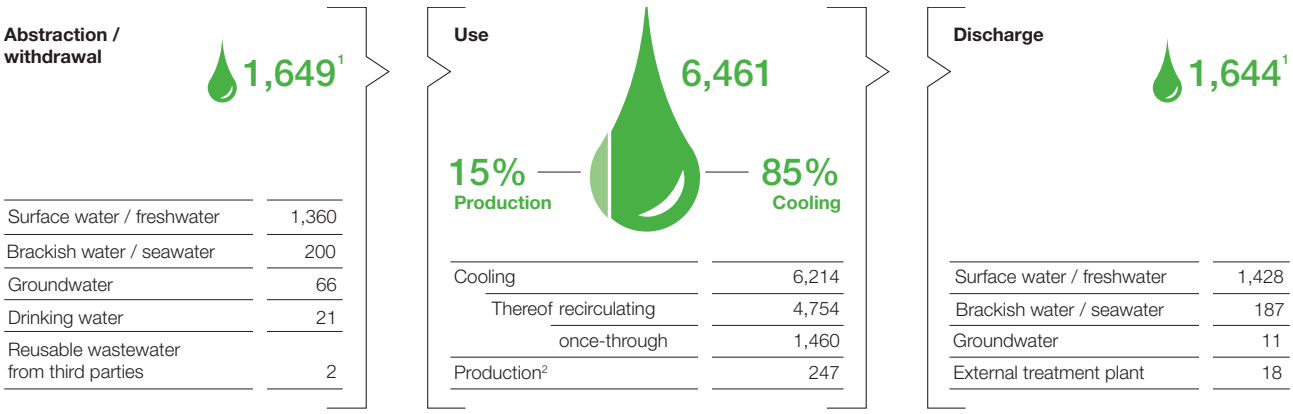
By 2025, we want to introduce sustainable water management at all sites in water stress areas and at our Verbund sites, covering 93% of BASF's entire water abstraction. We achieved 42.6% of this goal in 2016.

Water stress areas around the world



Source: Pfister et al., 2009

Water in the BASF Group 2016 (million cubic meters per year)



Abstraction / withdrawal	
Surface water / freshwater	1,360
Brackish water / seawater	200
Groundwater	66
Drinking water	21
Reusable wastewater from third parties	2

Use	
Cooling	6,214
Thereof recirculating	4,754
once-through	1,460
Production[2]	247

Discharge	
Surface water / freshwater	1,428
Brackish water / seawater	187
Groundwater	11
External treatment plant	18

[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

We pursue our goal by applying the European Water Stewardship standard, which rests on four principles: sustainable water abstraction, maintaining good water quality, preserving conservation areas, and ensuring continuous improvement processes, including in cooperation with other users.

In 2016, 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.

2025 Goal

Introduction of sustainable water management at all production sites in water stress areas and at all Verbund sites
BASF operations excl. Oil & Gas

100%

Water use

■ Using water responsibly

Our water usage totaled 1,649 million cubic meters in 2016. 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, reducing our need for freshwater.

We predominantly use water for cooling purposes (85%), after which we recirculate it back to our supply sources. We recirculate as much water as possible in order to withdraw less. Our larger sites have recooling plants that allow water to be reused several times and which reduce the temperature of used cooling water before it is discharged back into a body of water.

The supply, treatment, transportation and recooling of water is associated with a considerable energy demand. We employ various means in our efforts to minimize this as much as possible. 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

■ Further reduction of emissions

A total of 1,644 million cubic meters of water were discharged from BASF production sites in 2016, including 184 million cubic meters of wastewater from production. Emissions of nitrogen to water amounted to 2,900 metric tons (2015: 3,000 metric tons). We were able to achieve this improvement by optimizing processes and exchanging products, for example. Around 15,900 metric tons of organic substances were emitted in wastewater (2015: 17,300 metric tons). Our wastewater contained 23 metric tons of heavy metals (2015: 25 metric tons). Phosphorus emissions amounted to 310 metric tons (2015: 460 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, see basf.com/water

Air and soil

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
- Systematic management of contaminated sites

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 and reduce waste. We regularly carry out audits to inspect external waste disposal companies, ensuring that our hazardous waste in particular is properly disposed of. In this way, we also contribute to preventive soil protection and keep today's waste from becoming tomorrow's contamination.

When treatment is required for soil and groundwater contamination at active and former BASF sites, proper remediation measures are reviewed based on prevailing legal and current technical standards, and undertaken as necessary.

Emissions to air

- Further reduction of emissions

Absolute emissions of air pollutants from our chemical plants amounted to 26,735 metric tons in 2016. Emissions of ozone-depleting substances as defined by the Montreal Protocol totaled 25 metric tons in 2016 (2015: 23 metric tons). Emissions of heavy metals in 2016 amounted to 3 metric tons (2015: 4 metric tons).

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 Oil & Gas

	2016	2015
CO (carbon monoxide)	3,585	3,813
NO_x (total nitrogen oxides)	11,143	11,058
NMVOC (nonmethane volatile organic compounds)	4,824	5,140
SO_x (total sulfur oxides)	1,872	3,028
Dust	3,082	3,330
NH_3 (ammonia) and other inorganic substances	2,229	2,216
Total	**26,735**	**28,585**

Waste management

■ Total waste volume slightly above prior-year level

Waste prevention is our topmost goal. If waste is unavoidable, we review the options for recycling or energy recovery, using BASF's existing Verbund structures for efficient waste management. Total waste volume amounted to 2.10 million metric tons in 2016 (+3.7%).

Waste management in the BASF Group (million metric tons)

	2016	2015
Total waste generation[1]	**2.10**	**2.02**
Thereof from oil and gas exploration	0.06	0.05
Waste recovered	**0.77**	**0.68**
Recycled	0.26	0.27
Thermally recovered	0.51	0.41
Waste disposed of	**1.33**	**1.34**
In underground landfills	0.14	0.14
In surface landfills	0.47	0.48
Through incineration	0.72	0.72
Classification of waste for disposal[2]		
Nonhazardous waste	0.46	0.44
Hazardous waste	0.87	0.90
Transported hazardous waste	0.23	0.27

[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.

Management of contaminated sites

■ Systematic management of contaminated sites ensured

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. We set out global standards for our approach to managing contaminated sites. A worldwide network of experts ensures their proper implementation.

We have been documenting relevant sites in a contaminated site database since 2013. Ongoing remediation work around the world continued on schedule and planning was concluded on future landfill remediation projects.

Forecast
Opportunities and risks report

Opportunities	Risks	Risk management
Potential successes that exceed our defined goals	Events that can negatively impact the achievement of our goals	Identifying opportunities and risks as early as possible and planning effective courses of action

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 understand risk to be any event that can negatively impact the achievement of our short-term operational or long-term strategic goals. We define opportunities as potential successes that exceed our defined goals.

In order to effectively measure and manage identified opportunities and risks, we quantify these in terms of probability and economic impact in the event they occur. 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 risks and opportunities arise from overall economic developments and volatility in exchange rates and margins**

For 2017, we expect the global economy to continue to grow at around the same pace as the previous year. Important opportunities and risks for our earnings are associated with uncertainty regarding market growth, the development of key customer industries, and volatility in foreign currency exchange rates and margins. A considerable slowdown of the Chinese economy continues to pose significant risks. Such a development would negatively impact 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 and an increased tendency toward protectionism.

Potential short-term effects on EBIT of key opportunity and risk factors subsequent to measures taken[1]

Possible variations related to:	Outlook – 2017 +
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	□□■■■□□□
Finance	
Exchange rate volatility	□■■■■■■□
Other financial opportunities and risks	□□□■■□□□

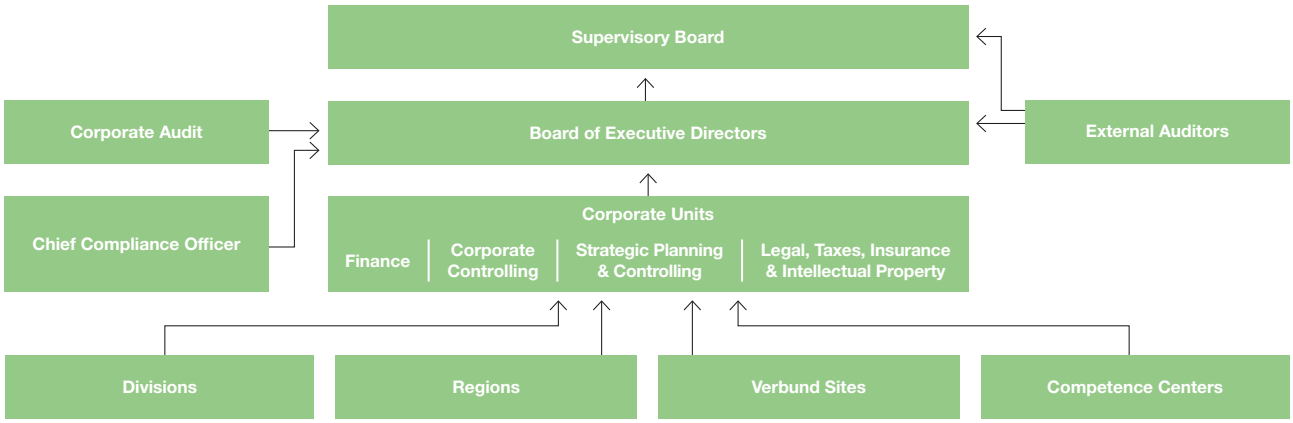
□□□■ < €100 million
□□■■ ≥ €100 million < €500 million
□■■■ ≥ €500 million < €1,000 million
■■■■ ≥ €1,000 million < €1,500 million

[1] Using a 95% confidence interval per risk factor based on planned values; summation is not permissible.

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 which even comprehensive risk management cannot exclude.

Organization of BASF Group's risk management[1]



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; Strategic Planning & Controlling; Legal, Taxes, Insurance & Intellectual Property; and the Chief Compliance Officer. Effective January 1, 2017, the Finance corporate unit and the Legal, Taxes, Insurance and Intellectual Property corporate unit were both renamed functional units. Competence centers were relabeled either functional units or research units. The Strategic Planning & Controlling unit is now called Corporate Development. The new nomenclature had no effect on the existing risk management processes. The aforementioned units continue to 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, research, functional and corporate units 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 material prices are an exception. In this case, there is an initial consolidation at a Group-wide 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. The CCO regularly reports to the Board of Executive Directors on progress in the program's implementation as well as on any significant results. Furthermore, the CCO provides a status report to the Supervisory Board's Audit Committee at least once each 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.

Instruments

– The Risk Management Process Manual, 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 the business and Group level using a Monte Carlo simulation helps us to identify effects and trends across the company.
– The BASF Group's management is informed about operational opportunities and risks (observation period of up to

[1] The names of some individual units were changed as of January 1, 2017. For more information, see the section "Organization and responsibilities."

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 our strategy development, the Corporate Development unit conducts strategic opportunity/risk analyses with a ten-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 on our Group-wide Compliance Program, see page 134 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, four-eyes principle, and clearly regulated access rights
- Annual evaluation of 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 standardized 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. 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 have a material impact on 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 annual evaluation process.

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 and evidenced by sample taking.
– **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 effective 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 from pages 119 to 121.

We also consider risks from deviations in assumptions. We continue to see a significant macroeconomic risk in 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 and an increased tendency toward protectionism.

Should the macroeconomic environment develop more weakly than we predict, we expect a lower oil price. In this case, we would also expect the euro to depreciate relative to the U.S. dollar 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 on our crop protection business.

Margin volatility

We anticipate generally stable margins for the BASF Group in 2017. For some products and value chains, it is possible that margin pressure could be increased by, for example, new capacities or increasing raw material costs. This would have a negative effect on our EBIT.

The year's average oil price for Brent crude was around $44 per barrel in 2016, compared with $52 in the previous year. For 2017, we anticipate an average oil price of $55 per barrel. We therefore expect a moderate increase in price levels for the raw materials and petrochemical basic products that are important to our business. Yet an oil price level below the expected average would pose risks for our oil and gas business, whose EBIT dips by approximately €20 million for every $1 decrease in the average annual barrel price of Brent crude.

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 fitting measures. Aside from innovation, a major component of competitiveness is a suitable cost structure in order to achieve good business performance on the market.

Regulation and political risks

Risks for us can arise from intensified geopolitical tensions, the destabilization of political systems or new trade sanctions. In addition, risks to the BASF Group can be posed by further regulations on the use or registration of agricultural and other chemicals.

The German federal government's agreement with the E.U. Commission on the treatment of existing self-generated energy in the new Renewable Energy Act (*Erneuerbare-Energien-Gesetz*, or EEG) has removed the previously reported risk of sharply increased charges resulting from the EEG surcharge.

We view the worldwide expansion of renewable energy and measures to increase energy efficiency as an opportunity for increased demand for our products. For example, we offer solutions for wind turbines in addition to insulation foams for buildings. Our catalyst business benefits from the tightening of automobile emissions regulations.

Purchasing and supply chain

We minimize procurement risks through our broad portfolio, global purchasing activities and the purchase of raw materials on spot markets, as well. 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 non-delivery. We continuously monitor the credit risk of important business partners.

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 on emergency response, see page 100 or 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.

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 on our compensation system, see page 44 onward
For more on risks from pension obligations, see page 117

Information technology risks

BASF relies on a 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 and 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 a Cyber Defense Center in 2015; is a member of the Cyber Security Sharing and Analytics e.V. (CSSA); and is a founding member of the German Cyber Security Organization (DCSO) together with Allianz SE, Bayer AG and Volkswagen AG.

Legal dispute 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 analysis and assessment 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 affected operating and functional units together with the Legal and Finance units. If sufficient probability is identified, a provision is recognized accordingly for each dispute. Should a provision be unnecessary, general risk management continues to assess whether these litigations nevertheless present 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 functional unit or in the 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.

Exchange rate volatility

Our competitiveness on global markets is influenced by fluctuations in exchange rates. For BASF's purchasing, opportunities and risks arise in particular when the U.S. dollar exchange rate fluctuates. A full-year rise in the value of the U.S. dollar/euro exchange rate by $0.01 would result in an increase of around €40 million in the BASF Group's EBIT, assuming other conditions remain the same. On the production side, we counter foreign currency 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 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 well-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. In addition, we use our knowledge of the markets for crude oil and oil products to generate earnings from the trade of raw materials. To address specific risks associated with these trades, which are not part of our operating business, we set and continuously monitor limits with regard to the type and size 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 on financial risks, see the Notes to the Consolidated Financial Statements from page 208 onward

For more on the maturity profile of our financial indebtedness, see the Notes to the Consolidated Financial Statements from page 204 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

The risk of an asset impairment occurs 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 the risk of impairment of individual assets such as customer relationships, technologies and trademarks, as well as goodwill, to be nonmaterial. Nevertheless, a continuing decline in the price of oil below our assumed planning level would result in impairment risks for the Oil & Gas segment's assets.

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.

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 been almost exclusively offered defined contribution plans for future years of service in recent years.

Long-term opportunities and risks

Long-term demand development

We assume that chemical production (excluding pharmaceuticals) will grow considerably faster than global gross domestic product over the next five years and at about the same level as 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 sales growth that slightly exceeds this market growth. Should global economic growth see unexpected, considerable deceleration, due for example to an ongoing weak period in the emerging markets 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 on the "We create chemistry" strategy, see page 22 onward

Development of competitive and customer landscape

We expect competitors from emerging markets to gain increasing significance in the years ahead. Furthermore, we predict that many raw material suppliers will expand their value chains.

We counter this risk through active portfolio management. We exit markets where risks outweigh opportunities, and in which we see limited possibilities to stand out from our competitors in the long term.

In order to remain competitive, we continuously improve our operational excellence. Our strategic excellence program, DrivE, also contributes to this aim. Starting at the end of 2018, we expect this program to contribute around €1 billion in earnings each year compared with baseline 2015.

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 more sustainability in our customer industries continues. We want to use innovations to take advantage of the resulting opportunities. In the long term, we aim to continue increasing sales and earnings with new and improved products.

BASF's enhanced innovation approach helps the company increase its power of innovation and ensure competitive ability through targeted enhancement and innovative application of specific key technologies. This is achieved by honing the focus of research on topics with long-term strategic business relevance, enhancing existing scientific processes and methods and introducing new ones, and optimizing our organizational structures. The central research areas Process Research & Chemical Engineering, Advanced Materials & Systems Research and Bioscience Research serve as global platforms headquartered in one of the regions particularly significant for us: 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. Stronger regional presence opens up new opportunities to participate in local innovation processes and gain access to local talent. 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.

We optimize the efficiency and effectiveness of our research activities through our global Know-How Verbund as well as through collaboration with partners and customers. Furthermore, we continuously review the chances of success and the underlying conditions of research projects; this

review includes all phases from idea generation to product launch. The trust of customers and consumers is essential for the successful introduction of new technologies. That is why we enter into dialog with stakeholders at an early stage of development.

For more on innovation, see page 32 onward

Portfolio development through investments

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; therefore, more than a quarter of our investment budget will be spent in emerging markets over the next five years. In North America, investments in new production facilities form the basis of future growth. For example, we are constructing an ammonia production plant in Freeport, Texas, with Yara International ASA (based in Oslo, Norway). In addition, 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 with a view to developments in raw material prices and the relevant market conditions.

Our decisions on the type, size 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.

For more on our investment plans, see page 123 onward

Acquisitions

In the future, we will continue to refine our portfolio through acquisitions that promise above-average profitable growth, are innovation-driven, offer added value for our customers and reduce the cyclicality of our earnings.

The evaluation of opportunities and risks plays a significant role during the assessment of acquisition targets. A detailed analysis and quantification are conducted as part of due diligence. Examples of risks include increased staff turnover, delayed realization of synergies, and 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.

For more on our acquisitions, see page 37 onward

Recruitment and long-term retention of qualified employees

BASF, too, is adjusting in the medium and long term to the rising challenge of gaining skilled employees due to demographic changes, 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 through our Best Team Strategy and the global initiatives derived from it, covering demographic and knowledge management, Diversity + Inclusion, employee and leadership development, intensified employer branding, and supplementary regional initiatives. With these measures, we increase BASF's attractiveness as an employer and retain our employees in the long term.

For more on the individual initiatives and our goals, see page 40 onward

Sustainability

BASF uses sustainability management tools to identify upcoming opportunities and risks that arise in connection with the topics of environment, society and governance. Their long-term effect on our business activities and their associated relevance are assessed through such instruments as our materiality analysis, and take into account our experiences from constant stakeholder dialog. We have established global monitoring systems to check adherence to laws and our voluntary commitments in the areas of environment, society and governance. These also incorporate our suppliers.

In terms of upcoming opportunities and risks, material aspects identified included: energy and climate, water, resources and ecosystems, responsible production, and employment and employability. In addition to specific requirements for these aspects, discussion is growing surrounding the internalization of external effects.

In order to identify, assess and direct climate-related risks and opportunities, our risk management process includes analyzing the material aspect "energy and climate." For BASF as an energy-intensive company, opportunities and risks arise particularly from regulatory changes, such as in carbon prices through emissions trading systems, taxes or energy legislation.

For more on sustainability management, see page 29 onward
For more on energy and climate protection, see page 103 onward
For more on opportunities and risks from energy policies, see page 114

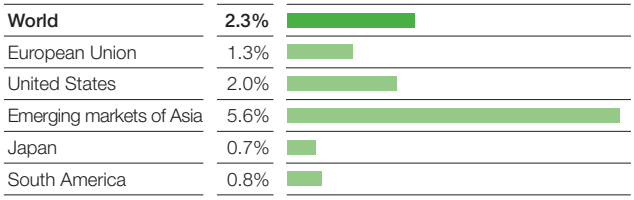
Economic environment in 2017

The global economy will presumably grow by 2.3% in 2017, about as fast as in 2016 (+2.3%). In light of significant political uncertainty, volatility is likely to remain high. We forecast a considerable slowdown in growth in the European Union. For the United States, we currently anticipate a slight upturn in growth. Growth in China is likely to continue its downward trend. We expect the recession in Brazil and Russia to end. We assume that global chemical production will grow by 3.4% in 2017, comparable with the rate of 2016. For 2017, we predict an average price of $55 per barrel for Brent blend crude oil and an exchange rate of $1.05 per euro.

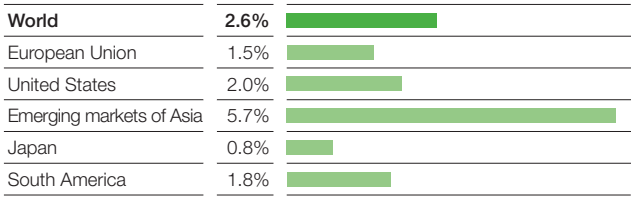
Trends in the global economy in 2017

- Weaker growth likely in the European Union
- Further slowing of growth expected for China
- Slight upturn probable in the United States
- End of recession anticipated for Russia and Brazil

Outlook for gross domestic product 2017
(Real change compared with previous year)



Trends in gross domestic product 2017–2019
(Average annual real change)



Economic growth in the **European Union** is expected to slow down considerably in 2017. In the United Kingdom, uncertainty as to the terms of exit from the European Union is likely to curb investment and private consumption. This weaker dynamic will have a dampening effect on the growth of Britain's E.U. trading partners, including Germany, Italy, France and Spain. Growth will presumably remain at a stable higher level in the eastern E.U. countries. We expect the recession in Russia to end, supported by our forecast of a slight recovery in the oil price.

Following the administration change in the **United States**, economic prospects for the United States are especially difficult to predict. We assume that this uncertainty will be reflected in a greater reluctance to invest in the manufacturing and service sectors. Nevertheless, overall economic growth in 2017 will quicken somewhat, as investments in the oil and gas industry are unlikely to continue declining. While the tax cuts planned by the new U.S. administration could have positive effects on growth, the expected protectionist measures and the stronger U.S. dollar pose risks to the country's economy.

In the **emerging markets of Asia**, we expect growth to continue weakening in 2017. Against the backdrop of economic restructuring in China, we anticipate a further cooldown in economic momentum. We predict growth at levels comparable to 2016 for the other countries in the region. While developments in China will probably exercise a dampening effect, raw material prices and demand for imports from South America and Russia should stabilize. The region's economy is supported by a solidly growing IT and communications industry.

Japan's gross domestic product is expected to maintain its merely minimal upward trend in 2017. Monetary and fiscal policy will continue to provide some growth impetus; however, investment momentum and private consumption will remain on the slow side in an environment of weak domestic demand. Moreover, we do not expect any significant impulses that would boost exports.

We anticipate an end to the economic downturn in **South America**. Leading indicators suggest that Brazil has bottomed out. Falling interest rates and declining inflation could increasingly support readiness to invest in the country; export demand is also likely to rise. We forecast economic recovery in Argentina. Decreasing inflation, a stable exchange rate and a better investment climate should provide impetus for growth.

Outlook for key customer industries

- **Marginally higher growth expected in global industrial production for 2017**

Global industrial production in 2017 is likely to grow marginally faster than in 2016, at 2.3%. This will be largely attributable to the end of the severe recession in South America, where industrial production should once again show slight growth. In the emerging markets of Asia, growth in industrial production will abate slightly, from 5.5% to 5.2%. In the advanced economies, it will probably remain weak, at under one percent.

We expect an economic slowdown in the **transportation sector** overall compared with 2016. After three years of solid growth, automotive production is likely to expand only slowly in western Europe, while other branches of the transportation industry could increase their growth rates. A turnaround can be expected in the Russian automotive market. The eastern European automotive market will begin growing again slightly as a result, even if at a low level. In North America, we expect production to stagnate overall. U.S. automotive production will probably shrink slightly; in Mexico, on the other hand, new production-line startups are expected to lead to growth. In South America, we anticipate slight increases in production once again for 2017. Growth in automotive production in China will weaken after the significant gains seen in 2016.

In the **energy and raw materials sector**, production will presumably grow again in 2017 after stagnating in 2016. However, in Europe and South America, we only anticipate a slight increase in production volumes. Higher raw material prices and the return of stronger demand are likely to provide somewhat faster growth in North America. Production will expand only moderately in the emerging markets of Asia; this will be partly offset by rising imports from Australia.

For the **construction sector**, we are assuming that the solid growth rates will continue overall. Construction volumes will grow only moderately in western Europe. A sharp increase in Germany and weak growth in France and Italy will contrast with a shrinking market in the United Kingdom. In the eastern E.U. countries, construction activity will recover somewhat after the strong declines of the previous year. However, we still see no increase in activity in Russia. Construction in North America is expected to grow at a moderate pace. We do not anticipate growth impetus in the infrastructure sector in the short term; financing conditions and the volume of a potential, state-funded infrastructure program remain unclear. In China, we continue to expect support measures for the construction industry; growth there will nevertheless abate. We still expect the other Asian emerging markets to show stable growth rates in the construction industry. In Japan, government spending programs should ensure additional investments in infrastructure. The construction market in South America is likely to recover somewhat after the declines of recent years. Given a background of continuing weak oil prices, only a slight recovery in construction activity is expected in the Middle East.

Consumer goods production will presumably grow slightly faster in 2017 than in the previous year. The increase will remain weak in western Europe; eastern Europe will see higher rates, albeit somewhat lower than in 2016. After a slight decline in the previous year, we once again expect modest growth in North America. In Asia, which accounts for over half of the world's production of consumer goods, growth will probably remain stable at a high level. For South America, we predict consumer goods output will stagnate following last year's considerable decline.

The **electronics industry** is likely to expand its production at a similarly strong rate as in 2016. We anticipate stable growth in Asia, the center of the global electronics industry, at a level comparable to that of the previous year. The increase will probably be somewhat higher year-on-year in North America.

In the **health and nutrition sector**, growth should once again match the levels of recent years. We expect the increase to be slightly higher overall in the European Union and in North America. The fast pace of growth in this sector in Asia will probably let up slightly in 2017. In this industry, too, we expect production to recover in South America.

We expect stable to slightly accelerating growth in **agricultural production** in 2017, given the low level of agricultural production growth in 2016. Record yields in some regions – of corn and soy in North America and wheat in eastern Europe, for example – contrasted with declining yields in parts of South America and Asia in particular, due to the negative effects of El Niño as well as weaker monsoon rains. Global demand for bioethanol in 2017 will remain dampened by lower prices in the energy sector. Against this backdrop, we expect prices for agricultural raw materials to remain under pressure in 2017.

Outlook for the chemical industry

■ **Global growth in chemical industry at level of previous year**

Global chemical production (excluding pharmaceuticals) will probably grow by 3.4% in 2017, the same pace as 2016 (+3.4%). We anticipate a marginally higher expansion rate in the advanced economies (2016: +0.9%, 2017: +1.1%). Growth in the emerging markets will presumably weaken somewhat (2016: +5.4%, 2017: +5.1%). The global growth rate of the chemical market will be largely determined by developments in China, which accounts for more than a third of worldwide production. There, the upward trend may continue to slacken but producers in China are nevertheless likely to contribute more than two percentage points to worldwide chemical industry growth. Yet macroeconomic risks in China remain high, therefore, our forecast for global chemical growth is marked by particular uncertainty.

Chemical production in the **European Union** is expected to barely grow faster than in 2016. In general, the increase in production will remain modest against the backdrop of a sluggish domestic market. We expect competitive pressure on export markets to remain intense, even though the naphtha-based European chemical industry benefits more from low oil prices than the gas-based production in the United States.

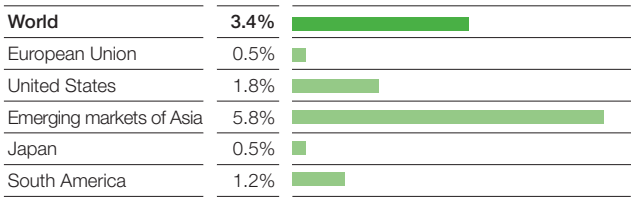
In the **United States**, we expect somewhat faster growth in chemical production, at just under 2%, as new production capacity, which will also be used for export, comes onstream.

Overall chemical growth is likely to decelerate somewhat in the **emerging markets of Asia**, mainly due to the slowdown in China, which will also affect the other developing countries in the region.

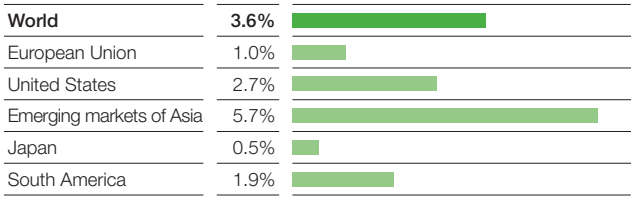
In **Japan**, we presume a weak overall economic environment and minimal growth in chemical production.

In **South America**, the anticipated end of the recession in Argentina and Brazil will result in slight growth in chemical production in the region.

Outlook for chemical production 2017 (excl. pharmaceuticals)
(Real change compared with previous year)



Trends in chemical production 2017–2019 (excl. pharmaceuticals)
(Average annual real change)



Outlook 2017

For 2017, we expect the global economy and chemical production to grow at around the same pace as 2016. We assume an average price of $55 for a barrel of Brent blend crude oil and an exchange rate of $1.05 per euro. In an environment that remains volatile, we aim to grow profitably and considerably raise the BASF Group's sales. For income from operations (EBIT) before special items as well as for EBIT, we anticipate a slight increase compared with the previous year.[1]

For more information on our expectations for the economic environment in 2017, see page 119 onward

Sales and earnings forecast for the BASF Group

- Considerable sales growth through increases in all segments
- Slightly higher EBIT before special items

We expect BASF Group sales to grow considerably in the 2017 business year. This will be supported by slightly higher sales in the Performance Products segment and by considerable increases in the other segments as well as in Other.

We want to slightly raise EBIT before special items compared with 2016. We anticipate considerably higher contributions from the Oil & Gas segment and from Other. In the Performance Products, Functional Materials & Solutions and Agricultural Solutions segments, we assume EBIT before special items will be slightly higher, while the contribution from the Chemicals segment will match the prior-year level.

BASF Group EBIT is also expected to grow slightly in 2017. A significantly higher contribution from the Oil & Gas segment and slight increases in the Chemicals, Performance Products and Agricultural Solutions segments are expected to more than offset the slight declines in the Functional Materials & Solutions segment and in Other. In 2016, EBIT of the Functional Materials & Solutions segment contained special income from divestitures, and EBIT of Other included special income from the sale of assets.

We are likely to once again earn a significant premium on our cost of capital in 2017; compared with the previous year, however, BASF Group EBIT after cost of capital will decrease considerably. The slight rise in EBIT – despite a lower level of special income from divestitures – will be contrasted by higher cost of capital, due for the most part to the acquisition of Chemetall at the end of 2016 as well as the startup of new plants. In the Functional Materials & Solutions segment, we are therefore assuming that EBIT after cost of capital will decline considerably. We aim to boost it slightly in the Chemicals segment and considerably in the other segments.

The significant risks and opportunities that could affect our forecast are described on pages 111 to 118.

Sales and earnings forecast for the segments

Sales in the **Chemicals** segment are likely to grow considerably in 2017. We anticipate higher sales prices as a consequence of rising raw material prices, as well as volumes growth from factors such as the startup of new plants. We assume that strong competitive pressure will continue, especially on the markets for butanediol, isocyanates and caprolactam. EBIT before special items is likely to match the level of 2016. We expect the earnings contribution from the increase in sales volumes to offset both margin pressure and higher fixed costs. Fixed costs will rise especially in the Intermediates division, mainly as a result of scheduled plant turnarounds and initial expenditures for the new acetylene plant in Ludwigshafen.

In the **Performance Products** segment, we expect the market environment to remain challenging, but nevertheless aim to slightly increase sales in 2017. This will be largely supported by volumes growth in all divisions, thanks in part to higher plant capacity utilization rates as well as the startup of new production capacities. We anticipate higher fixed costs in 2017, especially from new plant startups. This rise will be more than offset by strict cost discipline and measures to increase competitiveness in all divisions. As a result, we forecast slightly higher EBIT before special items compared with 2016.

We want to achieve a considerable sales increase in the **Functional Materials & Solutions** segment in 2017. The Chemetall business acquired from Albemarle will contribute to this, as will the sales volumes growth anticipated in all divisions. Our forecast is supported by the expectation of continuing good demand from the automotive and construction industries. The divestitures completed in 2016 in the Catalysts and Coatings divisions, along with a probable decline in precious metal prices, will slow sales growth. As a result of higher sales, EBIT before special items is likely to slightly exceed the level of 2016.

For the **Agricultural Solutions** segment, we anticipate stable market development for crop protection products in 2017. Our goal is to utilize growth potential on the market primarily through the launch of innovative products, growth in the emerging markets – especially Asia – and a strong customer focus. We are planning to increase volumes in 2017 and considerably boost sales levels. Because of ongoing margin pressure in a market environment that remains challenging, we assume a slight increase in EBIT before special items.

[1] With reference to 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 %).

Forecast by segment[1] (million €)

	Sales		Income from operations (EBIT) before special items	
	2016	Forecast 2017	2016	Forecast 2017
Chemicals[2]	12,905	considerable increase	2,032	at prior-year level
Performance Products[2]	15,558	slight increase	1,777	slight increase
Functional Materials & Solutions	18,732	considerable increase	1,946	slight increase
Agricultural Solutions	5,569	considerable increase	1,087	slight increase
Oil & Gas	2,768	considerable increase	517	considerable increase
Other	2,018	considerable increase	(1,050)	considerable increase
BASF Group	**57,550**	**considerable increase**	**6,309**	**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] Effective January 1, 2017, the Chemicals and Performance Products segments' activities for the electronics industry were merged and allocated to the Performance Products segment as the Electronic Materials global business unit. To facilitate comparability, the 2016 figures for both segments have been adjusted accordingly.

Our planning for the 2017 business year in the **Oil & Gas** segment is based on an average price for Brent blend crude oil of $55 per barrel. Gas prices in northwestern Europe are likely to hover above the level of 2016. We anticipate a considerable rise in sales and EBIT before special items. Higher prices for oil and gas and a contribution from our share in the Yuzhno Russkoye natural gas field exceeding that of the previous year will substantially support this development. In 2016, the excess amounts received over previous years were compensated as contractually agreed with our partner, Gazprom.

Sales in **Other** are expected to considerably increase in 2017, primarily as a result of higher prices in raw material trading. We also anticipate a considerable rise in EBIT before special items as compared with 2016.

Investments[3]

■ **Investments of around €3.9 billion planned for 2017**

Our investments in 2016 focused on the Chemicals, Performance Products and Oil & Gas segments. For example, we started up further sections of the TDI production complex in Ludwigshafen, Germany; completed construction of the aroma ingredients complex in Kuantan, Malaysia; and invested in field development projects in Argentina, Norway and Russia.

For 2017, we are planning total capital expenditures of around €3.9 billion for the BASF Group. We have planned capital expenditures totaling €19.0 billion for the period from 2017 to 2021 and will invest more than a quarter of this amount in emerging markets. The average investment volume in the years ahead will therefore remain at the same level as in 2016. Projects currently being planned or underway include:

Capital expenditures: Selected projects

Location	Project
Caojing, China	Construction: automotive coatings plant
Geismar, Louisiana	Capacity expansion: MDI
Ludwigshafen, Germany	Replacement: acetylene plant
	Construction: vitamin A production plant

In the Oil & Gas segment, our currently planned investments of around €4.4 billion between 2017 and 2021 will focus mainly on the development of proven gas and oil deposits in Argentina, Norway and Russia. The actual amount of expenditure is also dependent on oil and gas price developments and will be adjusted as necessary.

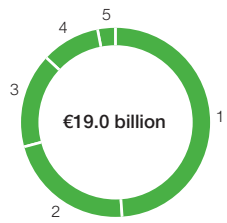
[3] Excluding additions to property, plant and equipment from acquisitions, capitalized exploration, restoration obligations and IT investments

Investments in property, plant and equipment by segment, 2017–2021

1	Chemicals	24%
2	Performance Products	21%
3	Functional Materials & Solutions	15%
4	Agricultural Solutions	4%
5	Oil & Gas	23%
6	Other (infrastructure, R&D)	13%

Investments in property, plant and equipment by region, 2017–2021

1	Europe	49%
2	North America	22%
3	Asia Pacific	16%
4	South America, Africa, Middle East	10%
5	Alternative sites currently being investigated	3%



Dividend

We stand by our ambitious dividend policy and offer our shareholders an attractive dividend yield. We continue to aim to increase our dividend each year, or at least maintain it at the previous year's level.

Information on the proposed dividend can be found from page 12 onward

Financing

Our financing policy is aimed at ensuring our solvency at all times, limiting the risks associated with financing and optimizing our cost of capital. We strive to maintain at least a solid "A" rating, which allows the BASF Group unrestricted access to money and capital markets.

From the scheduled repayment of bonds, we expect cash outflows in the equivalent amount of around €1.4 billion in 2017. To refinance mature 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 57

Events after the reporting period

Since the end of the 2016 business year, we have acquired the Henkel Group's western European building material business for professional users and completed the purchase of Rolic AG, an Allschwil, Switzerland-based company primarily active in the display material sector.

For more information, see the Notes to the Consolidated Financial Statements on page 220