



# Sustainability Report

# 2019

Science for a **better life**

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# Sustainability and business must go hand in hand

**Dear stakeholders of Bayer, dear readers,**

Bayer's commercial success has always been based on our researchers' passion and our company's innovative strength. Through this, we strive to develop new solutions for a better life. From today's perspective, it is clear that we must do more to achieve this goal – to ensure a sustainable future and at the same time sustainable economic success.

From 2020, we will once again underpin the importance of sustainability as a pivotal element of our corporate strategy and as an integral part of our operational performance. We have set ourselves ambitious targets that will guide our contribution to a sustainable future through our business activities in the areas of health and nutrition. These targets are aligned with the Sustainable Development Goals of the United Nations for 2030.

Sustainability is more than just climate protection. The 17 different United Nation goals have already underscored the need for broad efforts in many areas to overcome pressing global challenges – such as the steadily growing global population, the loss of biodiversity, global inequality and man-made climate change. Nevertheless, the progress made with the Sustainable Development Goals so far is insufficient and does not reach enough people, particularly in developing countries. Industry must play a more active role in this regard. Bayer commits itself unambiguously to its responsibility and its key role in health and nutrition.

One of the company's focal points is on reducing greenhouse gases throughout the world. Every company must do its part to fulfill the Paris Agreement. At Bayer we can and aim to do even more – that is our commitment as a leading company in our industries. Against this background, we have adopted ambitious climate measures to become a completely carbon-neutral company by 2030 and realize the tremendous potential offered along our entire value chain.

This applies especially to global agriculture. Our huge responsibility – and equally our great leverage – are evident when considering that farming accounts for about 25 percent of greenhouse gas emissions and nearly 70 percent of water use worldwide. By mobilizing our resources and innovative strength and by working together with our customers, we want to promote a more sustainable form of agriculture.

The crucial factor for us is that these activities must be implemented in a manner that is both measurable and comprehensible. We are currently working hard on achieving this. We want to set new standards for transparency in order to earn trust. People should know what Bayer stands for and what they can and should expect from us. This pertains equally to our financial and our sustainability targets, and equally to our social commitment and our collaboration with partners. We say what we do, and we do what we say. That's how you create trust.



Bayer CEO Werner Baumann

Transparency also means being able to recognize one's own role and the expectations of different stakeholders. We remain firmly committed to the principles of the United Nations Global Compact and align ourselves to clear values. At the same time, we are systematically investing in sustainable business models to generate earnings. That is not a contradiction – the transformation to a sustainable future can only succeed through the efforts of global companies. In this respect, sustainability and business must go hand in hand. Green goals must be achieved profitably.

We want to be judged on these ambitions and pronouncements. I would like to thank you for the confidence you have placed in Bayer. We will do everything we can to live up to this confidence in 2020 as well.

Sincerely

**Werner Baumann**

Chairman of the Board of Management of Bayer AG  
Chief Sustainability Officer

# About this Report

With this Sustainability Report, Bayer aims to provide transparent and in-depth insights into both its sustainability strategy and its sustainability performance. The report supplements the nonfinancial statement pursuant to the CSR Directive Implementation Act (CSR-RUG) that is published in the combined management report of the [Annual Report 2019](#).

The reporting period is the 2019 fiscal year. The closing date for all data and facts was December 31, 2019. The last sustainability report was published in February 2019 as an integrated part of the Annual Report 2018.

The Bayer Group's sustainability reporting has been aligned to the guidelines of the [Global Reporting Initiative \(GRI\)](#) and the 10 principles of the [U.N. Global Compact \(UNGC\)](#) since 2000. This report has been prepared in accordance with the GRI Standards: "core" option. This report also serves as a Communication on Progress in line with the U.N. Global Compact.



We also use, for example, the international recommendations and guidelines of the OECD and ISO 26000 as a guide when defining and selecting nonfinancial indicators and in our reporting. In selecting and measuring our key data, we take into account the recommendations of the Greenhouse Gas Protocol with respect to greenhouse gas emissions and those of the European Federation of Financial Analysts Societies, the World Business Council for Sustainable Development and the European Chemical Industry Council (CEFIC) with respect to other nonfinancial indicators.

## Data collection and reporting thresholds

The selection of reported content is based on the results of our materiality analysis and the requirements of the GRI standards. Please refer to Chapter 1.3 of the [Annual Report 2019](#) for more detailed information on the topic of innovation.

HR and HSE (health, safety and environment) indicators and our social data are given for continuing operations unless otherwise explicitly indicated.

Reporting of the Group's HSE data includes all fully consolidated companies in which we hold at least a 50 percent interest. Data on occupational injuries is collected at all sites worldwide. Environmental indicators are measured at all environmentally relevant production, research and administration sites. We consider all sites to be environmentally relevant whose annual energy consumption is greater than 1.5 terajoules.

Several indicators (particularly related to employees and procurement) are reported only for our significant locations of operation in line with the requirements of the corresponding GRI disclosures. In 2019, this covered 18 countries that accounted for more than 80% of total Bayer Group sales.

Where information is only relevant for parts of the Bayer Group, we refer to this. In addition, deviations are indicated in the footnotes of the relevant tables and graphs. The agriculture business acquired in 2018 is included in the quantitative and qualitative disclosures except where otherwise indicated.

Fundamental changes in the organization of the Bayer Group and its supply chain concern the sale of the Animal Health business unit and the service company Currenta. Where not otherwise indicated, their business activities are reported retroactively for 2018 and 2019 under discontinued operations.

## External verification

The auditing company Deloitte GmbH Wirtschaftsprüfungsgesellschaft (Deloitte), Munich, Germany, subjected this Sustainability Report of Bayer AG, Leverkusen, for the fiscal year from January 1, 2019, to December 31, 2019, to an audit with limited assurance.

## Additional information

// As the indicators in this report are stated in accordance with commercial rounding principles, totals and percentages may not always be exact.

// References to websites are indicated by an underlined word.

This report is issued in German and English and published in PDF format together with the Annual Report 2019 on Bayer AG's website. The next Sustainability Report is due to be published in February 2021.

# Sustainability Strategy

**2019 was a year in which Bayer repositioned itself strategically. With our advanced sustainability strategy, we are addressing the major challenges of our time and strengthening the societal impact of our company and our business. For us, sustainability means more than just countering risks. It offers a path to a new type of value creation from which everyone benefits. We are focusing here on generating inclusive growth while at the same time reducing our ecological footprint along our value chain.**

## Pressing Challenges

Climate change, water scarcity and the loss of biodiversity are among the most pressing challenges of our time. For decades, humans have consumed more natural resources than our planet can replace. This deficit has already left its mark. It is harming people's health and jeopardizing the food supply for a growing world population. We are facing an aging society with a rising need for health care. Poverty, inequality, disease and hunger are increasing. In many parts of the world, health care is still reserved for those who can afford it.

To drive solutions to overcome these challenges, the United Nations agreed on 17 global Sustainable Development

Goals (SDGs). The purpose of these targets set for 2030 is to enable everyone to enjoy a high quality of life within the ecological limits of the planet.

Our leading positions in health and nutrition allow us to significantly contribute to finding solutions. We already hold considerable responsibility here because our value chains are also part of the problem. This applies especially to farming, which causes about one quarter of global greenhouse gas emissions, is responsible for nearly three quarters of the world's freshwater consumption and threatens biodiversity.

*// How do the limits of the ecosystem impact Bayer and vice versa?*

**The overstepping of the Earth's boundaries jeopardizes human health and the food supply for the growing world population. This applies especially to the countries that are least responsible for it. Through our business activity, we can help to ensure people's healthy development, the conservation of resources and the reduction of emissions.**

## Our contribution to the SDGs

Bayer can and will make a significant contribution to meeting the global Sustainable Development Goals of the United Nations. Only 10 years remain to implement the global sustainability agenda. According to the United Nations, more rapid progress is urgently needed – especially because the global efforts so far have been inadequate. The appeal voiced by the United Nations in New York in September 2019 was directed at countries, yet it applies equally to companies as major national and international players. As a globally coordinated target vision, the worldwide sustainability agenda offers companies a unique opportunity to align their operations to social needs, realize new business opportunities and reduce risks.

To make a significant contribution, Bayer is focusing on selected SDGs. We extended and specified this approach in 2019 with the further development of our sustainability strategy: in a structured process, we looked at the total of 17 goals and 169 targets and identified those where Bayer has the biggest effect on people, the environment and society, and can make the biggest impact through its business.



*// Which SDGs can Bayer most heavily influence and why?*

As a major player in the fields of health and nutrition, we influence many of the 17 SDGs and have the biggest impact on #2 Zero Hunger, #3 Good Health and Well-being, #5 Gender Equality, #13 Climate Action and #15 Life on Land.

## Our Contribution

In accordance with our mission “Science for a better life,” we want to help achieve a high quality of life on a healthy planet. With this in mind, we have been driving science and innovation for more than 150 years and have made substantial progress already in the field of sustainability. In recent years, we have adapted our health care and agriculture portfolio to meet the challenges of the 21st century. Today, the scale of our business alone results in heightened responsibility for the social impact of our operations. We are therefore intensifying our commitment to sustainable development with the focus on the many innovations we are developing.

Sustainability is anchored at the core of our strategy. Our businesses promote sustainable development, and in so doing impact society and open up growth opportunities for our company. We already reach more than one billion people worldwide with our products and services.

Now we will invest further in inclusive growth to enable positive development for more people. To this end, we have established clear targets and want to be judged on how effectively we attain them. We will pursue these with the same rigor as our financial targets and include them in our decision-making.

*// How can Bayer influence people's lives?*

**We already reach numerous people throughout the world with our products and services. Now we will invest even more heavily in inclusive growth to enable a high quality of life for more people. To achieve this, we will combine experiences and skills from all our businesses in the fields of health care and agriculture.**



## Our Sustainability Targets

Inclusive growth that enables a growing world population to share in progress while at the same time respecting planetary boundaries is a complex challenge that requires systemic approaches – especially in the fields of health and nutrition. Here we are linking up the experience and expertise of all our businesses.

### Supporting Smallholders

There are some 550 million small farms worldwide that play a central role in ensuring food security in low- and middle-income countries. Smallholders – many of them women – provide up to 80% of food in Asia and sub-Saharan Africa, for example. Many smallholders can barely earn a living with their work. Their productivity is relatively low and they lack access to agricultural know-how and financing options.

They are also far more susceptible to extreme weather conditions and harvest losses.

By 2030, we aim to contribute to food security by supporting 100 million smallholder farmers in low- and middle-income countries to provide for themselves and others, thereby also improving their incomes. To achieve this goal, we shall further expand our product and service portfolio. This will also include access to tailored digital solutions. The focus is on improving access to agronomic expertise, products and services, and markets specifically for smallholders through collaborations and partnerships with research institutes, nongovernmental organizations, companies, social start-ups and other institutions. A good example of this is the Better Life Farming alliance, which supports smallholder farmers

with training courses, market access and technology, as well as financing options. In this way, we can make an important contribution to strengthening local food production and reducing poverty in rural areas.



#### Indicator

*Number of smallholder farmers in low- and middle-income countries supported by products, services and partnerships*



*What products and new business models are you referring to?*

**Liam Condon, member of the Board of Management and Head of the Crop Science Division** // We will drive innovations for smallholders and introduce digital solutions that give them real-time agronomic advice throughout the harvesting cycle. We also strive to enter into partnerships with other value-chain players to help smallholders earn a living from farming and produce sufficient food on the basis of sustainable farming methods.

### Access to Contraception

According to the United Nations, gender equality will be a crucial factor in the world's future economic and social development.

Modern contraception helps to strengthen the role of women. It helps them determine their own path in life, often with positive spillover effects on families and communities. Nevertheless, more than 200 million women in low- and middle-income countries who want contraception still have no access to modern family planning.

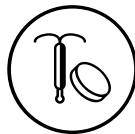


*Why is it sustainable to sell more contraceptives?*

**Stefan Oelrich, member of the Board of Management and head of the Pharmaceuticals Division**

// Family planning has been a fundamental human right since 1968 and is of central importance for empowering women, fighting poverty and promoting sustainable development. By giving 100 million women in low- and middle-income countries access to contraceptives, we improve their health, rights and economic status – a major step toward gender equality.

Specifically, we aim to provide 100 million women in low- and middle-income countries with access to modern contraception by 2030. With this goal in mind, we will expand our offering of long-acting products that are in especially high demand in international development projects, such as the Jadelle™ implant and the Mirena™ coil. As is currently the case for oral contraceptives and contraceptive injections, these products will be offered to our partners (such as the United Nations Population Fund, or UNFPA) at preferential prices. Further collaborations are planned to promote voluntary family planning programs. We pledge support for participating partners irrespective of the products used. These measures can demonstrably improve women's health and strengthen their role in society by helping to promote gender equality and women's economic participation.



**Indicator**

*Number of women in low- and medium-income level countries who have their need for modern contraception satisfied due to interventions supported by Bayer*

As a leading pharmaceutical company in the area of contraception, we have been active in this field for many years. We already reach more than 40 million women in developing countries and emerging markets and want to significantly expand these efforts.

**Access to self-care solutions**

Global health systems are under constant cost pressure. An aging population, a growing number of lifestyle-related diseases and rising costs are preventing access to health care for more and more people and leaving behind the world's underserved communities, particularly the women and children living there. At least half the world's population is currently unable to access basic medical services, including self-care products.

More of these products and targeted education can help to prevent diseases and offer health solutions for regions in which self-care is often the only option. With an initial focus on women's health care and improved access to micronutrients for children and pregnant women, we will expand the availability and affordability of our well-known brands and self-care initiatives.





## How does self-care contribute to sustainable development?

**Heiko Schipper, member of the Board of Management and head of the Consumer Health Division** //

Expanding access to health education and everyday health solutions will not just lower costs, but offer a health care lifeline to underserved communities. For example, if we can improve access to everyday health for a mother in need, she can invest more in the well-being of her children. These investments enable better treatment and prevention, relieve health care systems and – one person at a time – take us a step closer to our vision of “Health for All, Hunger for None.”



### Indicator

*It is our ambition to expand to everyday health for 100 million people in underserved communities around the world by 2030*

## Climate Protection

Without suitable countermeasures, global temperatures will rise by well over 2 degrees Celsius. This will threaten our planet's ecosystems, jeopardize the health of people, animals and plants, and place the food supply for a growing world population at risk. Bayer is therefore taking several steps to reduce greenhouse gas emissions within our company and along our entire value chain in accordance with the Paris Agreement.

We aim to make our own production sites carbon-neutral by 2030 and are therefore implementing energy efficiency measures at our sites and increasing the procurement of electricity from renewable sources. Bayer will offset the remaining emissions it produces by purchasing certificates from certified climate protection projects that satisfy recognized quality standards. The company also aims to reduce greenhouse gas emissions along the up- and downstream value chain through cooperation with suppliers and

customers. To ensure that our targets are in line with the goal of the Paris Agreement to limit global warming to 1.5 degrees Celsius, or well below 2 degrees Celsius, we have joined the Science Based Targets initiative.



### Indicator

*Carbon-neutral operations<sup>1</sup> at own sites and achievement of a Science Based Target (SBT)<sup>2</sup>*

<sup>1</sup> Scope 1 and Scope 2 (market-based) emissions of the environmentally relevant sites, i.e. those with annual energy consumption of more than 1.5 terajoules, including emissions from the vehicle fleet

<sup>2</sup> Science-based climate target that complies with the goal of the Paris Agreement to limit global warming to 1.5 degrees Celsius, or well below 2 degrees Celsius



*Why is Bayer actively committed to the climate and the Science Based Targets initiative?*

**Werner Baumann, Chairman of the Board of Management** // Climate change has become a concrete threat to life on Earth. Our health- and nutrition-based business portfolio gives us the opportunity and the responsibility to act rapidly. The Science Based Targets initiative is rooted in scientific facts and findings, as is the Paris Agreement. They are an internationally recognized gold standard in climate protection. We are confident that we will be able to conclusively validate and establish the official targets over the course of 2020.

## Implementation

As the next step, the targets will be rolled-out to the divisions, individual segments and regions, as well as the countries. We will also produce a timetable in 2020 that shows how we aim to achieve our targets by 2030. This will include concepts for new business models, milestones and measurable targets.

We intend sustainability to become an integral component of our yearly planning and strategy cycle as early as 2020. In addition, the sustainability targets will already be accounted for in the compensation systems for the Board of Management and managerial employees beginning in 2020. This will take place in the form of a qualitative component of the short-term variable compensation (STI) starting in 2020 and a quantitative component of the long-term compensation (LTI) as of 2021.

We will regularly report on the progress of our target achievement and pursue the sustainability targets with the same intensity as our financial targets. Clear nonfinancial indicators will help us to evaluate their success.

We need a large network to realize our objectives. We aim to deepen our cooperation with social organizations so as to understand other perspectives and jointly amplify the effects of our efforts. One example is the establishment of an external sustainability council in 2020, which is to be composed of independent experts who can give us an outside perspective on our innovation, mindset and strategy. The plan is for this external sustainability council to report annually on our efforts. In addition, we have combined our guiding principles and the bases for our activities in the new Bayer Societal Engagement (BASE) principles, which will guide our relationship with our social stakeholders in the future. They will provide us with orientation in all internal and external processes and help us to be a company appreciated for its scientific work, trustworthiness and transparency.



*How important is sustainability for managing the company?*

**Wolfgang Nickl, Chief Financial Officer** // Integrating sustainability into the core business has become an important demand on the part of various stakeholders, including our investors. To make our commitment measurable, we have set ourselves clear sustainability targets that we are pursuing with the same rigor as our financial targets.

# Performance Report

Specific greenhouse  
gas emissions

85.2



(kg CO<sub>2</sub>e/€ thousand external sales)

Energy efficiency

247



(kWh/€ thousand external sales)

Proportion of women in  
upper management

♀ 34.8%

# 1. The Company

The Bayer Group comprises 392 companies in 87 countries throughout the world and employs 103,824 people. Its headquarters is in Leverkusen, Germany. Sales at the Bayer Group in 2019 amounted to €43.5 billion.

## 1.1 Corporate Profile

Putting an end to hunger, helping everyone lead a healthy life, and protecting ecosystems at the same time. That's what we aspire to achieve, guided by our corporate purpose "Science for a better life." The major issues of our time can only be addressed if we work together. Our campaigns #voranbringen in Germany and "This is Why We Science" in the United States both under-score this approach. We are a life science company and a global leader in health care and nutrition. Our innovative products support efforts to overcome the major challenges presented by a growing and aging global population. We help prevent, alleviate and treat diseases. We also aim to ensure the world has a reliable supply of high-quality food, feed and plant-based raw materials. As part of this endeavor, the responsible use of natural resources is always a top priority.

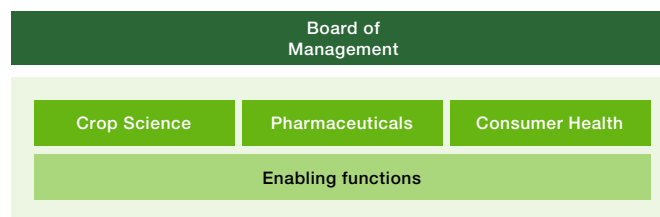
We aim to enhance our company's earning power and create value for our customers, patients, shareholders, employees and society. Growth and sustainability are integral parts of our strategy, guided by our corporate values of leadership, integrity, flexibility and efficiency, or LIFE for short. This culture ensures a common identity throughout the Bayer Group.

## 1.2 Corporate Structure

### Corporate structure as of December 31, 2019

As the parent company of the Bayer Group, Bayer AG – represented by its Board of Management – performs the principal management functions for the entire enterprise. This mainly comprises the Group's strategic alignment, resource allocation, and the management of financial affairs and managerial staff, along with the management of the Group-wide operational business of the Crop Science, Pharmaceuticals and Consumer Health divisions. The enabling functions support the operational business. They serve as Group-wide competence centers and provide business support services.

#### Structure of the Bayer Group in 2019



As part of the portfolio and structural measures announced in late 2018, the sale of our Animal Health business unit was agreed in August 2019. We expect the sale to close in mid-2020. The service company Currenta, which operates the Chempark sites in Leverkusen, Dormagen and Krefeld-Uerdingen, is no longer part of the Bayer Group after the sale of our majority stake closed in November 2019. Both Animal Health's and Currenta's business activities are reported retroactively for 2018 and 2019 under discontinued operations. The information given in this report therefore excludes Animal Health and Currenta.

The Supervisory Board of Bayer AG resolved in September 2019 to reduce the size of the company's Board of Management from seven to five members effective January 1, 2020, as part of the efficiency program. Responsibilities within the Board of Management were reallocated.

### Crop Science

Crop Science is the world's leading agricultural enterprise, with businesses in crop protection and seeds. We offer a broad portfolio of high-value seeds, improved plant traits, innovative chemical and biological crop protection products, digital solutions and extensive customer service for sustainable agriculture. We market these products primarily via wholesalers and retailers or directly to farmers. In addition, we market pest and weed control products and services to professional users outside the agriculture industry. Most of our crop protection products are manufactured at the division's own production sites. Numerous decentralized formulation and filling sites enable the company to quickly react to the needs of local markets. The breeding, propagation, production and / or processing of seeds, including seed dressing, takes place at locations close to our customers, either at our own facilities or under contract.

### Pharmaceuticals

Pharmaceuticals concentrates on prescription products, especially for cardiology and women's health care, and on specialty therapeutics focused on the areas of oncology, hematology and ophthalmology. The division also comprises the radiology business, which markets diagnostic imaging equipment together with the necessary contrast agents. Our portfolio includes a range of key products that are among the world's leading pharmaceuticals for their indications. The prescription products from Pharmaceuticals are primarily distributed through wholesalers, pharmacies and hospitals.

## Consumer Health

Consumer Health is a leading supplier of nonprescription (OTC = over-the-counter) medicines, nutritional supplements, medicated skincare products and other self-care solutions in the categories of dermatology, nutritional supplements, digestive health, allergy, cough and cold, and pain and cardiovascular risk prevention. The products are generally sold by pharmacies and pharmacy chains, supermarket and drugstore chains, and online retailers.

We report in more detail on the divisions' products, activities and sales and our sites worldwide in our [2019 Annual Report](#).

## 1.3 Value Added

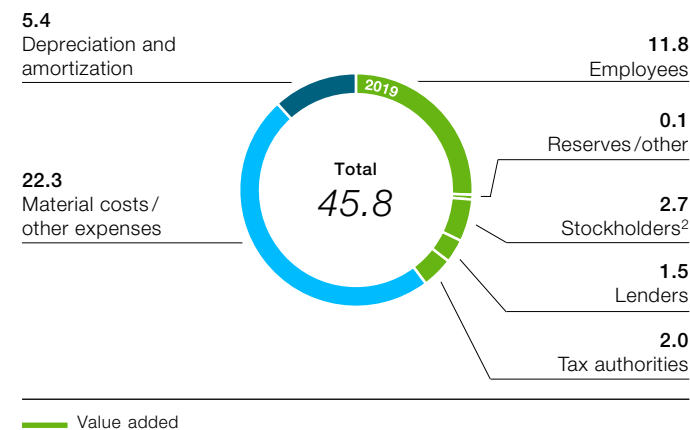
By delivering innovative products and solutions, Bayer creates value for its stakeholders at all stages of the value chain. We operate production sites worldwide, invest in research and development, work with international and local suppliers and contribute to the economic development of our target markets. As an employer, we provide jobs in industrialized, emerging and developing economies and create purchasing power through the salaries we pay. We contribute to public finances and thus support public infrastructure through the payment of taxes and other levies.

The value added statement shows the direct financial value our business activities create for our stakeholders. We define value added as the company's total operating performance in the previous fiscal year less the costs of procured and consumed goods and services, depreciation, amortization, impairment losses and impairment loss reversals.

### Total Operating Performance<sup>1</sup> 2019

€ billion

Value added 18.1



<sup>1</sup> Total operating performance = net sales + other operating income + financial income + net income / loss from investments accounted for using the equity method

<sup>2</sup> Proposed dividend of Bayer AG for 2019

## 2. Corporate Governance

Bayer is committed to responsible corporate governance. By adhering to laws, safeguarding values and strengthening our reputation, we aim to secure our company's long-term success and to foster a high level of trust among all stakeholders. Our endeavors in this regard are further supported by our increased focus on sustainability aspects in all processes and at all levels of the company.

### 2.1 Corporate Governance Practices and Principles

Bayer AG is subject to German stock corporation law and therefore has a dual governance system consisting of the Board of Management and the Supervisory Board, which manage the company based on a transparent strategy that is geared toward its long-term success and complies with applicable laws and ethical standards.

Corporate governance practices that go beyond the legal requirements are derived from our vision and our common values, which form the basis for the respectful working relationship among our employees and with our external partners. Responsible conduct along the entire value chain is crucial in corporate governance. To this end, we have established core values, corporate policies and management systems that serve as the basis. The organization and oversight obligations of the Board of Management and the Supervisory Board are ensured in particular by compliance management and risk management systems.

In our 2019 [Annual Report](#), we report in detail on the main elements of the Bayer Group's corporate governance structures and conformity with the recommendations of the German Corporate Governance Code, relevant corporate governance practices, the composition and procedures of the Board of Management, the Supervisory Board and their committees, and the Compensation Report along with the objectives to be defined and the underlying concepts.

### 2.2 Our Ethical Principles (BASE)

As a leading health care and agriculture company, we have a highly responsible role to play. To ensure that we meet current societal expectations, we introduced the "[Bayer Societal Engagement \(BASE\) principles](#)" in 2019. These principles, which form the basis of a publicly available corporate policy, establish how we interact worldwide not just with our employees, but also with patients, customers, consumers, business partners, political stakeholders, scientists, critics and our stockholders. In this way, we want to live up to our social responsibility as a sustainably acting and transparent company that is respected for its contribution to progress in health care and agriculture. We want to listen, understand, take concerns seriously and engage in respectful dialogue – especially where this is difficult or uncomfortable.

The BASE principles are grounded in our purpose "Science for a better life" and the Bayer LIFE values: leadership, integrity, flexibility and efficiency. The principles describe our actions in eight areas:

- // Our engagement with society
- // Our guiding principles and core values
- // How we drive innovation
- // How we act in the workplace
- // How we conduct our business
- // How we interact with our customers, patients and the consumers of our products
- // How we interact with media, legislators, regulators and civil society organizations
- // How we interact with shareholders

### 2.3 Transparency

As our products and activities concern the sensitive areas of health and nutrition, they lead to inquiries and the desire to understand what we do. Against this background, we endeavor to build and strengthen trust – for which transparent conduct is essential. For example, we disclose information from various areas of our work and openly communicate how the safety of our products is assessed.

We supply information about Bayer's transparency efforts in the following areas, for instance:

- // We make detailed disclosures on, for example, material and project expenses and headcount in the transparency registers of the European institutions and the U.S. Congress, for instance. We also report data for countries in which there is no legal disclosure obligation. For more information, please see Chapter 2.5 Compliance and our [website](#).



// Through the “[Transparency at Crop Science](#)” website, we grant public access to safety-relevant studies that regulatory authorities use to approve crop protection product registrations.

// We publish information on planned and current clinical patient trials on our “[Clinical Trials](#)” website.

// In relations between the pharmaceutical industry and physicians, other healing professions and health care organizations, Bayer ensures compliance with the EFPIA (European Federation of Pharmaceutical Industries and Associations) Disclosure Code.

For more information on Bayer’s transparency initiative, please see our [website](#).

We transparently shape our corporate governance in accordance with the German Corporate Governance Code. For more information, please see our [2019 Annual Report](#).

## 2.4 Steering and Management Systems

### Planning and steering

The Board of Management uses defined, primarily nonfinancial targets and key performance indicators to steer the company’s sustainable orientation in terms of operating activities. In 2019, the Board of Management adopted an advanced sustainability strategy along with new nonfinancial Group targets and key performance indicators. The corresponding framework is set to be translated into specific targets for the individual divisions starting in 2020. In the future, nonfinancial Group targets are set to be integrated into the planning and steering process as management and key performance indicators.

Nonfinancial targets already constitute components of the short-term variable compensation of the Board of Management. For more information on the compensation of the Board of Management in 2019, please see our [2019 Annual Report](#).

Furthermore, the Supervisory Board has passed a resolution to integrate qualitative nonfinancial targets derived from the sustainability strategy into the short-term variable compensation of the Board of Management in 2020. From 2021, quantitative targets derived from the sustainability strategy are set to become important components of the long-term variable compensation of the Board of Management. The Supervisory Board intends to submit the realigned Board of Management compensation system to the ordinary Annual Stockholders’ Meeting of Bayer AG for approval on April 28, 2020. The Notice of the Annual Stockholders’ Meeting is set to contain a description of the revised compensation system.

### Integrated management system

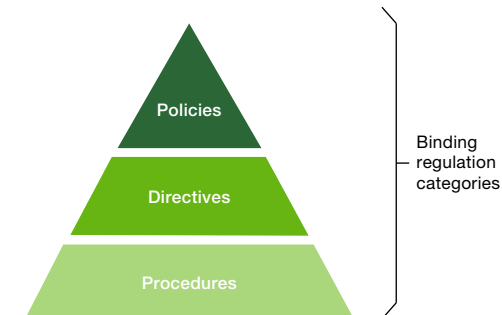
Bayer has in place an integrated management system (IMS) comprising process management, management of internal regulations, effectiveness testing and continuous improvement. All of the requirements are specified in a corporate policy. The IMS provides a framework for existing and future management systems to ensure compliance with corporate policies and the law as well as efficient ways of working. This is achieved through applicable processes and internal requirements involving clear roles and responsibilities. Its tasks also include facilitating effective risk management and helping to safeguard the company’s license to operate.

Within the IMS, each function or organization – such as Quality, Health, Safety & Environment or Risk Management – is responsible for ensuring that its own management system is in line with business needs and with applicable legal and regulatory requirements.

As part of the IMS, Bayer has established a clearly defined set of rules, which includes fundamental principles and framework conditions, standards of conduct, guidelines and methods covering the Group’s material risks. Moreover, these are binding requirements that include legal and regulatory requirements.

Our binding internal regulations at Group and country level serve as key management instruments and are classified into three categories: corporate policies (which have the highest focus covering global interdisciplinary content), corporate directives and procedures.

### Corporate Regulations



## 2.5 Compliance

Bayer manages its businesses responsibly and in compliance with the statutory requirements and regulations of the countries in which it operates. We define compliance as legally and ethically impeccable conduct by all employees in their daily work, because the way they each carry out their duties affects our company's reputation. We do not tolerate any violation of laws, codes of conduct or internal regulations. Compliance is essential for our long-term economic success.

### Compliance management at Bayer

The Board of Management is unreservedly committed to compliance, and Bayer will forgo any business transaction that would violate any of the 10 principles in our updated Corporate Compliance Policy observed throughout the Bayer Group. These principles are as follows:

- // We compete fairly in every market.
- // We act with integrity in all our business dealings.
- // We balance economic growth with ecological and social responsibility.
- // We observe trade controls that regulate our global business.
- // We safeguard equal opportunity in securities trading.
- // We keep accurate books and records.
- // We treat each other with fairness and respect.
- // We protect and respect intellectual property rights.
- // We act in Bayer's best interest.
- // We protect and secure personal data.

All employees are required to observe the compliance principles and to immediately report any violation of the Corporate Compliance Policy. Bayer's managers serve as role models and have a vital part to play in implementing the compliance principles. Infringements are sanctioned.

The global compliance management system is steered by a central compliance organization within the Bayer Group. This organization is headed by the Group Compliance Officer, who, in this capacity, reports directly to the Chairman of the Board of Management and to the Audit Committee of the Supervisory Board. Within the compliance organization, specialist compliance managers throughout the Group are responsible for establishing industry- and country-specific standards.

Potential compliance risks are identified together with the operational units to ensure the systematic and preventive detection and assessment of risks. Potential risks are then entered into a global compliance risk management database that we use to develop suitable measures for specific processes, business activities or countries, for example. In addition, we assess our business partners according to risk criteria as we look to identify potential compliance risks.

Adherence to the corporate compliance principles is among the subjects covered in audits conducted by Bayer's Internal Audit enabling function and in the analyses and investigations by the legal and compliance organization. The heads of these organizations provide regular reports on the findings of the audits and analyses to the Audit Committee of the Supervisory Board, while summary reports are presented at least once a year.

The planning of these audits by Internal Audit follows a function- and risk-based approach that also takes the Corruption Perceptions Index of Transparency International into account. Function-specific audits are conducted worldwide across all important corporate units, such as for marketing and distribution. The larger businesses and units are audited at shorter intervals, and the smaller units at longer intervals. A total of 178 audits were completed in 2019, of which 16 were preventive compliance-system audits or incident-related investigations.

### Handling of suspected and actual compliance violations

Suspected compliance violations can be reported – anonymously if desired and if permitted by respective national law – to a central, worldwide compliance hotline that is also accessible to the general public. In 2019, the compliance organization received a total of 372 reports in this way (including 256 anonymous reports), with 20 reports coming from Germany and 352 from other countries. Alternatively, suspected violations may also be reported to the respective compliance functions or to Internal Audit.

Compliance violations are systematically sanctioned. The action taken depends on factors including the gravity of the violation and applicable law. All cases are recorded according to uniform criteria throughout the Bayer Group and are dealt with under the rules set forth in Bayer's updated corporate policy entitled "Management of Compliance Incidents." Where an investigation confirms that a compliance violation has occurred, the company has a graduated set of measures at its disposal. These include a verbal warning or

written reprimand, transfer to a different unit, cancellation of a planned promotion, a reduction in the short-term incentive payment, downgrading to a lower collectively agreed pay rate or managerial contract level, and ordinary or extraordinary termination. Bayer also reserves the right to assert further claims against the employee for cost reimbursement or damages and / or to initiate criminal proceedings.

### Compliance training and communications activities

We support all employees in acting with integrity and proactively avoiding potential violations by implementing Bayer-wide training measures and communication campaigns that are tailored to target groups and based on identified needs. The Corporate Compliance Policy forms the basis of our compliance communication and training activities. Both supervisors and compliance managers can answer employees' questions about lawful and ethical behavior.

In 2019, 95.3% (34,619) of Bayer's managerial employees worldwide completed at least one compliance training program. Furthermore, we launched a new global web-based training program on sexual harassment and the importance of speaking up in 89 countries, with these issues also addressed in our Corporate Compliance Policy. The video training program is available in nine languages (English, German, Spanish, Portuguese, French, Italian, Russian, Japanese and Chinese) and had been completed by 66.4% (68,772) of our employees (excluding those of the acquired agriculture business) as of December 31, 2019.

We continued to gradually roll out additional compliance training courses for the employees of the acquired agriculture business in 2019, including web-based training on the principles of our Corporate Compliance Policy, presented in the form of an interactive infographic, and on the risk area of anticorruption. Training courses on the risk areas of fairness and respect at work, conflicts of interest, data privacy and the speak-up campaign on sexual harassment will follow by the second quarter of 2020.

The speak-up campaign on sexual harassment also featured digital elements in 2019. In addition, we held the second global Compliance Day at various Bayer Group sites in October and November 2019.

### Data privacy

Data is very important in today's world – it is accessible worldwide and its financial value is growing. As a result, people have an increasing interest in their data remaining secure. Bayer is committed to protecting the personal data of all its stakeholders, be they employees, business partners, stockholders or suppliers. Fulfilling this commitment is an important business principle and a central condition for the company's success.

Since there is no globally binding data privacy law, legislation varies widely from country to country. To establish a standard for all countries in which Bayer operates, a Group-wide approach is required. This is the only way to ensure personal data is afforded sufficient protection while at the same time facilitating efficient business processes.

The corporate policy "Data Privacy" sets out minimum requirements for the way personal data is processed throughout the Bayer Group. Bayer strives to protect people's privacy and prevent their data from being misused. We are aware of the potential harm caused by unlawful data processing and have therefore established a standard to minimize this risk.

The data privacy management system addresses risk situations that are relevant to the company's business. The system covers the entire data life cycle: from collection, transfer, analysis and storage to deletion. The core elements of the data privacy management system – the maintenance of a processing registry, the management of data leaks, inquiries from affected individuals and risk mitigation – are mandatory. Training and guidance along with system-based monitoring ensure the regulations are applied.

### Marketing compliance

We do not tolerate any improper exertion of influence on our business partners. As part of our compliance management system, we record and investigate any suspected violation of our responsible marketing principles, irrespective of whether the complaints come from internal or external sources.

The most important Bayer corporate regulation in this context is our "Anti-Corruption" corporate policy, which is supplemented by the rules of conduct established in our corporate policy entitled "Responsible Marketing & Sales." Furthermore, we are committed to ethical advertising and communication for all our products and services.

Directives and corporate policies are also in place at Bayer to prevent price fixing and ensure data protection. Where several regulations are applicable, we comply with the more stringent standards. The respective corporate policies and training programs are implemented in the divisions and enabling functions on a decentralized basis.

Industry codes for pharmaceutical products and medical devices that have been adopted by major national and international associations and organizations also apply to marketing and distribution at Bayer. In many countries, these standards are further underpinned by local codes – all of which apply to prescription pharmaceuticals and some of which also apply to nonprescription medicines, dietary supplements, medical devices and medicated skincare products.

All codes of the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) serve as a binding minimum global standard for all human pharmaceutical products marketed by Bayer. In addition, Bayer observes the codes of the European Federation of Pharmaceutical Industries and Associations (EFPIA) in its interaction with health care professionals and patient organizations.

Moreover, Bayer observes the Ethical Criteria for Medicinal Drug Promotion established by the World Health Organization (WHO) as the minimum global standard for the advertising of human pharmaceutical products, along with national ethical standards that are usually also enshrined in industry codes at the local level.

All of the aforementioned codes contain provisions governing, among other matters, advertising materials, the distribution of samples, cooperation with members of specialist groups in connection with speaker and consultancy contracts, and scientific studies. Based on the [EFPIA transparency code](#) and the corresponding local interpretations, Pharmaceuticals annually discloses any [payments and other remunerations](#) made to health care professionals and organizations for the preceding calendar year.

In line with the principles of sustainable development and the responsible use of crop protection products and seeds, Crop Science follows the guidelines of its new [Product Stewardship Commitment, Principles and Key Requirements](#). This policy, which also satisfies the requirements of our corporate policy entitled “Responsible Marketing & Sales,” is based on the International Code of Conduct on Pesticide Management issued by the Food and Agriculture Organization (FAO) of the United Nations and the International Code of Conduct on Plant Biotechnology issued by CropLife International.

Relevant training measures on product-related communication, antitrust law, data protection and anti-corruption are fundamental elements of our compliance management system. Principles communicated in these training courses provide an overview of globally applicable minimum requirements for cooperation with key stakeholders, explicitly including those in the health care industry such as physicians, hospitals or patient organizations. In addition to explaining general compliance principles, the anti-corruption courses provide specific advice on approaches to nonreciprocal

benefits and the exchange of services with health care professionals.

### Lobbying

Bayer’s commitment to ensuring transparent lobbying forms part of our BASE principles. In line with this, our corporate policy entitled “[Code of Conduct for Responsible Lobbying](#)” sets out binding rules for our involvement in political matters, covers compliance-relevant risks and creates transparency in our interactions with the representatives of political institutions.

As set out in this corporate policy, Bayer as a company did not make any donations to political parties, politicians or candidates for political office in 2019. This does not include political donations in the United States, which permits Bayer to make donations in support of candidates and elections at the state level. Such donations are subject to stringent conditions and mandatory transparency measures that include a publicly accessible list documenting donations made at state level.

In the United States, where applicable law may prohibit corporate donations for some Federal, state or local elections, Bayer’s employees have organized the Bayer Corporation Political Action Committee (Bayer-US PAC) to support legislative candidates through private donations. Political action committees are separate, segregated funds governed by Bayer employees and further regulated by the U.S. Federal Election Commission and some state governments. The private donations made by Bayer-US PAC are regularly reported to the U.S. Federal Election Commission and can be viewed on its [website](#).

For Bayer, national liaison offices are key touchpoints between the company and political stakeholders. We publish details of material costs, project expenses, employee numbers and any of the other statistics required in each country in the transparency registers of the [European institutions](#) and the [U.S. Congress](#). In doing so, Bayer goes beyond the

statutory requirements. For instance, we also publish data for countries such as Germany where there is no legal disclosure requirement. In 2019, the costs incurred at the liaison offices totaled approximately €1.7 million in Berlin, Germany; €4 million in Brussels, Belgium; €9 million in Washington, United States; €0.25 million in Moscow, Russia; €0.51 million in Brasília, Brazil; and €1.51 million in Beijing, China.

## 2.6 Risk Management

As a global life science enterprise, the Bayer Group is exposed to a wide range of internal and external developments and events that could significantly impact the achievement of our financial and nonfinancial objectives. Risk management is therefore an integral part of corporate management at Bayer. The Bayer Group has implemented a holistic and integrated risk management system designed to ensure the continued existence and future target attainment of the Group through the early identification, assessment and treatment of risks. The Bayer Group’s risk management system is aligned to internationally recognized standards and principles such as the ISO 31000 risk management standard of the International Organization for Standardization.

As part of the risk management process, we reevaluate all risks at least once a year. In 2020, particular emphasis will be placed on sustainability risks while taking into account our advanced sustainability strategy.

Detailed information on the basic elements of the risk management system including the risk management process and details on the risk situation is contained in the Opportunity and Risk Report in the [2019 Annual Report](#).

Material risks are described in B Notes to the Consolidated Financial Statements of the Bayer Group 30 Legal Risks in the 2019 Annual Report.

## 2.7 Sustainability Management

Our advanced sustainability strategy represents our greater focus on increasing the overall societal impact of our business activities. Sustainability is therefore a core element of our corporate strategy. In his role as Chief Sustainability Officer, the Chairman of the Board of Management is supported by the Public Affairs & Sustainability enabling function, which develops strategies and identifies areas of activity, targets, key performance indicators, management systems and corporate policies and compiles the Sustainability Report on behalf of the Board of Management. Operational implementation takes place in the divisions and along the value chain.

The foundation of sustainability management remains the company's commitment to the [U.N. Global Compact](#) and the [Responsible Care™ initiative](#) of the chemical industry, as well as our involvement in the World Business Council for Sustainable Development ([WBCSD](#)).

The establishment of a sustainability council is planned for 2020. This will be staffed with external experts from the areas of health care, nutrition, agriculture and the environment representing a broad range of views, differing geographical origin and different genders. The council will support the company in implementing its sustainability strategy, provide advice on strategic matters and in particular contribute new perspectives and ranges of experience.

### Materiality analysis

We determine the expectations and requirements of various stakeholders using a materiality analysis that surveys representatives of important stakeholder groups, managerial staff and nonmanagerial employees. The results thereof reveal the latest developments, along with sustainability-related opportunities and risks, and help us to address them.

At the next stage, Bayer managers supplement the assessment of issues of relevance from an external perspective with an estimation of the impact the company has on the environment, employees and health in each respective topic area. Finally, the issues prioritized on this basis are approved by the Board of Management.

The areas of activity identified in this way in 2018 were accounted for in the further development of our sustainability strategy and determine the focal points of our sustainability management approach and our nonfinancial Group targets:

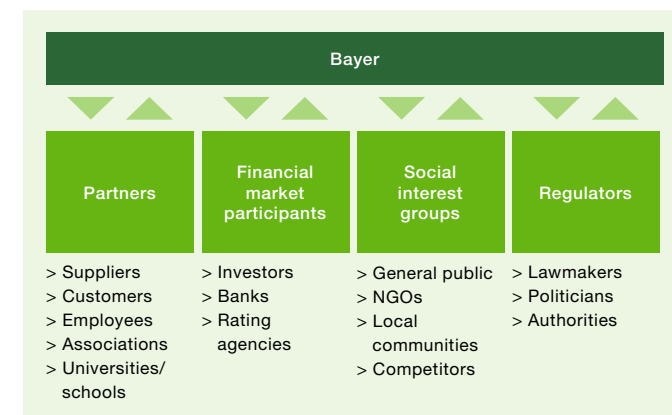
// Access to health care  
// Sustainable food supply  
// Climate protection  
// Business ethics  
// Product stewardship  
// Environmental protection  
// Innovation

## 2.8 Stakeholder Dialogue

As a company, Bayer is part of society and of public life. Ongoing dialogue with our stakeholders is therefore particularly important to us. After all, their expectations and viewpoints affect our public acceptance and thus our commercial success. This is also reflected in our [BASE principles](#) published in 2019 (see also Chapter 2.2 Our Ethical Principles (BASE)).

We fundamentally distinguish four stakeholder groups with which we engage in discussions on different issues in various dialogue formats.

### Stakeholder Groups



This dialogue helps us to recognize important trends and developments in society and our markets at an early stage and take this information into account when shaping our business. The integration of various stakeholder groups is planned within the scope of our stakeholder engagement process. This process also includes monitoring the results of individual dialogue measures.

In strategic decision-making processes such as investment projects and launches of products, Bayer approaches key social and political players right from the start of a new project to canvass their support. Such an open dialogue enables us to identify opportunities and risks early on. This process is in line with our Stakeholder Engagement Guideline and is supplemented by an internal information platform.

### Focus on a variety of stakeholders

Our regular stakeholder activities range from dialogue at local, national and international level and active involvement in committees and specialist workshops all the way through

to comprehensive information programs, issue-related multi-stakeholder events and participation in international initiatives and collaborations.

The selected topics described below provide insights into our engagement with respect to our most important stakeholder groups. We always focus on a fact-based dialogue.

Throughout the past year, we held intensive discussions with journalists and politicians, scientists and supervisory authorities, consumers and stakeholders, farmers and neighbors. We discussed topics such as agriculture and nutrition, sustainability and biodiversity. For example, we discussed the future of agriculture with the relevant stakeholders at our Future of Farming Dialogue 2019 and at the World Food Convention.

Before the publication of our extended sustainability strategy we debated the concept across the globe in 2019 with a variety of stakeholder groups, including in workshops, with the help of an international agency. The results were incorporated into the strategy implemented.

The increasing interest of the capital market in sustainability issues was reflected in our talks with investors and ratings agencies in 2019. The focus was on the integration of Monsanto, the impact of our products on the environment and the topics of climate change and human rights.

We prioritize being a reliable partner that is aware of its societal responsibility toward the communities adjacent to our sites. To this end – at our production sites in particular – we maintain open dialogue between local management and community members, which is supported by the respective country organization. This dialogue includes personal discussions with residents, citizens' initiatives, representatives of religious communities and the regional press. This community dialogue is anchored in a globally valid corporate policy on site management. In 2019, our everyday business once again included dialogue with our customers – especially with respect to their satisfaction with our products and services. Our divisions navigate very different regulatory frameworks. For example, direct contact between Pharmaceuticals or Consumer Health and the respective customer

environment, and especially patients, is regulated in very different ways for each division. With regard to the collection of customer satisfaction data, different legal requirements apply for prescription medicines from Pharmaceuticals than for nonprescription medicines, for example. The primary market research and data research that must be conducted, including systematic internet analysis, strictly adhere to the legal requirements, which can vary significantly depending on the market. At Crop Science, customer centricity is achieved by way of the several hundred initiatives of the Food Chain Partnership throughout the value chain and through BayG.A.P., the capacity building program that is implemented with food chain partners in many of these initiatives, and Bayer ForwardFarming, a global collaboration with farmers. These programs center on innovative crop solutions and services for sustainable agriculture.

For more information on dialogue with stakeholders, please see the chapters 2.7 Sustainability Management (International initiatives), 3. Product Stewardship (Commitment), 4. Procurement (Developing suppliers), 5. Human Rights (Commitment) and 6. Employees (Dialogue and exchange) and our [sustainability website](#).



## 3. Product Stewardship

Assuming responsibility for our products, from medicines to complex solutions for agriculture, is always at the core of what we do. They should be of the highest quality and contribute to a better life. This means that neither their development and manufacture nor their disposal should cause damage to people and the environment. For this reason we strictly submit ourselves to regulations and laws all over the world.

### 3.1 Management Approach

For us, product stewardship for us means that our products satisfy the highest quality standards and are safe for people, animals and the environment when properly used. Not only do the desired properties of substances and products need to be taken into consideration but also the possible risks for people and the environment. We respect legal requirements, and our voluntary commitment and internal standards go beyond these in a variety of areas. Bayer has put in place suitable directives and management systems to implement regulatory and voluntary product stewardship requirements. These are steered by our Corporate Health, Safety & Environment enabling function and the quality functions of the divisions.

### 3.2 Regulatory Conditions

Bayer's finished products, such as pharmaceuticals, crop protection products, seeds and biocides, are subject to very stringent regulations prescribing specific and detailed approval and authorization procedures. As a result, our products cannot be sold on the market until they have been

approved by a competent authority or an official registration has been granted. The prescribed efficacy and safety of the individual products must always be demonstrated as proven as a condition of their approval. As a result, the approval only applies for a particular product with the formulation registered in the marketing authorization. Changes in the product composition (such as new formulations for crop protection products) require an additional authorization or registration.

Wherever there is no dedicated crop protection legislation in a given country, Bayer has made a voluntary commitment to distribute there only those crop protection products whose active ingredients are approved or registered in at least one OECD country, so that their safety has been adequately verified. For more information, please see Chapter 3.6 Product Stewardship – Crop Science.

In addition to the regulation of finished products, extensive statutory regulations also apply to the chemical substances handled by Bayer during product manufacture. Chemical substances are subject to the respective regional chemical regulations. These include REACH in the European Union, the Lautenberg Chemical Safety Act (formerly TSCA) in the United States and the Measures for Environmental Management of New Chemical Substances (Order No. 7) of the Ministry of Environmental Protection (MEP) in China. To fulfill these requirements, we have approved Group-wide and division-specific policies.

Authorities, in the European Union for example, review the implementation of obligations resulting from chemicals legislation through regular inspections. To meet these obligations, we require our suppliers to acknowledge conformity with REACH for all substances they supply to us. The classification and labeling of chemicals enables users to become informed about the risks associated with chemicals. Bayer implements the Globally Harmonized System (GHS) for the classification and labeling of chemicals worldwide.

Besides the regular registration obligation, REACH can also entail an additional authorization procedure that can lead to the replacement of, or a ban on the use of, particularly hazardous substances. Already registered substances are also regularly evaluated by the authorities. With regard to Bayer substances, this can result in additional testing requirements, new risk management measures or inclusion in the REACH authorization procedure. To date, only one Bayer substance has been affected, for which authorization has already been granted.

The requirements of MEP Order No. 7 in China are similar to those of REACH in the E.U., although MEP No. 7 in China provides for greater grandfathering of products that are already on the market.

In the United States, all substances must be approved in accordance with the Lautenberg Chemical Safety Act and accompanied by information required pursuant to the standard Hazard Communication (29 CFR 1910.1200) of the U.S. Occupational Safety and Health Administration.

### Voluntary assessment of substances handled

We voluntarily apply comparable standards around the world, independent of the respective national legislation. For all handled substances with an annual volume of more than one metric ton that are not subject to the REACH regulation, we have (voluntarily) undertaken to successively provide comparable minimum data sets on ecotoxicology and toxicology. This data enables the hazard potential of all substances (> 99%) we use in quantities exceeding one metric ton per year to be assessed. By the end of 2019, we had already assessed 93.4% (2018: 87%) of these substances.

## 3.3 Assessments and Testing

Our substances and finished products undergo extensive assessment and testing to ensure product efficacy and safety. We examine possible health and environmental risks along the entire value chain and use this to derive appropriate measures to mitigate risks.

The safety of our products is the top priority. As early as the research and development stage, we assess the properties of our active ingredients and all other substances that are contained in a product and could thus impact the properties of a finished product (e.g. additives that support the actual active ingredients). We discontinue the development of active ingredients with undesirable properties in application of the precautionary principle as defined in Principle 15 of the Rio Declaration of the United Nations and Communication COM (2000) 1 of the European Commission. There should not be a unilateral focus on hazard potential, but rather a balanced risk-benefit evaluation.

All substances emerging from research are subjected to further extensive testing and assessments at the development stage that include (legally prescribed) animal studies. For more information, please see Chapter 3.4.

We also conduct environmental risk assessments or implement risk management measures for our active ingredients subsequent to their registration. Moreover, we help to raise questions about the impact of active ingredients in the environment and to have them addressed through sound risk assessments and analyses.

We carry out the risk assessments for our substances according to recognized scientific methods such as those described in the Guidance on Information Requirements and Chemical Safety Assessment of the European Chemicals Agency (ECHA). Should the analysis reveal that the use of a certain substance is not safe, we take steps to mitigate risk. These can vary from revised application recommendations to substitution of a substance. In this case, a replacement that is economically and technically viable needs to be sought. The substitution of chemicals is basically a continuous task for the chemical and pharmaceutical industry in its endeavors to generate new or substantially improved products and processes. This is integral to our commitment to Responsible Care™. The applicable assessment steps are established in a corporate policy.

Strict international and national laws and regulations also control the official approval and therefore development of crop varieties and plant traits and the recognition and commercialization of seeds and planting material. This includes genetically modified seed. We meet all regulatory requirements of the countries in which we distribute our crops. Extensive and intensive safety reviews of the environmental and health risks for people and animals are conducted at all

stages of the product development process from early development onwards. The results of these are incorporated into the approval / authorization procedures. Our corporate policies on the responsible use of genetic engineering and biological safety together with processes stipulated at Crop Science, such as those in the Seeds Stewardship Directive, supplement the legal and regulatory requirements.

Processes are established throughout the company to address inquiries about product safety or problems with products of ours that are already available on the market. This feedback is also integrated into our risk assessment. More information about the products of the Pharmaceuticals and Consumer Health divisions can be found under Pharmacovigilance (see Chapter 3.7) and about the (crop protection) products of the Crop Science Division in Chapter 3.6.

### Information on substances and products

Bayer compiles safety data sheets for all chemical substances used, regardless of whether or not this is required by law. Safety data sheets are the central tools of communication for safety-relevant information about substances and mixtures in the supply chain. Targeting professional users, they contain information on a substance's properties and on its safe use. In addition, technical information is provided for professional use.

Appropriate packaging information is provided for all end consumer products, an example being package inserts for pharmaceuticals.

In accordance with the respective product safety and information obligations, we compile product information both for raw materials and for intermediates and end products and make this information available across the company worldwide.

### Commitment

We are actively engaged in product stewardship activities through our work in relevant associations and initiatives. Since 1994, Bayer has supported the Responsible Care™ initiative of the chemical industry and the associated Responsible Care™ Global Charter. We actively participate in the further development of scientific risk assessment and are involved in several associations, such as the European (CEFIC), U.S. (ACC) and international (ICCA) chemical industry associations and the OECD, as well as in initiatives such as European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC). We also support the Strategic Approach to International Chemicals Management (SAICM) with the goal of further minimizing negative effects of chemicals on the environment and human health through 2020. The approach aims to create the necessary structures, especially in developing countries. SAICM combines chemical safety activities at the global level under the umbrella of the United Nations Environment Programme.

## 3.4 Animal Welfare

Animal studies are legally required and essential from a scientific viewpoint for assessing the safety and efficacy of our products. We aim to minimize the use of study animals and to employ alternative methods whenever possible.

Responsibility for animal welfare at Bayer lies with the Bayer Global Animal Welfare Committee. We respect all legal requirements pertaining to animal welfare, compliance with which is verified both by regulatory authorities and by means of internal audits. In addition, Bayer applies its own principles on animal welfare and animal studies, which are specified in a corporate policy we drafted in 2019 and will publish in 2020.

The Global Animal Welfare Committee monitors compliance with these principles within the Bayer Group and in external studies. Our principles also apply to the research institutes we commission and to our suppliers, whose compliance with our animal welfare requirements we regularly monitor.

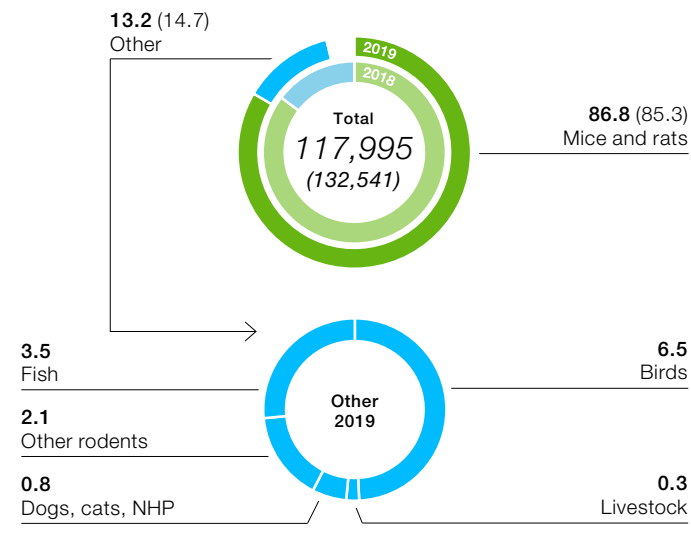
### Commitment to reducing animal studies

In early drug screening, Bayer continuously establishes different computer-based and in-vitro processes that help reduce the number of animal studies or the impact on animals in subsequent testing. Included in this is our activities in connection with organ-on-a-chip, a biochip used to simulate organs in a cell culture. We also actively participate in internationally renowned consortia, projects and validation programs geared toward achieving replacement methods, one example being the IMI-eTRANSafe project.

Applying performance indicators, we analyze the development of animal numbers, the distribution according to species and the impact on our test animals each year, while evaluating studies and discussing possible steps in accordance with the 3Rs principle (replace, reduce, refine). The total number of study animals used in 2019 (including animals in Bayer studies performed by contract research organizations) was 117,995, compared with 132,541 in 2018.

### Study Animals by Species 2019 (2018)

%<sup>1</sup>



<sup>1</sup> Figures including acquired agriculture business excluding discontinued operations (Animal Health, Currenta)

## 3.5 Protection against Product Counterfeiting

Product counterfeiting is an enormous problem worldwide, due particularly to the increase in e-commerce. We endeavor to resolutely and effectively prevent counterfeiting so as to ensure access by our customers to our safe and effective original products, protect our innovations and intellectual property rights, reduce potential financial damages for Bayer and safeguard the company's reputation. The basic principles of our strategic actions against counterfeit or otherwise illegal products and the corresponding organizational implementation for all divisions are defined in a corporate policy.

Product counterfeiting can only be addressed internationally through a joint approach by industry, associations, governmental agencies and nongovernmental organizations. We advocate the resolute application and, where necessary, the strengthening and expansion of existing laws and provisions that serve to enable the identification and confiscation of illegal products. We support these efforts through extensive measures of our own in the areas of production and packaging that are designed to enable our customers too to distinguish original products from counterfeits.

### Crop Science

The production, sale and distribution of counterfeit crop protection products take place within globally organized criminal networks, and the negative effects are amplified by numerous opaque internet offers. The use of counterfeit crop protection products poses a risk for human health and the environment because their contents do not correspond with the crop protection products formulated by Bayer and approved by regulatory authorities or do not contain approved active ingredients. In addition, counterfeit seeds often do not possess the traits chosen by farmers upon purchase. As it is becoming increasingly difficult to distinguish between an original product and a counterfeit, Crop Science cooperates with the operators of major online marketplaces to jointly develop steps to prevent the sale of counterfeit or illegal products.

#### Innovative packing technology: CapSeal

Bayer is the first producer of crop protection products to enable farmers to clearly identify original products through CapSeal technology. The closure seal has optical security features and a QR code that users can scan with an interactive smartphone app to receive important information about the product's authenticity. CapSeal is currently featured on the packaging of all Bayer crop protection products that are filled in bottles and sold in the Europe, Middle East, Africa and Latin America regions, as well as parts of Asia/Pacific.

We support association initiatives and work closely with crop protection and law enforcement authorities to prevent the introduction of counterfeit products to the market by criminal networks. Our activities in the area of crop protection products are currently focused particularly on cooperation with the Chinese customs authorities to identify counterfeit products when attempts are being made to export them from China and to stop this. In 2019, we identified patent and trademark infringements in China, India and Brazil, and successfully asserted our legal rights.

For a number of years, we have been cooperating on a cross-industry basis with leading shipping and logistics companies to disrupt the transport chain for counterfeit and illegal products. This collaboration also extends to courier services. We conduct our own inspections in the market worldwide and keep a record of all signs of suspicious and potentially counterfeit or illegal products.

On the [Counterfeits in Agriculture](#) website, we provide our customers with information on how to identify counterfeit and illegal crop protection products or seeds and what risks they harbor. The site also gives farmers tips on how to protect themselves against counterfeiting.

### Pharmaceuticals and Consumer Health

Counterfeit products that imitate the medicines of our Pharmaceuticals and Consumer Health divisions harbor considerable risks for patients and consumers. Through the [Be-ware of Counterfeits](#) campaign, Bayer is actively addressing the problem of counterfeit pharmaceuticals together with public authorities in Germany and abroad. The website of the same name contains information on the risks of counterfeit pharmaceuticals and offers patients tips on how to protect themselves against counterfeiting.

The Falsified Medicines Directive of the European Union specifies requirements and measures for the verification of original pharmaceuticals. This includes mandatory security features on external packaging, which Bayer has used in its prescription products since 2019. These data matrix codes are stored in country-specific databases across the E.U. Wholesalers and pharmacies can verify the products' authenticity by simply scanning the code. Security features of this kind are also used in further countries, such as China. In other countries, such as the United States, they are currently in the introductory phase. Bayer supports and actively accompanies these measures with the goal of ensuring standardized protection of patients against pharmaceutical counterfeiting in as many countries as possible. For years now, we have also voluntarily employed tamper-evident closures for our prescription medicines and many of our non-prescription products as well to prevent packaging manipulation.

Since 2019, Bayer has participated in the binational [Security for Pharma-Transportation](#) (s4pt) research program of the German Ministry of Education and Research and the Austrian Ministry of Transport, Innovation and Technology. Together, we are pursuing the objective of making the supply chains for pharmaceutical products safer. Also since 2019, we have been advocating within the scope of another initiative for a block chain platform in the European Union that would simplify the exchange of data beyond the

pharmaceutical value chain and irrespective of the various systems. The goal of this initiative is to improve the products' full traceability and thus combat pharmaceutical counterfeiting. We are also active in the Pharmaceutical Security Institute, an alliance in which pharmaceutical companies provide mutual support in detecting product-counterfeiting-related crimes.

## 3.6 Crop Science

Before crop protection products and technologies can be introduced to the market, it must be demonstrated that they are harmless to people and animals and can be used without placing an unjustifiable burden on the environment. They therefore require official approval, which is governed by numerous international and national laws and regulations. We test products in compliance with the applicable official regulations and perform extensive risk assessments. We also observe the import regulations for the importing countries and acquire product approvals in countries in which the products are due to be marketed.

Crop Science works continuously to improve its products and solutions. The focus of these efforts is on optimizing product benefits for our customers and applying the findings from product monitoring. For us, product stewardship begins at the research and development stage of a new product, continues through its production, marketing and safe use and ends with disposal, for example of product packaging.

We have specified our principles of responsible product management in our new [Product Stewardship Commitment, Principles and Key Requirements](#) guideline. These principles are based on established and internationally recognized standards such as the code of conduct on the handling of pesticides issued by the Food and Agriculture Organization of the United Nations (FAO), the specifications for crop protection products of the association [CropLife International](#), and the guidelines of the industry initiative [Excellence](#)

[Through Stewardship](#) (ETS) for seeds and traits. This initiative promotes, for example, the introduction of product stewardship programs and quality management systems for seeds throughout the life cycle and entrusts independent outside experts with the performance of audits to verify that member companies are complying with its guidelines. Our plant biotechnology sites in Argentina and Chile were recertified for the product stewardship programs in 2019.

We present our principles for responsibly handling our products throughout their life cycle based on our key requirements in the sections below.

### Research and development

We use the latest technologies to develop products and services so that we can optimize their efficacy, productivity and safety for people and the environment.

As part of the testing process, chemical and biological crop protection products are examined early in the development phase with regard to their mode of action, their (eco)toxicological properties and the extent of potential residues in plants and the environment to ensure that only those products with the best safety profile are developed further. To determine risks more precisely, we perform extensive safety testing as defined by law.

The development of genetically modified seeds is also subject to stringent international and national laws and regulations. We have specified internal processes in a corporate policy to ensure a responsible approach to biotechnologically manufactured products throughout their life cycle.

### Processes in plant biotechnology

In the cultivation of new crops, Crop Science uses both conventional and new targeted cultivation techniques to develop robust, high-quality plants that deliver high yields even under difficult conditions. We want to provide farmers with innovative solutions that enable them to produce more food for a

growing population and at the same time reduce the environmental impact of our products. We also support the responsible use of different cultivation techniques.

With the aid of conventional genetic engineering, foreign genes can be inserted into crops (transgenesis). The plants that are generated in this way offer substantial agronomic, economic and ecological benefits; they can help farmers affected by difficult growing conditions to increase their productivity by enabling harvests to be better protected from pests and weeds and enabling fewer natural resources to be consumed. These plants offer economic growth opportunities, particularly for smallholder farmers in less developed regions. The safety of genetically modified crops has been confirmed by numerous studies and third-party peer reviews included in the approval process and overseen by regulators in 70 countries. According to information from the nonprofit organization ISAAA (International Service for the Acquisition of Agri-biotech Applications), genetically modified crops that are the product of conventional genetic engineering are grown on more than 191 million hectares in over 26 countries.

Bayer specializes in high-quality seeds with groundbreaking traits that offer not just higher yields, but also improved weed control and more effective defense against insects. Our genetically modified plants, such as insect-resistant Bt (*Bacillus thuringiensis*) plants (e.g. corn, soybeans and cotton), contain genes from a naturally occurring Bt bacterium that kill insect pests attempting to directly feed on the plant. Other insects such as bees and additional pollinators are not harmed by Bt plants. The deployment of these plants can considerably reduce the use of broadband insecticides.

Our herbicide-tolerant plants contain genes from a bacterium and are therefore tolerant toward certain herbicides such as glyphosate or dicamba. As weeds compete with field crops for nutrients, the use of these herbicides can eliminate weeds without damaging the crops. Using these plants enables



farmers to reduce or completely forgo tillage as a method of weed control. This can help to preserve soil quality over the long term and also reduces the release of greenhouse gases from the soil that can contribute to climate change.

Genome editing is another approach in modern plant breeding that is largely based on improving plants' existing genetics by preventing a certain negative effect or amplifying a certain ability. The use of modern plant breeding methods including CRISPR-Cas can improve the efficiency and precision of plant cultivation and contribute to the development of the new crop varieties needed to sustainably secure the supply of safe, affordable and healthy food.

### Production, packaging, storage and transport

Health, safety, environmental protection and quality are a top priority for Bayer at all its sites around the world, including at the Crop Science sites where crop protection or seed products are produced. An HSE management system with uniform standards applies Group-wide. Product manufacture at Crop Science is performed according to the quality management standard ISO 9001. For more information, please see Chapter 7 Environmental Protection and Safety. We expect our third-party producers, like our suppliers, to conduct their business with Bayer in accordance with the requirements of our Supplier Code of Conduct (for more information, please see Chapter 4 Procurement). We ensure that our products are adequately packaged and are stored and transported according to the applicable legal and regulatory requirements (for more information, please see Chapter 7.11 Transportation and Storage Safety).

### Marketing, sale and distribution

In its distribution of crop protection products and technologies, Crop Science observes the International Code of Conduct on Pesticide Management of the Food and Agriculture Organization (FAO) of the United Nations. Our principles are established in our new Product Stewardship Commitment,

Principles and Key Requirements. We have also made relevant voluntary commitments. Since 2016, we have marketed only those crop protection products that are registered in at least one OECD country, and only new active ingredients for which an OECD data package has been compiled. In the future we aim to set even higher standards and are reviewing new procedures to introduce crop protection products in emerging markets only if they satisfy both the local safety standards in the respective country and the requirements of leading relevant regulatory authorities.

Bayer aims to strengthen our customers' and stakeholders' confidence in our products through transparency, which is very important to our company. Crop Science is therefore the first company in its industry to make safety-relevant data on crop protection products publicly available. More than 230 summaries of scientific studies assessed by the European Food Safety Authority (EFSA) in connection with the registration procedures for 28 of our active ingredients are already available on our online platform, including toxicological and ecotoxicological studies and investigations into degradability. Comprehensive study reports are available upon request. The platform is continuously updated to provide the most recent status of safety-relevant information. Since February 2020, interested candidates have been able to apply for a placement in our OpenLabs program through the transparency website. During a two-day event, program participants can observe our scientists as they carry out a registration study. Here they learn how we collect reliable, verifiable and reproducible data on the safety of our crop protection products by complying with guidelines such as Good Laboratory Practice (GLP).

For the marketing of genetically modified seeds, we have established internal processes and defined the requirements for the responsible use of biotechnology in both our Product Stewardship Commitment, Principles and Key Requirements guideline and our Seeds Stewardship Directive.

We provide our customers with comprehensive, transparent and reliable information about our products and services in accordance with our Corporate Policy "Responsible Marketing & Sales Policy." Users of our products can contact us through a range of communication channels should they have complaints or inquiries or wish to report any incidents. These include direct contact with our sales staff as well as hotlines as printed on our product packaging. We process external incidents or complaints involving our crop protection and seed products using a dedicated management system and compile the relevant information in an internal database. If necessary, we undertake measures ranging from labeling changes to product recalls.

Counterfeit products harbor substantial risks for users and the environment. For more information on our strategy for preventing product piracy, please see Chapter 3.5 Protection Against Product Counterfeiting.

### A comprehensive approach: integrated crop protection for pest and resistance management

Crop Science supports the implementation of integrated crop protection measures that combine various strategies for controlling weeds, pests and plant diseases in farming. This concept is tailored to the special challenges facing farmers, and it enables them to unlock their full economic potential while at the same time minimizing the environmental impact of their farming activities. We offer a broad portfolio of innovative chemical and biological crop protection solutions, high-value seeds and data-driven solutions that help farmers to protect their crops safely and responsibly. We also assist farmers further by providing cultivation recommendations that reflect the specific needs of fields, crops and soils.



## Bayer ForwardFarming

Crop Science promotes and supports ecological enhancement measures in agriculture and the recovery and protection of natural and semi-natural habitats. Together with farmers and scientific experts, we are working to find solutions to preserve biodiversity e.g. as part of the ForwardFarming initiative. ForwardFarming promotes the implementation of sustainable agriculture in practice across a global network of independent agricultural operations. On the Bayer ForwardFarms we show how sustainable agriculture involving integrated crop protection and resistance management can be put into practice. In these representative operations, the farmers demonstrate modern cultivation techniques, approaches to applying seeds and crop protection products, and the action they take to handle resources responsibly. Our ForwardFarms also promote dialogue with users and enable the local and worldwide exchange of ideas and findings among various stakeholder groups. There are currently 17 Crop Science ForwardFarms spread across Europe (12), North America (2) and Latin America (3).

## Responsible use

Through targeted training courses, we teach farmers, seed treatment professionals and dealers how to use our products both effectively, to increase the yield and quality of their harvested goods, and also safely, with regard to human health and the environment.

In 2019, Crop Science trained more than a million farmers in the safe use of our products, mainly during customer events. We focus our safe use training activities on countries where there are no statutory certification requirements for the handling of crop protection products. We conduct training both independently, and in cooperation with local, regional and international associations. MoreAs a member of CropLife International, we help to train nearly four million

farmers in this association in 82 countries in the responsible and appropriate use of crop protection products.

Crop Science trains farmers in various technical areas on the proper use of individual products such as dicamba. In 2019, more than 25,000 U.S. users completed the certification mandated by the U.S. Environmental Protection Agency (EPA).

As part of Bayer's Safe Use Ambassador Program launched in 2017, we enter into partnerships with Asian universities and offer students annual training in the safe use of crop protection products, with a focus on safety for users and the environment. The goal is for the students to share their knowledge with farmers during internships on farms. In 2019, Bayer trained students at 29 universities in seven Asian countries.

Our objective is to continuously increase the outreach of our training activities.

New technologies not only enable crop production to be increased, but also promote the safe and responsible use of crop protection products. This includes the targeted application of crop protection products using data from satellites and drones. In 2019, Crop Science continued its strategic partnership with Chinese drone producer XAG for the use of this technology in farming, including for the targeted treatment of field crops. Furthermore, sensors on the latest tractors and harvesters can supply important information on soil conditions and plant health. This data is incorporated into the digital applications developed by the digital farming business of Crop Science – The Climate Corporation – to help farmers achieve more efficient and sustainable agricultural operations.

Our digital farming platform FieldView™ enables seamless linking and unlimited storage of machine-generated agonomic data on farmers' accounts. The application of this data not only helps farmers, but also creates substantial

advantages for the environment. Precision agricultural machinery and digital tools enable farmers to use inputs such as seeds, water, fertilizer and crop protection products only when and where they are necessary. FieldView™ is currently available in North America, South America and Europe.

To meet increasing demands for environmental protection and occupational health and safety more effectively, Crop Science has developed the easyflow system together with agrotop GmbH. This closed, contamination-preventing discharge system for liquid crop protection products enables full or partial discharge and is fully self-cleaning. The system is already being used in practice for small-scale spraying of fruit and vegetables. A new variant for use in field crops was introduced to the market with Bayer's support.

For water protection in agricultural areas, Crop Science recommends the use of biological remediation systems such as Phytobac™. This system is designed to prevent water contamination with residues of crop protection chemicals generated during the filling and cleaning of spraying devices or the disposal of residual liquids. The system is used in many E.U. countries and offered commercially by various suppliers. More than 4,600 remediation systems are currently in operation in Europe. Projects to introduce the system have also been implemented in Australia, Canada, China, Thailand and Latin America (Argentina, Brazil and Colombia). Together with external partners we are developing a digital geoinformation system for agriculture in order to protect neighboring water bodies from contamination with crop protection products. Site-related risks are visualized by means of high-resolution maps supplemented with risk mitigation proposals.

Bees and other pollinators are hugely important for sustainable food production. Our pollinator research activities support farmers in food production while at the same time contributing to the health, safety and biodiversity of pollinators. We promote dialogue with all stakeholder groups through our global network. Our scientific activities pertaining to

pollinators comprise numerous cooperation projects worldwide that focus on the major stress factors for pollinators, new approaches for protecting the insects and the pollination of crops, among other issues. Solutions tailored to local and regional needs are developed through these efforts.

To minimize potential risks posed to bees by our crop protection products, initial tests to measure bee toxicity are carried out already at an early development stage. The goal here is to ensure that only products with a pollinator-safe environmental profile are developed further. Crop protection products are among the most stringently regulated products and undergo thorough testing to make sure they can be used safely without harming bees. We perform extensive safety testing and risk assessments, enabling us to recommend specific bee safety measures to farmers. Bayer also specifically develops bee-friendly crop protection products and application procedures.

Neonicotinoids are the subject of controversial debate with regard to bee safety. These highly effective insecticides protect plants from a broad array of pests and are therefore widespread. The effects observed under laboratory conditions did not harm bee colonies under realistic field conditions when the products were used properly. Scientific reviews by regulatory authorities in many countries of studies conducted over a period of nearly 30 years found that neonicotinoids do not pose an unacceptable risk to nontarget organisms such as pollinators. Hundreds of studies have delivered sound and detailed scientific findings confirming that neonicotinoids are safe and not harmful to bee colonies and the populations of other pollinators. Against this background, we are convinced that our neonicotinoid products have a favorable environmental safety profile and are not dangerous to honey bee colonies and the populations of other pollinators when used properly.

We share the concerns about currently declining insect populations. The causes of these losses have not yet been fully clarified, however. Bayer takes this issue seriously and agrees that further studies of the scientific causes and the development of countermeasures are urgently needed wherever feasible.

### Product stewardship for glyphosate

The nonselective herbicide glyphosate is used in many countries for effective, simple and cost-effective weed control. The active ingredient was first introduced in 1974 and has since been marketed under a number of different tradenames in hundreds of crop protection products by several dozen different companies worldwide. In Europe, most glyphosate-based herbicides are used according to the label to control weeds in production fields of a wide range of crops. Some glyphosate-based products can be used according to the label to control weeds in gardens and noncultivated areas, such as in industrial complexes and along railway tracks. Glyphosate works in plants by specifically inhibiting an enzyme that is essential to plant growth. This enzyme is not found in cells of humans or animals.

Glyphosate has a 40-year history of safe use when used according to label directions. This is confirmed by science-based evaluations conducted by regulatory bodies such as the European Food Safety Authority (EFSA) and the German Federal Institute for Risk Assessment (BfR) and other leading regulatory authorities such as the U.S. Environmental Protection Agency (EPA) and the Canadian Department of Health, Health Canada.

The most extensive epidemiological study ever with detailed information on glyphosate use, the Agricultural Health Study published in the Journal of the National Cancer Institute in 2018, also found no association between glyphosate-based herbicides and non-Hodgkin lymphoma. The study followed more than 50,000 licensed applicators of crop protection products for more than 20 years.

Extensive information on the public debate surrounding the safety of glyphosate for users and the environment is available on our [website](#). For information on the lawsuits against Bayer in the United States, please see the Notes to the Consolidated Financial Statements in [Bayer's 2019 Annual Report](#).

It is of central importance for Crop Science to offer farmers a broader range of solutions to improve the sustainability and productivity of their operations. Glyphosate will continue to play an important role in agriculture and in our product range. As one-size-fits-all solutions do not account for nature's needs, however, we plan to invest around €5 billion in the next 10 years to research additional weed control methods and thus provide farmers with more options in the future. We will also take the next step as regards transparency: in a pilot project we will invite scientists, journalists and NGOs to actively participate in the upcoming reregistration procedure for glyphosate in the European Union.

### Disposal of containers and old inventories, discontinuation policy

Bayer supports programs to ensure the safe recycling or, should local conditions not allow this, safe disposal of empty packaging and containers. Processes are in place at Bayer to ensure the safe sale-off of products, including the disposal of obsolete inventories or waste. For more information, please see Chapter 7.5 Waste and Recycling.

## 3.7 Pharmaceuticals and Consumer Health

### Quality and safety of pharmaceuticals and medical devices

The most stringent quality and safety requirements for patients and users apply to both pharmaceuticals and medical devices. The manufacturing of pharmaceuticals and medical devices is subject to very stringent quality requirements. The quality management system of the Pharmaceuticals and Consumer Health divisions is based on internationally recognized standards for all stages of the provision of a pharmaceutical or a medical device – from development to registration, production and distribution. These include ISO (e.g. ISO 9001, 17025 and 13485) and ICH (International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use) standards, as well as rules for good working practices (GxP) in the development and manufacture of pharmaceuticals, such as Good Manufacturing Practices (GMP), Good Distribution Practices (GDP) and Good Clinical Practices (GCP).

Compliance with the statutory requirements, relevant standards in production and registered product specifications is regularly audited by internal experts, regulatory authorities and external assessors. Such audits also cover institutes subcontracted by Bayer, service providers and our suppliers. The quality requirements derived from regulatory requirements, permits and authorizations, and from relevant standards are regularly reviewed and integrated into our quality management system.

Quality, safety and efficacy are always assessed relative to the possible risks associated with a product's use. Such an assessment results in a benefit-risk profile, which is crucial for the product's approval and is also continuously reviewed thereafter.

Accordingly, the Pharmaceuticals and Consumer Health divisions assess the medical benefit-risk profile of their pharmaceuticals and medical devices throughout their entire product life cycle. For medical devices, the initial production and subsequent update of the benefit-risk profile are undertaken within the scope of the quality management system. For pharmaceuticals, this takes place through a corresponding pharmacovigilance system.

### Safety in pharmaceutical development and production

Drug development is a complex and time-consuming process and is subject to stringent rules. Before a pharmaceutical can be submitted for approval following the time-consuming search for a promising drug candidate, its efficacy, safety and tolerability must be examined in various phases (Phases I-III) of preclinical and clinical trials.

### Clinical trials

Clinical trials are an essential tool for determining the efficacy and safety of new drugs before they can be used to diagnose or treat diseases. The benefits and risks of new medicinal products must always be scientifically proven and well documented. With respect to clinical trials we strictly align ourselves to the Declaration of Helsinki, an ethical standard in place since 1964 that regulates research conducted on humans. Since that time, additional standards, regulations and ethical codes have been further developed and introduced worldwide to ensure that the safety and health of patients are the top priority in clinical trials.

Wherever in the world we conduct clinical trials, they satisfy these strict international guidelines and high quality standards, as well as the respective applicable national laws and standards. Bayer publishes information about clinical trials in line with the respective applicable national laws and according to the principles of the European (EFPIA) and U.S. (PhRMA) pharmaceutical industry associations, these principles being defined in a joint position paper. Bayer publishes information on its own clinical trials both in the [publicly accessible register](#) and in its own Trial Finder [database](#). In the case of approved products, summarized results of Phase II, III and IV clinical trials are accessible online through the Trial Finder. Upon request, scientists can receive access to anonymized data from clinical trials at the patient level via the [Clinical Study Data Request](#) portal, provided the studies in question are listed in the portal.

Further information about our globally uniform standards, the monitoring of clinical studies and the role of the ethics committees can be found on the [internet](#).

### Approval process

The respective documentation submitted to the regulatory authorities contains the results of these studies. It includes both the data from the developmental phases, such as chemical-pharmaceutical and toxicological data, and a comprehensive benefit-risk assessment of the pharmaceutical. For a new pharmaceutical to secure marketing authorization, it must comply with regulatory safety requirements. The same applies to medical devices, dietary supplements and medicated skincare products. Based on these documents, the regulatory authority assesses whether the efficacy, safety and quality of the pharmaceutical have been demonstrated for the intended indication. The product is only approved if its benefits outweigh the risks.

### The most important regulatory authorities for Bayer are:

- // The U.S. Food and Drug Administration (FDA)
- // The European Medicines Agency (EMA)
- // The Pharmaceuticals and Medical Devices Agency Japan (PMDA)
- // The China Food and Drug Administration (CFDA)

As each country has its own strict regulations for drug development and approval, we work closely with the respective national regulatory authorities to ensure that we act in a compliant manner at every development stage. The authorities in the additional countries often take the assessments of the EMA and/or the FDA into consideration in their own evaluations.

### Drug safety

The preclinical and clinical studies prescribed for pharmaceutical research investigate drug candidates with regard to their quality, safety and efficacy. At the same time, the genesis and progression of a disease differ from one person to another and the effect of a drug product can vary accordingly. We continue to observe and evaluate our products following their approval and throughout their entire life cycle. This enables adverse effects to be identified at an early stage and a decision taken as regards the necessary risk mitigation measures.

The collection and evaluation of safety-relevant information about our products are the responsibility of the global Patient and Drug Safety (Pharmacovigilance) department, in which medical experts from various disciplines work together in safety management teams (SMTs). These teams evaluate internal benefit and safety data, clinical trials, post-marketing studies, external databases and scientific publications to identify potential safety concerns at an early stage and detect possible changes in the benefit-risk profile. All data evaluated is entered into our pharmacovigilance database. The evaluation of information about a benefit-risk profile applies not just to pharmaceuticals and medical devices, but also to dietary supplements and medicated skincare products. This information is regularly evaluated together with the regulatory and oversight authorities at both national and international level.

As it is particularly important not just to collect data during the clinical development of a medical product, but also to monitor the product after marketing authorization has been granted, we conduct Phase IV studies (Post-Authorization Safety Studies) to record rare or very rare side-effects. Pharmaceutical manufacturers receive reports on side-effects either directly or through the health authorities, as well as through stakeholders such as physicians, pharmacists or patients themselves. As a producer, we decide on the steps resulting from these reports in close cooperation with the relevant health authorities.

Should risks be identified, we immediately take steps to safeguard the health of patients and consumers in coordination with the authorities. These measures range from updating product information for patients, users, pharmacists and physicians through patient education brochures and further training measures for medical specialists to direct communication with medical experts (Direct Healthcare Professional Communication, DHPC) and even product withdrawals. All of these processes are documented, regularly updated and integrated into the quality management system.

Implementation of risk mitigation activities is coordinated by our local SMTs in the country organizations. The information that we compile on side-effects is reported to the national health authorities in the relevant countries, where it is processed. As processes in the European Union are centralized, European marketing authorization holders such as Bayer are now required to enter all suspected cases of undesirable side-effects directly into EudraVigilance, the European Medicines Agency's electronic information system, rather than reporting them to the 27 national authorities.

Large data volumes must be analyzed to identify relevant information in the drug safety process. Since 2019, Bayer has employed technologies with artificial intelligence for this task in order to support time-consuming manual workflows. This enables side-effects to be discovered at an earlier stage and risk mitigation measures to be implemented faster, which in turn helps to further improve patient safety.

### Pharmaceutical residues in the environment

Active pharmaceutical ingredients can enter the environment through human excreta, through improper disposal or during production. Surface waters are particularly relevant here. Stakeholders are discussing the release of active pharmaceutical ingredients into water in connection with drinking water production. To our knowledge, the existing concentrations of individual active pharmaceutical ingredients in drinking water that is partially taken from surface waters do not have any relevant adverse effects on human health. For example, according to its report on mixtures of active pharmaceutical ingredients in drinking water published in 2017, the WHO currently does not identify any immediate health risks and consequently sees no need to act in the short term.

Our Pharmaceuticals and Consumer Health divisions carry out ecotoxicological investigations of pharmaceutical residues to assess the potential environmental impact of their active pharmaceutical ingredients. In connection with the approval process for human pharmaceuticals in Europe and the United States, an environmental risk assessment of discharge following proper use by patients takes place for all new active pharmaceutical ingredients. General information on the environmental risks of pharmaceuticals is given in the specialized information for physicians and in the package inserts, including details on how to dispose of unused pharmaceuticals. The direct impact of pharmaceutical residues on ecosystems is addressed in the public sector and in scientific publications. As part of a public-private partnership between the E.U. and the European pharmaceutical industry a study was published in 2019 on the environmental risks of human pharmaceuticals. A potential environmental risk has only been identified for a small number of the active ingredients assessed so far within the scope of central approval processes. These primarily comprise hormonally active ingredients, which are also used at Bayer.

To further reduce the release of active ingredients into the environment, we take additional action in our production facilities that minimizes discharges based on risk-oriented assessment parameters. For more information, please see Chapter 7.4 Water and Wastewater.

We are also participating actively in various research projects to develop assessment and reduction measures such as by acting as a coordinator in the [Intelligence-led Assessment of Pharmaceuticals in the Environment \(IPIE\)](#) project in Europe, in which new models and assessment strategies to predict environmental risks are being developed. Bayer is actively involved in the stakeholder dialogue initiated by the German government with the goal of drawing up a [strategy for dealing with trace substances](#) in bodies of water. This process is aimed at developing a strategy to prevent the water-polluting effects of certain chemicals, including active pharmaceutical ingredients.

## 4. Procurement

As a global company, Bayer procures services and materials from all over the world. We align our procurement and supplier management processes to ambitious ethical, social and environment-related principles. We expect our suppliers to also observe these principles and support them in doing so. Through this approach we help to improve the sustainability of our supply chain.

### 4.1 Management Approach

The procurement organization supplies the company with raw materials, goods and services all around the world. We exert influence on society and the environment through our procurement activities and supplier relationships. Not only economic, but also ethical, social and ecological principles are therefore anchored in our Procurement Policy, which is binding for all employees worldwide. Beginning in 2020, the procurement unit of the acquired agriculture business will fully operate according to the globally valid Bayer Procurement Policy.

Procurement is an enabling function that acts centrally on behalf of all divisions and enabling functions and leverages synergies by bundling know-how and procurement spend. The head of Procurement reports directly to the Chief Financial Officer. Our main direct procurement materials include active ingredients, raw materials, intermediates, finished products and seeds. Technical goods and services, marketing services and research and development services are important components of our indirect procurement portfolio.

The share of renewable raw materials in Bayer's procurement portfolio plays a subordinated role in the Bayer Group. These materials are primarily used when it makes technical, economic and ecological sense to do so. More information can be found [online](#).

The following table provides relevant data on our procurement activities.

#### Procurement Activities<sup>1</sup>

	2018	2019
Procurement spend in € billion	15.6	17.6
Spend in OECD countries in € billion	12.2	13.8
U.S.A.	4.8	6.3
Germany	3.4	3.2
United Kingdom	0.6	0.6
Other	3.5	3.7
Spend in non-OECD countries in € billion	3.4	3.8
China	0.8	1.0
Brazil	0.7	0.9
India	0.5	0.6
Other	1.3	1.3
Number of suppliers <sup>1</sup>	85,599	86,400
of which from OECD countries	55,749	52,038
U.S.A.	13,203	13,128
Germany	12,393	11,263
United Kingdom	1,511	1,375
Other	28,642	26,272
of which from non-OECD countries	29,850	34,362
China	1,996	1,972
Brazil	3,897	3,917
India	4,959	8,699
Other	18,998	19,774
Number of countries	148	143

<sup>1</sup> In addition, internal services worth €0.3 billion (2018: €0.3 billion) were procured from the Currenta group until the date of its deconsolidation.

Bayer purchases locally wherever possible in order to respond promptly to the requirements of our sites and simultaneously strengthen local economies. In 2019, this applied to 76% (2018: 74%) of our procurement spend at our significant locations of operation, and to 76% (2018: 74%) of procurement spend in all countries worldwide.

When selecting suppliers, we consider all types of suppliers and supplier diversity, as supported, for example, by our [Supplier Diversity Program](#) in the United States.

#### Supplier Diversity Program U.S.A.

With its comprehensive Supplier Diversity Program, Bayer promotes diversity within the supply chain in the United States. In doing so, we account in particular for underrepresented supplier groups such as companies owned or operated by women or members of ethnic minorities. Together with chambers of commerce and external organizations, we help these suppliers to further develop themselves professionally, offer them financial benefits to improve their competitive opportunities and assist them in qualifying for tendering processes.

Procurement operates according to established procurement and supplier management processes. Long-term contracts and active supplier management for strategically important goods and services are important elements here. They serve to minimize procurement-specific risks such as supply bottlenecks or significant price fluctuations, safeguard the company's competitiveness and ensure smooth production processes. Bayer works closely with selected suppliers to systematically involve them in innovation processes. For example, the winner of the Bayer Supplier



Innovation Award 2019 consolidated a heavily fragmented supplier landscape previously comprising 70 individual supplier relationships into a single account without disrupting business continuity. The introduction of this account considerably reduced the administrative workload while ensuring that full control remains in-house so that there are no fixed infrastructure costs for the management of individual suppliers.

## 4.2 Sustainability in the Supply Chain

Clear, sustainability-oriented criteria and standards apply to our supply chain at both a global and regional level. A four-step process is established throughout the company to improve sustainability practices in the supply chain.

This process is centrally steered by the Sustainability unit in Procurement. The process is implemented through cross-functional cooperation between the Procurement and the Health, Safety & Environment enabling functions. The seed growers of the acquired agriculture business are not yet included in this process. Owing to particular risks in the agricultural sector, these suppliers are subjected to a separate evaluation process with a special focus on human rights.

Bayer's procurement employees are supported in the implementation of our sustainability requirements through targeted Group-wide training measures. In 2019, 89% of procurement employees in the acquired agriculture business received training in the area of sustainability in procurement.

Furthermore, a worldwide network of local sustainability experts provides support in the communication and implementation of measures in countries where heightened sustainability risks predominate. These experts undergo regular training and then share the acquired knowledge in their teams and countries, as well as with suppliers.

### Four-stage Management Process to Improve Sustainability Practices in the Supply Chain



### Step 1: Raising awareness

The core principles of our sustainability requirements are established in [Bayer's Supplier Code of Conduct](#), which was updated in 2019 and is based on our Bayer Human Rights Policy, the principles of the U.N. Global Compact and the core labor criteria of the International Labour Organization (ILO). The code is available in 11 languages and covers the areas of ethics, relations with employees and other stakeholders (including human rights), health, safety, environment and quality, and governance and management systems. In our Supplier Code of Conduct, we refer to the system in place at Bayer through which employees and outside stakeholders can report complaints and (compliance) violations via a compliance hotline that can also be accessed anonymously (for more information, please see Chapter 2.5 Compliance). Additionally, we expect our suppliers to make an adequate complaint mechanism available to their stakeholders.

The code is applied in the selection and evaluation of our suppliers and is integrated into electronic ordering systems and contracts throughout the Bayer Group. As a result, suppliers must already commit to our core principles upon registration. Furthermore, our standard supply contracts contain a clause that authorizes us to verify suppliers' compliance with our sustainability requirements. Our code is supplemented by the global [Supplier Code of Conduct Guidance](#), which was also updated in 2019 and, like the Supplier Code of Conduct, is integrated into our registration portal for suppliers.

Step 2: Selecting suppliers for evaluation

Each year, Bayer systematically selects suppliers whose observance of the code requirements needs to be reviewed through an online evaluation or an audit. The first step is to identify all suppliers of strategic relevance to Bayer who must automatically undergo a sustainability evaluation. In the second step, Bayer gives the remaining suppliers a sustainability risk classification based on the country / category risk and significant procurement spend (more than €1 million). This risk categorization is based on internationally recognized country risk classifications such as those applied by the World Bank or the United Nations. The suppliers identified in these two steps are once again validated by the procurement organization, and the suppliers requiring evaluation are then conclusively specified. In 2019, 233 strategically important suppliers making up more than 25% of the total procurement spend were identified through this process. A further 239 suppliers had an increased sustainability risk and a significant procurement spend (> €1 million p.a.).

Since 2018, we have already selected individual suppliers with an increased sustainability risk and a procurement spend of more than €500,000 per year for evaluation. From 2020, the threshold for the selection process will be lowered to include all suppliers with an increased sustainability risk and a procurement spend of €500,000 per annum, thus increasing the number of our evaluations.

Also included are suppliers for which evaluations were performed through our industry initiatives Together for Sustainability (TfS) and the Pharmaceutical Supply Chain Initiative (PSCI), as well as those who have proactively allowed themselves to be evaluated. These initiatives should lead to a standardization of the sustainability requirements that suppliers in the chemical and pharmaceutical industries are expected to meet. The exchange and mutual recognition of evaluation and audit results should also create synergies within the respective initiatives.

Step 3: Evaluating sustainability performance

Bayer verifies the observance of the code requirements by the suppliers selected in Step 2 through EcoVadis online assessments or on-site audits conducted by external and Bayer auditors. The suppliers gained through the acquisition of the agriculture business were already included in the EcoVadis online assessment process in 2019. It is planned to fully integrate them into Bayer’s evaluation processes by the end of 2020.

The online assessment criteria of EcoVadis – broken down into the areas of environment, ethics, labor practices & human rights, and sustainable procurement – correspond to the requirements of our code and also take into account country- and industry-specific conditions and supplier size. In total, our service provider EcoVadis assessed 650 (2018: 715) suppliers on our behalf in 2019.

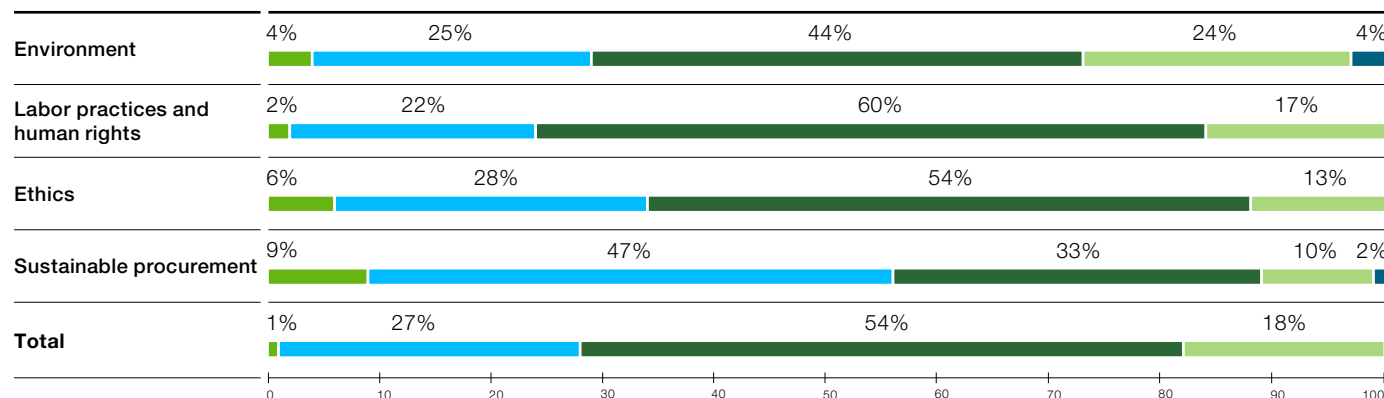
In 2019, we additionally arranged for 62 (2018: 79) of our suppliers to be audited on site by external, independent auditors. The audit criteria included both the specifications of our code and the industry-specific requirements of the TfS and PSCI industry initiatives. In 2019, PSCI carried out an auditor training course and extensively revised its audit questionnaire.

Furthermore, internal and external auditors evaluate selected new and existing suppliers with a focus on health, safety and the environment (HSE). These audits are performed for suppliers with significant risk potential as regards, for example, substances, production processes, occupational safety or environmental factors, as well as on toll or contract manufacturers in countries at increased risk. In 2019, 103 (2018: 130) suppliers were evaluated by means of HSE audits.

Assessments and Audits of Bayer Suppliers <sup>1</sup>		
	2018	2019
Sustainability assessments <sup>2</sup> via the EcoVadis platform	715	650
Sustainability audits <sup>3</sup> by external auditors	79	62
HSE <sup>4</sup> audits by external or Bayer auditors	130	103

<sup>1</sup> The online assessments of our suppliers that form part of a group generally takes place at the parent-company level. The number of assessments comprises suppliers of continuing and discontinued operations in both 2018 and 2019.  
<sup>2</sup> Initial and re-assessments of suppliers working for Bayer; initiated by Bayer and shared via the TfS initiative  
<sup>3</sup> Initial and follow-up audits of suppliers working for Bayer; initiated by Bayer and shared as part of the TfS and PSCI initiatives  
<sup>4</sup> Health, safety, environment

### Evaluating the Sustainability Performance of Our Suppliers



Valuation according to EcoVadis (in points): 0-24 25-44 45-64 65-84 85-100  
 Number of suppliers assessed: 650 (as of: December 31, 2019)

Additional verification processes were established for the fulfillment of further international regulations such as those requesting companies to disclose the origin of certain raw materials. This applies, for example, to [conflict minerals](#). When surveying our 154 relevant suppliers, we use the internationally recognized Conflict Minerals Reporting Template to identify the use, sources and origin of certain minerals in our supply chain. In order to help our customers meet their legal obligations to disclose the origin of certain raw materials in their supply chain, we increased the response rate of the suppliers identified by us in 2019.

#### Step 4: Developing suppliers

The online assessments and on-site audits are analyzed and documented so that specific improvement measures can be defined. In 2019, suppliers who had undergone online assessments by EcoVadis demonstrated the need for improvement in particular in the categories of sustainable procurement and the environment, while those who had been audited required improvement in occupational health and safety.

A supplier receives a critical result if a serious violation or several major findings in sustainability performance are identified. In these cases, Bayer requests that the suppliers remedy the identified weaknesses within an appropriate timeframe based on specific action plans. In 2019, this applied to 11 suppliers (2% of all assessed and audited suppliers; 2018: 2% (17)). We monitor the implementation of these activities by way of re-assessments or follow-up audits. Bayer terminates a supplier relationship if no improvement is observed during a re-evaluation. In 2019, Bayer was not prompted to end any supplier relationship due solely to sustainability performance.

Our monthly monitoring shows that 332 (2018: 343) of the 712 (2018: 794) Bayer suppliers evaluated in 2019 improved their sustainability performance.

A key factor in this cooperation is helping our suppliers to improve their sustainability performance. Here we focus both on remedying deficiencies and on cooperating on sustainability issues.

In 2019, this was the focus of activities such as the global Supplier Day in Germany, during which Bayer's sustainability requirements were addressed in panel discussions and working groups and the revised [Supplier Code of Conduct](#) were presented. The industry initiatives TfS and PSCI also organized training courses and workshops for suppliers in India and China in 2019. Through the TfS Supplier Academy and the PSCI online resource library, the respective initiatives offer additional advanced training modules for our suppliers that are being expanded each year. In 2019, this included offers such as best-practice examples, brochures or new webinars.

The TfS initiative is testing the introduction of a [collaboration platform](#) involving Bayer suppliers as another element of supplier development. It provides users with numerous best-practice examples and dialogue opportunities, as well as activities, tips, case studies and expert suggestions on the topics of water, energy and waste.

The supplier training measures launched in 2018 under the auspices of the German Business Initiative for Sustainable Value Chains were successfully completed in the spring of 2019. Selected Bayer suppliers received intensive training on environmental, social and human rights standards and subsequent support in practical application. The training program is being continued under the name [Econchain](#).

From 2020, we want to define new priorities in our four-step management process. Our activities aimed at implementing and further developing Steps 1 to 3 continue to form the basis for our endeavors. On the other hand, we aim to further expand our supplier development activities (Step 4). It is our goal to help relevant suppliers achieve positive successes in their sustainability performance over the long term. In addition, we want to shift the focus more toward issues such as CO<sub>2</sub> emissions (Scope 3) in the supply chain, our supplier diversity and sustainability assessments at tier 2 level.

## 5. Human Rights

Bayer is a founding member of the U.N. Global Compact and respects the Universal Declaration of Human Rights. We also support the U.N. Guiding Principles on Business and Human Rights, which provide global standards for preventing and combating possible human rights violations in connection with business activities, and a range of globally recognized declarations applicable for multinational corporations. These include the OECD Guidelines for Multinational Enterprises and the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy of the International Labour Organization (ILO), as well as the latter's core labor standards.

### 5.1 Management Approach

Bayer fully supports human rights and has documented its stance in a globally binding corporate policy entitled the "[Bayer Human Rights Policy](#)." We are committed to respecting and fostering human rights within our sphere of influence and to reporting transparently on the results of our activities in this area. We also expect our business partners, and particularly our suppliers, to fully observe human rights. Our LIFE values and our corporate policies on [Corporate Compliance](#) and on Fairness and Respect at Work also obligate all employees worldwide to conduct themselves fairly and in a compliant manner in dealings with colleagues, business partners and members of the community. Sustainability and human rights are among the responsibilities of the Chairman of the Bayer Board of Management. He is supported in his role as Chief Sustainability Officer by the Public Affairs & Sustainability enabling function.

The observance of human rights is an integral part of our sustainability management and of our human resources strategy. Directives, processes and management and monitoring systems control the implementation of human rights standards in business operations.

We use a Group-wide, integrated risk management system to identify potentially detrimental effects of our business activity on human rights. The Bayer Risk Universe anchored in this system reflects the potential risk categories at Bayer. The Bayer Risk Universe is regularly reviewed and, if necessary, updated. It also expressly takes account of nonfinancial risks related to our business activity or to our business relationships, products and services. Using a defined matrix, the identified risks are evaluated with regard to their potential impact and likelihood of occurrence, taking into account established countermeasures. For more information on our risk portfolio, please see the Opportunity and Risk Report in the [2019 Annual Report](#).

We continually review our processes and activities with respect to human rights. In 2019, we held two joint workshops with an external management consulting firm to discuss our due diligence with respect to both human rights in certain business processes and gaps identified through external evaluations.

### 5.2 Implementation Measures

We take measures to observe human rights both internally and within our sphere of influence. Child and forced labor are strictly prohibited at Bayer in accordance with the core labor criteria of the International Labour Organization (ILO). This prohibition is set out in our binding Human Rights Policy and applies Group-wide. In line with the conventions of

the ILO, Bayer only offers fixed-term internships, education programs and seasonal employment to young people when this does not impair their safety, health and compulsory school attendance in any way and compliance with the requirements is precisely monitored.

We offer ongoing training programs to enhance employees' awareness of the importance of human rights in their day-to-day activities. In 2019, more than 76% of our employees received training on aspects of our Human Rights Policy in sessions totaling around 238,000 hours. Aspects of human rights are also covered in the training offerings and the sustainability manual for our suppliers. If there are indications of violations of our Human Rights Policy, employees and members of the general public can contact the worldwide [compliance hotline](#), which is available in numerous national languages. This can also be done anonymously if desired.

We verify the observation of human rights at our sites and by our suppliers, including by means of Bayer audits. In 2019, our auditors identified a limited number of violations against applicable worktime regulations and established minimum wages in our supply chain. In each of these cases, we actively cooperated with our suppliers to improve the situation for employees in a timely fashion.

### 5.3 Challenges in Seed Production

The risk of human rights violations in the seed supply chain poses a particular challenge for Bayer. The focus here is on both the work of seasonal laborers and the risk of child labor.

## Seasonal labor

Seasonal laborers in the fields have been identified as a high-risk group in terms of human rights. Such laborers are employed directly by Bayer, through employment agencies or by seed producers contracted by Bayer. To ensure the observation of human rights within our sphere of influence, Bayer has developed a four-step, risk-based approach specifically for this high-risk group:

### 1. Risk assessment

On behalf of Bayer, a nonprofit organization specializing in the observance of human rights in agricultural work and the employment of seasonal laborers conducted a risk assessment of countries and regions in which we produce seed. The next update to the risk assessments is planned for 2020.

### 2. Training courses

To counter the risk of human rights violations, our human rights experts train the seasonal laborers hired directly by us, the employment agencies and the seed producers. These training courses convey information on employee rights and the human rights standards we stipulate, and also explicitly inform participants about options and ways to report incidents and suspected violations. In 2019, more than 5,800 employment agencies and seed producers in five countries underwent training.

### 3. Inspections

In the countries identified, our human rights experts carry out inspections of seed producers to ensure compliance with the human rights standards we have stipulated. In 2019, we conducted a total of 62 inspections in seed production, 32% of them in countries with high risk potential.

### 4. Corrective measures

If the inspections reveal potential or actual violations, corrective measures must be implemented. In 2019, 14 corrective measures were requested, which have been implemented accordingly.

### Combating child labor

Our position on child labor is quite clear – it is not tolerated at Bayer. The employment of children in farming represents a high risk outside our own operations. We therefore obligate our suppliers to strictly refrain from employing children. Through our Child Care Program, Bayer has for years taken systematic action to prevent child labor in the seed supply chain, particularly in India. The program is being established in those countries in which there could be cases of child labor based on our risk assessment. We raise awareness of the issue among our suppliers and clearly communicate our requirements. The Child Care Program involves systematic and repeated inspections of individual seed producers in their fields by Bayer employees during the growing season. As the majority of the cases of child labor we identified were in India, it is there that we implement most of our measures and inspections. The corporate auditor EY, India, additionally carries out unannounced visits to producers of hybrid cotton seed in four Indian districts. The Child Care Program is also still in place in Bangladesh and the Philippines, as cases of child labor were identified there several years ago. In the cultivation year 2018/19 no cases of child labor were identified in either country.

We measure the success of our comprehensive program in India using the indicator “Child Labor Incidence in Relation to the Total Number of Laborers Monitored in Seed Production for Bayer.” In 2018/19, we uncovered a total of 28 cases of child labor among our seeds suppliers in India.

### Child Labor Incidence in Relation to the Total Number of Laborers Monitored in Seed Production for Bayer in India<sup>1</sup>

	Child labor cases	Number of laborers monitored	Child labor incidence in relation to total laborers monitored	
	2018/19	2018/19	2017/18	2018/19
Cotton	20	138,369	0.01%	0.01%
Vegetables	0	51,558	0%	0%
Corn	0	21,844	0%	0%
Rice	8	70,789	0.01%	0.01%

<sup>1</sup> The figures cover several growing cycles in the cultivation year 2018/19. In India, the cultivation year runs from the middle of one year to the middle of the next, depending on climatic conditions and the various different seed types. Cumulated depiction on the basis of control inspections performed (at least one per growing season for vegetables and up to six per season for cotton).

We immediately put a stop to instances of child labor among our contractors and closely track them through the measures related to our Child Care Program. Graduated sanctions are applied for noncompliance by our suppliers. These range from written warnings to termination of the contract in the case of repeated noncompliance. By contrast, suppliers who can verify that they strictly observe our ban on child labor receive a bonus. Thanks to a stringent monitoring system and the support of local information and educational initiatives, there are very few instances of child labor among seed producers.

As school attendance is essential for children's development, Bayer regards this as an effective tool for preventing child labor. We therefore made a point of visiting the parents of children we find working in the fields with the goal of convincing them of the importance of school education. In India, Bayer has established the “Learning for Life” initiative within the Child Care Program, which focuses both on general vocational training and on fostering scientific knowledge. This

covers everything from reintegrating children into the regular school system to vocational training measures. Between 2005 and the end of 2019, we reached more than 6,900 children and young people through Learning for Life.

Continuously raising awareness about child labor in the agriculture sector requires extensive measures and the involvement of national governments. Bayer continues to advocate the expansion of measures to eradicate child labor and the communication of best practices in seed production. Together with other seed companies, Bayer has therefore joined the Enabling Child and Human Rights with Seed Organizations (ECHO) initiative, the biggest multi-stakeholder forum for the promotion of children's rights and decent work.

## 5.4 Commitment

We engage in dialogue with other stakeholders on the topic of human rights and actively participate in committees and initiatives established to ensure their observance, such as contributing to discussions on implementing the [National Action Plan](#) (NAP) – Business and Human Rights in Germany, in the corresponding working groups of [econsense](#) and, in the supply chain, via our [Together for Sustainability](#) (TfS) industry initiative and the [Pharmaceutical Supply Chain Initiative](#) (PSCI).

Since 2018, we have been involved in a pilot project organized by the OECD and the Food and Agriculture Organization (FAO). The two organizations published a joint Guidance for Responsible Agricultural Supply Chains in 2016. This is designed to help companies observe existing standards for responsible business conduct with respect to, for example,

human rights, labor rights and health along agricultural supply chains and prevent negative effects from their business operations. As part of the project, companies were asked to what extent they already voluntarily applied the OECD/FAO guidance. The [final report](#) published in October 2019 states that many companies pursue a differentiated approach to responsible business practices in their agricultural supply chains, yet there remain gaps in the implementation of their obligations. The lack of a legal framework in some countries poses a particular challenge. There is room for improvement in the complaint mechanisms for the upstream supply chain and in traceability throughout the supply chain.

### Human rights: an interdisciplinary issue

Observing human rights is an interdisciplinary issue that covers wide-ranging areas of influence and processes at Bayer. We report in more detail on our due diligence with respect to human rights in the relevant chapters, such as:

- // Chapter 6 Employees:
  - // Diversity, compensation including in particular living wages, fairness and respect at the workplace
  - // Prohibition of child and forced labor, and the right to freedom of association
- // Chapter 7 Environmental Protection and Safety:
  - // Health and safety in the workplace
  - // Plant safety to protect our employees and the people who live near our production sites
  - // Biodiversity
- // Chapter 3 Product Stewardship, for example in clinical studies
- // Chapter 4 Procurement: sustainable supplier management

# 6. Employees

Bayer's success is fundamentally based on the knowledge and commitment of our employees. As an employer we focus on our [corporate values](#) (LIFE values) and on establishing a dialogue-oriented corporate culture based on trust and respect for diversity and equality of opportunity. We offer our employees attractive conditions and wide-ranging individual development opportunities.

## 6.1 Management Approach

Human Resources (HR) is an enabling function at Bayer that has reported directly to the Chairman of the Board of Management and Labor Director since the beginning of 2020. It assumes leadership of the HR organization and is thus responsible for Group-wide regulations and standards for employees. Specialized organizational units are responsible for the operational design, implementation and steering of the global processes.

The employees of the agriculture business acquired in 2018 were largely integrated in 2019.

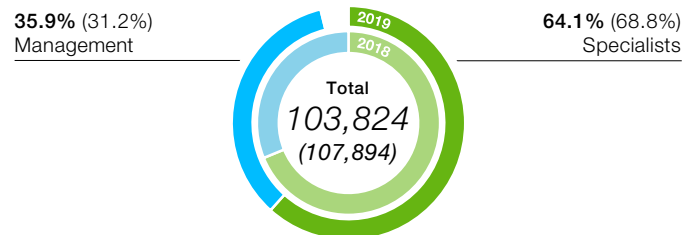
### Corporate culture

The company aims to create a culture that is based on fairness and respect. This includes observing Group-wide standards of conduct and protecting employees from discrimination, harassment and retaliation. These standards are set out in our corporate policy entitled "Fairness and Respect at Work." Bayer employees around the world are provided with guidance on how to comply with this corporate policy.



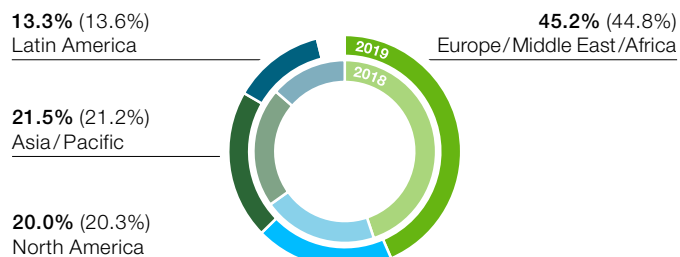
## Employee Data<sup>1</sup>

### Total Employees 2019 (2018)



2018 figures restated

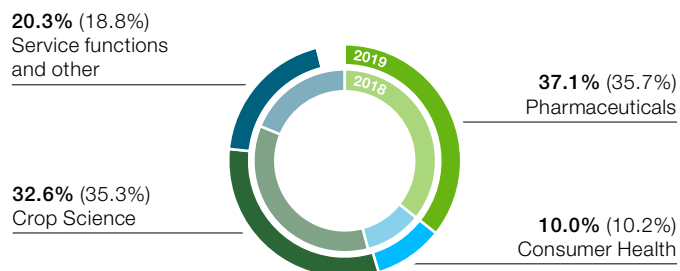
### Employees by Region 2019 (2018)



	2018	2019	Change %
Europe / Middle East / Africa	48,390	46,933	-3.0
North America	21,951	20,735	-5.5
Asia / Pacific	22,863	22,341	-2.3
Latin America	14,690	13,815	-6.0

2018 figures restated

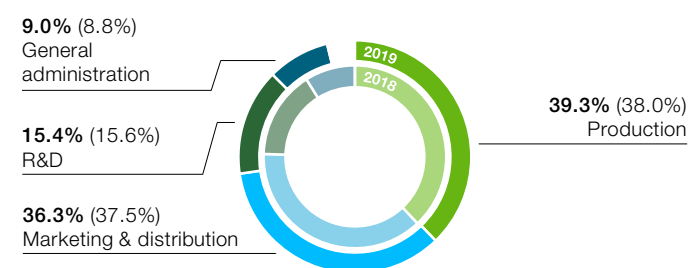
### Employees by Division 2019 (2018)



	2018	2019	Change %
Crop Science	38,109	33,866	-11.1
Pharmaceuticals	38,478	38,553	0.2
Consumer Health	11,050	10,400	-5.9
Service functions and other	20,257	21,005	3.7

2018 figures restated

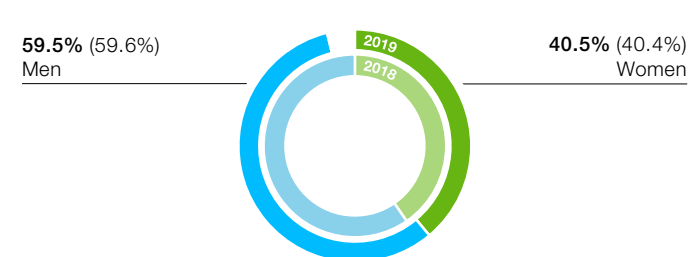
### Employees by Function 2019 (2018)



	2018	2019	Change %
Production	40,979	40,814	-0.4
Marketing & distribution	40,435	37,665	-6.9
R&D	16,835	16,006	-4.9
General administration	9,645	9,339	-3.2

2018 figures restated

### Employees by Gender 2019 (2018)



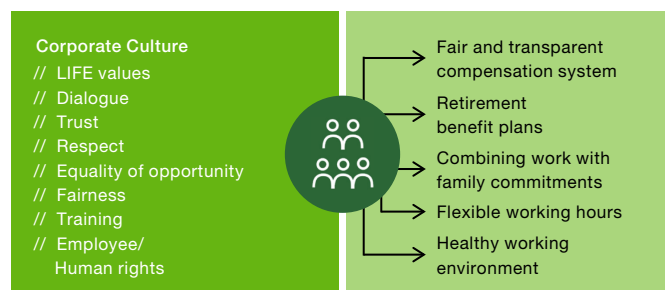
	Women		Men	
	2018	2019	2018	2019
Europe / Middle East / Africa	21,132	20,609	27,258	26,323
North America	8,465	7,799	13,486	12,936
Asia / Pacific	8,700	8,541	14,163	13,799
Latin America	5,310	5,088	9,380	8,727
Total	43,607	42,039	64,287	61,785

2018 figures restated

<sup>1</sup> Number of employees in full-time equivalents (FTE)

The LIFE values are firmly anchored in our company and give us orientation in aligning our business. The acronym LIFE (leadership, integrity, flexibility and efficiency) symbolizes our values and leadership principles.

## Employees



Numerous external awards and surveys bear witness to our excellent reputation as an employer. These include the awards we received in 2019 as one of the best employers in Germany, China, the United States and Brazil.

## Digitalization

Digitalization represents a major opportunity for Bayer and its employees. HR views its task as systematically preparing our employees for digital evolution in the areas of interaction, automation and projection through special training courses. HR already uses robotic process automation and artificial intelligence in some of its processes. In the area of recruiting, for example, we are experimenting with new, intelligent algorithms to discover how innovative technologies can support our HR employees in selecting talented personnel for vacant positions.

## 6.2 Employee Data

On December 31, 2019, Bayer employed 103,824 (2018: 107,894) people worldwide. In Germany we had 24,953 (2018: 25,602) employees, which was 24.0% of the total Bayer Group workforce (2018: 23.7%). Further employee data can be found in the [2019 Annual Report](#).

## Restructuring measures

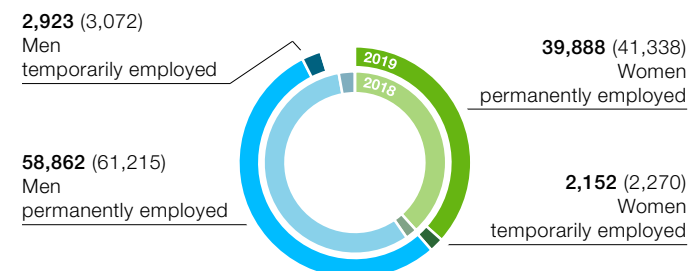
When implementing the necessary changes and restructuring measures we act with social responsibility. We will complete the worldwide reduction of around 12,000 jobs initiated at the end of 2018 by the end of 2021 on the basis of local laws and regulations, meaning that there might be different solutions in different countries. In all countries we aim to minimize the impact on employees and find mutually acceptable solutions in cases where job cuts are necessary. In Germany, which remains the company's largest operational base, business-related dismissals are fundamentally excluded in the major companies through the end of 2025 under agreements with the employee representatives.

We made good progress with the planned Group-wide measures in 2019. Voluntary severance agreements are the most important tool for the job cuts announced in Germany. Flexible models with attractive conditions have been offered to employees of various age groups since February 2019.

## Employment status and new hires

Within Bayer's workforce, 4.9% of employees (2.1% women and 2.8% men) have temporary contracts. On the reporting date, our employees had worked for the Bayer Group for an average of 10.2 years.

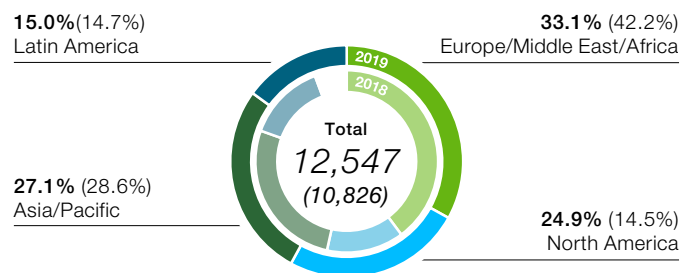
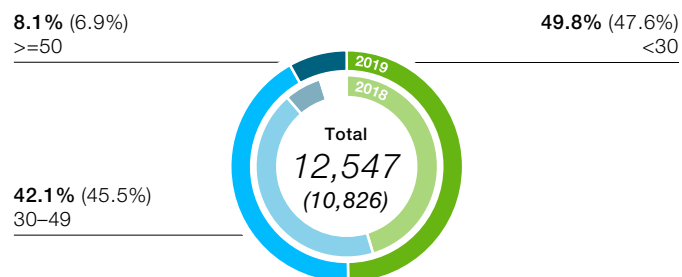
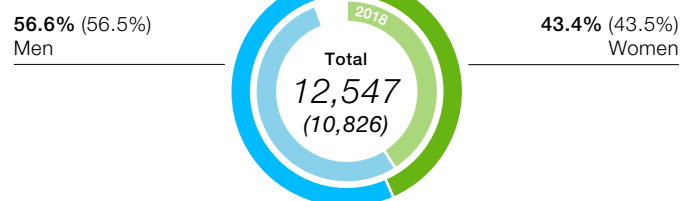
## Employees by Employment Status, Gender and Region 2019 (2018)



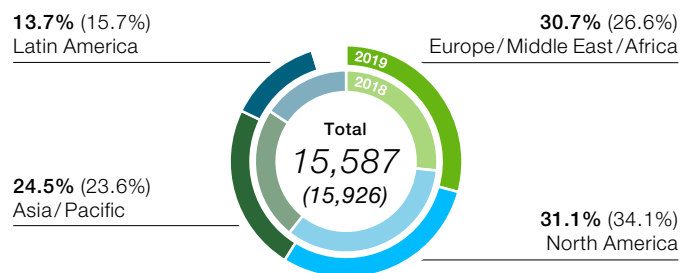
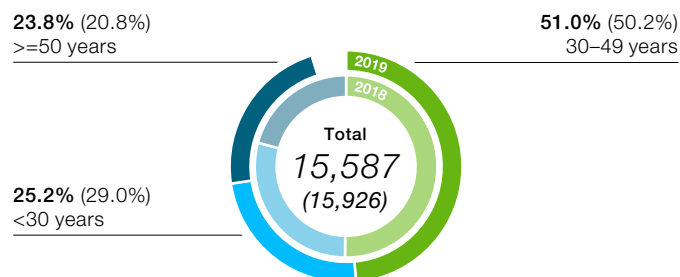
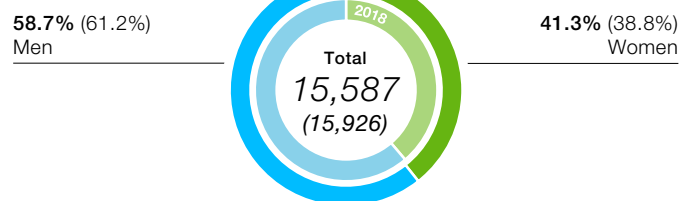
	Permanently employed		Temporarily employed	
	2018	2019	2018	2019
Europe / Middle East / Africa	46,122	44,661	2,269	2,272
North America	20,445	19,102	1,505	1,633
Asia / Pacific	22,233	21,644	631	696
Latin America	13,753	13,343	937	473

2018 figures restated

In total, the Bayer Group hired 12,547 new employees in 2019, accounting for 11.8% of the workforce.

**New Hires 2019** (2018)**by Region****by Age Group****by Gender**

2018 figures restated

**Fluctuation of Employees 2019** (2018)**by Region****by Age Group****by Gender**

2018 figures restated

The overall fluctuation rate was 15.0%, an increase of 0.2% compared with 2018. This figure includes all employer- and employee-driven terminations, retirements and deaths.

**Fluctuation in %**

%	2018	Voluntary		Total	
		2019	2018	2019	2018
Women	6.1	7.2	14.2	15.3	
Men	5.1	6.2	15.2	14.7	
Total	5.5	6.6	14.8	15.0	

2018 figures restated

Bayer uses temporary employees from staffing agencies primarily in response to short-term personnel requirements, fluctuations in order levels, temporary projects or as replacements for employees suffering a long-term illness. In some countries, staff are employed via agencies for seasonal work. On December 31, 2019, some 4,100 temporary employees from staffing agencies were working for Bayer. In Germany, the proportion of such temporary employees from staffing agencies compared with the total for the core workforce was 1.4%.

**Demographics**

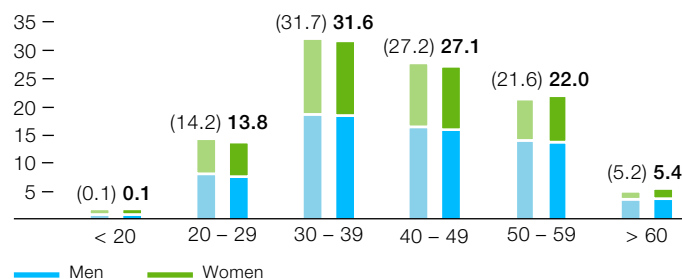
We want to create an optimal working environment for our employees in all life phases and thus safeguard the long-term availability of specialists.

Within the context of our demographic management, we take a range of steps to address the various challenges – including health and sports programs, flexible worktime models, age-appropriate jobs and knowledge management.

The average age of our employees Group-wide is 42.

**Employees by Age Group 2019 (2018)**

%



The demographic situation differs greatly from one region to another.

**Employees by Gender, Region and Age Group 2019**

	Europe / Middle East / Africa	North America	Asia / Pacific	Latin America
<b>Women</b>				
< 20	10	6	0	14
20 – 29	2,448	785	2,123	969
30 – 39	5,788	1,840	3,901	2,160
40 – 49	6,023	2,289	1,927	1,381
50 – 59	5,440	2,020	549	505
> 60	900	849	42	58
<b>Men</b>				
< 20	28	43	8	16
20 – 29	2,655	1,378	2,665	1,259
30 – 39	6,793	3,347	5,674	3,275
40 – 49	6,939	3,638	3,316	2,670
50 – 59	7,837	3,207	1,964	1,278
> 60	2,072	1,332	172	228

In Germany, the updated General Works Agreements on life-time working and demographic change and on addressing demographic change at the nonmanagerial level at Bayer are among the tools we use to help shape the working environment for all life phases. These General Works Agreements provide for a reduction in employee workloads that was extended to further age groups, as well as measures to ease the return to work of nonmanagerial employees after long-term illness, and an extensive health screening program for all employees. More than 98% of those who were eligible took part in 2019 in the program to reduce the workload of older employees.

## 6.3 Fair Compensation

As a global enterprise, Bayer enacts uniform standards to ensure that employees are fairly compensated throughout the Group. Our performance and responsibility-related compensation system combines a basic salary with performance-related elements, plus additional benefits. Adjustments based on continuous benchmarking make our compensation internationally competitive.

We attach great importance to equal pay for men and women, and to informing our employees transparently about the overall structure of their compensation. Our corporate policy entitled “Total Rewards” provides a binding framework specifying the global requirements.

### Living wages

Bayer compensates employees on both permanent and temporary employment contracts in excess of the statutory minimum wage in the respective countries, paying a living wage that is annually reviewed and specified worldwide by the nonprofit organization [Business for Social Responsibility](#) (BSR). That makes Bayer one of the first companies to commit globally to this concept. This also applies to part-time employees whose compensation was proportionately aligned with that of a full-time position. The payment of living wages is implemented at the country level and reviewed each year by the HR enabling function to ensure that the requirements of BSR are observed throughout the Group.

A living wage is defined as the wage that is required to purchase the goods and services needed to meet a minimum cultural and social standard of living in a country – including basic needs such as accommodation, energy and food, but also leisure activities, cultural participation and a savings rate. In other words, the concept of a living wage goes beyond the otherwise customary statutory minimum wage. In addition, living wages are adapted annually to changing conditions in specific countries, while statutory minimum wages usually remain unchanged for several years. Although minimum wages are legally established in many countries, they often are not sufficient to enable a living standard above the poverty line. By integrating the living wage concept into our operations we also support the Universal Declaration of Human Rights of the United Nations.

### Compensation structures at Bayer

At Bayer, individual salaries are based on each employee's personal and professional abilities and the level of responsibility assigned to them. At the managerial level, this is based on uniform evaluation of all positions throughout the Group using the internationally recognized Hay method.

In areas of the Bayer Group and jobs covered by a binding collective bargaining agreement, there are no differences in pay based on gender. In the emerging markets and developing countries, compensation levels are aligned to local market conditions.

In the majority of cases, full- and part-time employees at our significant locations of operation receive the same rates of pay. Depending on statutory requirements, employees on temporary contracts may not be entitled to long-term compensation components such as pension plans in some countries. Our compensation concept also includes variable one-time payments. In many countries, employee stock programs enable our staff to purchase Bayer shares at a discount. Employees at upper management level throughout the Bayer Group are invited to participate in Aspire, a uniform long-term compensation program based on the development of the share price. For more information, please see the [2019 Annual Report](#).

### Retirement benefits

Alongside providing attractive compensation for their work, Bayer contributes to the financial security of its current and former employees. Retirement benefit plans are available to 78% of Bayer employees worldwide to complement national pension systems. The benefits provided depend on the legal, fiscal and economic conditions in each country, employee compensation and years of service.

#### Availability of Retirement Benefit Plans<sup>1</sup>

%	2018 <sup>2</sup>	2019
Europe / Middle East / Africa	89	86
North America	99	98
Asia / Pacific	50	52
Latin America	69	66
<b>Total</b>	<b>80</b>	<b>78</b>

<sup>1</sup> In addition to the state pension insurance

<sup>2</sup> Figure includes discontinued operations

## 6.4 Vocational and Ongoing Training

Employees have wide-ranging ongoing training opportunities open to them. We bundle our Group-wide continuing education offerings in the Bayer Academy, which offers professional training for all employees and has received numerous international awards. The Bayer Academy also offers courses designed to systematically develop managerial employees. The courses accompany the managers from their first leadership roles to future duties in upper management.

Functional academies such as the Finance Academy offer advanced specialist training for employees in various disciplines. Our employees can further expand their expertise through continuous professional training at more than 40 of these functional academies and learning organizations.

Since 2018, our employees have also been able to access a comprehensive eLearning library that is available at any time without commitment to defined course times. All employees can access contents suitable for their needs and put together an individually tailored learning plan in line with their development requirements. The courses are free of charge for employees, and approval by supervisors is not required.

In this way, we are meeting modern workplace learning requirements and creating a sound infrastructure for standardized qualification throughout the Bayer Group. The eLearning library currently includes more than 7,000 courses and offers not just specialized contents for individual occupational groups and disciplines, but also overarching themes for a broad target group within the company. These include business know-how or the "Digital Transformation Collection," which helps our employees to prepare for workplace 2.0.

Vocational and ongoing training hours amounted to 22.6 hours per employee in 2019. The average cost of training per employee was €509.

#### Training and Education Hours in 2019 by Employee Group and Gender

	Women	Men	Total
<b>Employee group<sup>1</sup></b>			
Management	23.4	20.7	21.8
Specialists	19.2	25.5	22.9
<b>Overall average</b>	<b>20.6</b>	<b>24.0</b>	<b>22.6</b>

<sup>1</sup> As the data for training activities in hours was still compiled in separate systems in 2019, our reporting for the whole Group refers to specialist and managerial (both lower and upper management) employees. Beginning in 2020, the data for training activities in hours will be compiled in a standardized system.

To meet the need for skilled employees, Bayer provides vocational training, primarily in Germany, in more than 25 different occupations and offers more vocational training places than it requires to meet its own needs. We employed more than 1,400 apprentices overall in 2019 (of which around 33% were women). Bayer also offers trainee programs in various areas for those embarking on a career and internships for students around the world.

## 6.5 Employee Development and Integration

Bayer encourages a culture of candid feedback and encourages feedback in all directions: from supervisors to employees, between colleagues and from employees to supervisors.

Our managerial employees serve as role models and play an important part in promoting performance and further developing the feedback culture at Bayer. Supervisors have the opportunity to ask their team for feedback about their leadership behavior. The Leadership Pulse feedback tool helps them to understand how their team perceives them in their role as a manager.

### Performance targets and development dialogue

Since 2019, employees and supervisors have set flexible annual targets. In consultation with their supervisors, employees can select targets of relevance for themselves and their work areas, as well as make flexible adjustments to the targets during the evaluation phase. Both individual and team targets can be set. In 2019, 69% of our employees set flexible annual targets, 43% of these female and 57% male.

78% of our employees can participate in a year-end evaluation concerning the fulfillment of the targets they set for themselves. At the end of 2019, 96% of the entitled employees (43% female and 57% male) received an evaluation concerning the fulfillment of the targets they set for themselves. In addition, employees can regularly and openly discuss their performance, challenges, ideas and well-being with their supervisors in so-called check-ins.

Since 2019, managerial employees have had the option of presenting Top Performance Awards to reward outstanding individual and team successes. These involve a variable payment to reward employees directly in a timely fashion.

Thanks to our wide-ranging business activities, employees throughout the Bayer Group can access various opportunities for development. In regular development dialogues, employees discuss perspectives for their further career development together with their supervisors. More than 55,000 development dialogues were held and documented in 2019. A total of 51% of employees (45% female and 55% male) participated in development dialogues.

Vacancies throughout the Bayer Group, from nonmanagerial right up to upper management level, are advertised via a globally accessible platform.

### Dialogue and exchange

Our employees have the opportunity to discuss company-specific issues and scope for optimization via various communication channels. We actively involve our employees in business processes by offering the opportunity for dialogue. Informing staff in good time and comprehensively about upcoming changes, in compliance with the applicable national and international regulations, is very important to us.

We measure employee engagement at Bayer by means of institutionalized feedback discussions and regular employee surveys. This enables us to monitor the effectiveness of our initiatives and implement any necessary improvements. At Crop Science and Consumer Health, employee surveys involving spot checks were implemented. The approval rate for employee engagement was 73% at Crop Science and 75% at Consumer Health.

We engage in open and trustful dialogue with employee representatives worldwide. The main dialogue formats are regular employee assemblies and information events for managers, as well as the European Forum, at which employee representatives from all European sites engage in discussion with the Board of Management on issues of overarching relevance to the company.

Our employees can submit Bayer-related questions through the internal crowdsourcing platform “WeSolve” to solicit innovative, interdisciplinary ideas. These are then answered with the help of other employees with whom the person asking the question does not normally have any contact.

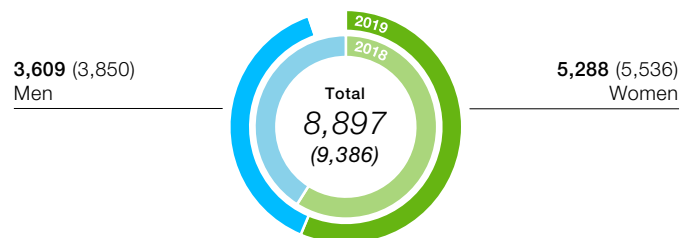
To promote a culture of innovation in the workplace, two additional platforms for making work-related suggestions are available to employees in Germany: the Bayer Ideas Pool and the Ideas Forum. The suggestions made by employees on improving processes, occupational safety and health protection are rewarded and utilized. More than 3,200 ideas were submitted in 2019. Around 44% of the suggestions for improvement evaluated in 2019 were implemented. In the first year of implementation alone, those improvements that led to quantifiable benefits generated savings of some €5.1 million. In 2019, Bayer distributed bonuses of around €1.15 million for the implemented proposals.

## 6.6 Work-life Balance

We offer our employees flexible working hours and support in childcare and caring for close relatives. In many countries, our commitment in this area goes beyond the statutory requirements.

In 2019, part-time employees accounted for around 8.4% of the Bayer Group workforce (corresponding to 12.2% of our female employees and 5.8% of our male employees), primarily in Europe.



**Part-Time Employees by Gender 2019 (2018)**

2018 figures restated

Bayer enables both men and women to take parental leave, although national parental leave regulations vary widely from country to country. 1,505 women and 1,327 men took parental leave in 2019. By the end of the year, 2,227 employees on parental leave had returned to work.

The next table shows the number of employees who have returned to work after selecting the standard statutory parental leave program of up to three years per child. By the end of 2019, 71.2% had returned to work. 55.1% of women and 88.7% of men who have taken parental leave since 2017 have returned to work.

**Employees Returning from Parental Leave in Germany in 2019**

	Women		Men		Total	
	%	Number	%	Number	%	Number
Employees on parental leave since 2017	52.1	1,187	47.9	1,091	100	2,278
Of which still on parental leave/ dormant contract	39.8	472	5.7	62	23.4	534
Of which re-turned by 2019	55.1	654	88.7	968	71.2	1,622
Of which with terminated contract <sup>1</sup>	5.1	61	5.6	61	5.4	122

<sup>1</sup> This includes employer- and employee-driven terminations, severance agreements and departures following the expiry of employment contracts.

Bayer has introduced uniform conditions for mobile working (home office) in Germany through a General Works Agreement with the Works Council. In addition, through the "BayZeit" long-term account, employees in Germany can convert part of their salary into free time, which they can later take off to care for children or close family members, or to take part in an advanced training course, for example.

The General Works Agreement on caring for close relatives helps Bayer employees in Germany to combine working with their role as carers through adapted worktime models and temporary paid leave.

## 6.7 Inclusion and Diversity

Mutual understanding and a company culture that leverages talented employees of various backgrounds and perspectives is an important success factor for the Bayer Group. At the same time, it helps us gain a better understanding of

changing markets and consumer groups. In our employee structure we promote inclusion and diversity. We employ people from around 145 countries.

In 2019, we further developed our inclusion and diversity strategy. Our focus is on the integrative behavior of all managerial and nonmanagerial employees within the Group. It is supported by adjusted HR processes for areas such as recruitment and employee promotion.

The first measure undertaken in 2019 was training of the senior management in the divisions in the area of integrative management. Furthermore, committees were established at the divisional management level that are consulted in decisions pertaining to inclusion and diversity. The training measures will be expanded in 2020 to include the Board of Management and additional managerial employees.

In addition, we plan to develop performance indicators for inclusion and diversity that we will integrate into the existing feedback tool for managerial employees (Leadership Pulse).

The inclusion and diversity strategy incorporates the Business Resource Groups (BRGs), which facilitate networking and thus dialogue and mutual support for employees within the Bayer Group. Various BRGs currently exist at Bayer for LGBT+, employees with disabilities, families and other global and regional employee groups.

People with disabilities are an integral part of our workforce. Based on voluntary statements by employees, we employ some 2,250 people with disabilities in 31 countries, 46% of whom are women and 54% men. That represents around 2.1% of our total workforce. Most employees with disabilities work for our companies in Germany, where they made up 4.7% of the workforce in 2019. In ENABLE, we have a BRG that in the future will more intensively support the networking of employees with disabilities.

## LGBT+

The first LGBT+ employee networks were established at Bayer in the 1990s. In 2014, these networks were combined under the name BLEND as a global network for lesbian, gay, bisexual and transgender (LGBT) employees and their supporters at Bayer. BLEND is currently represented in 14 countries.

The global BLEND community aims to draw attention to LGBT+ issues and thus promote an inclusive company culture. In this way, BLEND is helping Bayer to become a globally visible role model for equality. In 2019, Bayer was once again honored by various organizations as an LGBT+-friendly company.

The proportion of women in the Group Leadership Circle, the highest management level below the Board of Management, increased again compared to previous years. By the end of 2019, it was made up of 22.5% women (compared to 6.5% as reported in 2010) and 77.5% men (2010: 93.5%). The Group Leadership Circle currently comprises 29 nationalities, with around 65% of its members working in their native country.

The Board of Management should have at least one female member. On a five-member Board of Management, this would translate into a share of 20%. It is planned to meet this target again in 2022. The company's Supervisory Board should be comprised of at least 30% women or 30% men. The Supervisory Board meets this target, with a share of 35% women. For more information, please see the Declaration by Corporate Management in the [2019 Annual Report](#).

As a signatory to the [United Nations Women's Empowerment Principles](#), we pursue an inclusive approach. Diversity is integrated into all relevant human resources processes and driven forward by the management. The seven

Women's Empowerment Principles sum up how women can be empowered in the workplace, on the employment market and in the community.

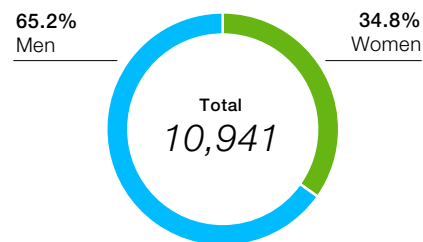
We also support the [Diversity Charter](#) corporate initiative and are a founding member of the German "[Chefsache](#)" network. Together with the other members, we develop practically oriented strategies to drive diversity and gender balance in the respective organizations.

## 6.8 Health Promotion

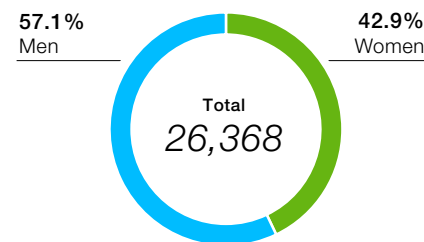
The health of our employees has huge relevance to Bayer, which is why we sustained our global framework concept to promote employee health and quality of life (BeWell@Bayer) in 2019. This expands the core aspect of health into a comprehensive approach, targets further health improvements in the daily work environment and is intended particularly to help balance employees' professional and private lives. We are working to provide employees in all countries with access to regular medical check-ups, sports programs, rehabilitation and on-site medical care.

### Employee Structure of the Bayer Group in 2019

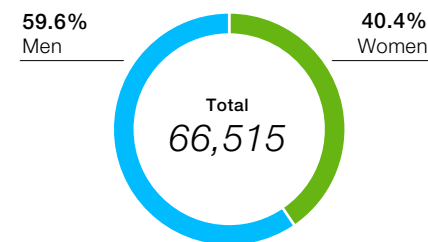
#### Upper management



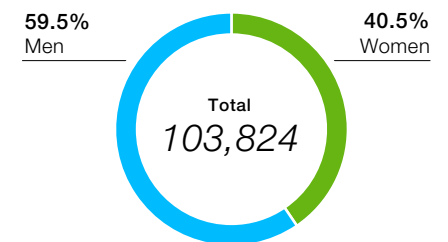
#### Lower management



#### Specialists



#### Group



Our occupational health management activities include many standard preventive programs, ranging from ergonomic workplace and stress management initiatives to incentive systems to promote healthy behavior. Our employee representatives are included in occupational health management and are actively involved in its development.

The Bayer European Forum – which brings together management and employee representatives – has signed the Luxembourg Declaration on Workplace Health Promotion in the E.U. and is committed to the principles contained therein on the implementation of workplace health promotion.

Almost 98% of our employees worldwide either have statutory health insurance or can obtain health insurance through the company.

#### Health Insurance Coverage<sup>1</sup>

%	2018 <sup>2</sup>	2019
Europe / Middle East / Africa	99	98
North America	98	99
Asia / Pacific	95	95
Latin America	97	97
<b>Total</b>	<b>98</b>	<b>98</b>

<sup>1</sup> Financially supported by the employer

<sup>2</sup> Figure includes discontinued operations

## 6.9 Employee Rights

Employees at all Bayer sites around the world have the right to elect their own representatives. In 2019, the working conditions for around 55% of our employees worldwide were governed by collective or company agreements. At various country companies, the interests of the workforce are represented by elected employee representatives who have a right to be consulted on certain personnel-related decisions.

#### Proportion of Collective Agreements by Region<sup>1</sup>

%	2018 <sup>2</sup>	2019
Europe / Middle East / Africa	82	80
North America	1	2
Asia / Pacific	50	51
Latin America	57	54
<b>Total</b>	<b>57</b>	<b>55</b>

<sup>1</sup> Percentage of employees covered by collective bargaining agreements or company agreements, especially with respect to wages and working conditions

<sup>2</sup> Figure includes discontinued operations

The contractually agreed working hours of our employees do not exceed 48 hours a week at any of our significant locations of operation.

# 7. Environmental Protection and Safety

Among our highest priorities are protecting the environment and ensuring the safety of our employees and the people who live near our sites. We work continuously to reduce the environmental impact of our business activities and develop product solutions that benefit the environment. Bayer’s focus is on taking consistent precautions – to ensure safety in day-to-day work, in the operation of production facilities, and on work-related travel and transportation routes.

## 7.1 Management Approach

Responsibility for steering and monitoring health, safety and environmental protection (HSE) across the Group lies with the enabling function of the same name, which is assigned to the member of the Board of Management responsible for Crop Science. The enabling function establishes responsibilities, targets, key performance indicators and framework conditions. These include the corporate policy entitled “[HSE Management and HSE Key Requirements](#),” which took effect for the acquired agriculture business, too, in April 2019. The continuous review and revision of corporate policies by the HSE enabling function, regular mandatory internal audits and external certification processes ensure that the systems at all sites meet the requirements in each case.

HSE management systems are integrated into business processes across the Bayer Group. The HSE systems and standards at Bayer and the acquired agriculture business are comparable. Until the integration has been fully implemented, the individual HSE rules, systems and processes of the acquired agriculture business will remain in force. Operational responsibility for health, safety and environmental protection lies with the individual divisions, which steer HSE via management systems, committees and working groups.

We report all relevant HSE data of the Group including all fully consolidated companies in which we have a share of at least 50%, collect data on occupational injuries at all sites worldwide, and record environmental indicators at 244 environmentally relevant production, research and administration sites, compiling this in the Bayer-wide site information system BaySIS. All sites with an annual energy consumption of more than 1.5 terajoules are considered to be environmentally relevant.

The divestment of our service company Currenta (which supplies energy and water among other utilities) and our Animal Health business led to deconsolidation for all HSE data for 2018 and 2019.

Our HSE commitment extends beyond the scope of legal requirements. We perform a voluntary ecological assessment for capital expenditure projects exceeding €10 million. In the case of acquisitions, we examine compliance with the applicable environmental and occupational safety regulations as well as fundamental employee rights at the production sites in question. Through our HSE management systems we also avoid damage and disruptions to work and production.

### HSE management systems

Based on the corporate policy “[HSE Management and HSE Key Requirements](#),” which was published in April 2018, all Bayer sites must introduce an HSE management system that complies with recognized international standards (e.g. ISO 14001, ISO 45001 or ISO 50001). Our goal is to implement this requirement for the entire company by March 2021.

Standards and Certifications		
% of business activities based on energy consumption of environmentally relevant sites	2018	2019
Certification to external standards		
ISO 14001 certification / EMAS validation	78	65
ISO 45001 certification / OHSAS 18001	53	43
ISO 50001 certification	30	21
Degree of coverage with certification to at least one of the above standards	82	67

2018 figures restated

By 2025, 80% of our business activity should have coverage with external certification to the above standards.

### HSE audits

Audits are an integral component of our global HSE management system. They help to ensure compliance with applicable regulations and to improve our performance worldwide through the management and mitigation of possible HSE risks. Bayer’s global HSE audit program comprises both general HSE audits and process and plant safety audits. A standardized audit program that includes the sites of the acquired agriculture business will be introduced in 2020. The corporate policy “[Health, Safety and Environmental Audits](#)” defines the basic principles and methodology for selection, planning, implementation and post-processing using a risk-based decision-making process. Bayer’s audit approach is based on the international standard ISO 19011 “[Guidelines for Auditing Management Systems](#)” and provides the framework for carrying out audits.

Through the overarching HSE audit approach, we include all units and apply the same concepts worldwide. When selecting sites for audit, the focus is particularly on production

sites, relevant Bayer warehouses, sites with research and development units, relevant seed treatment and processing units and country groups.

The frequency of audits is determined taking into account the risk category (based partly on the size of the site or the type of production activity), the performance evaluation (based partly on past audit results, for example) and risk-mitigating measures (e.g. existing ISO certifications), and ranges from one to five years. Incident-based audits can be carried out in addition to this. The audit criteria comprise all applicable regulations and standards for the area being audited, including Bayer regulations, local HSE management system regulations, legally applicable standards, permit requirements and international standards (e.g. ISO 14001 or ISO 45001). If deficiencies in compliance with legal regulations are identified, additional compliance audits can be planned.

The respective site management, the division and the Corporate Health, Safety & Environment enabling function are notified of the audit findings.

Supplementary to the global HSE and process and plant safety audits, sites and country organizations carry out their own internal HSE audits or self-inspections according to a specific risk-based approach. Beginning in 2020, all global audit reports, and successively the local audit reports as well, will be stored in a new database.

## 7.2 Energy

The energy needs of our production operations depend on the production processes and the depth of our value chain. Our raw material extraction activities, including treatment and downstream processing, for the manufacture of crop protection intermediates are especially energy-intensive. In the area of Pharmaceuticals, the production of innovative active ingredients is also energy-intensive.

### Energy consumption

When calculating total energy consumption, we differentiate between primary and secondary energy consumption. The main source of primary energy consumed comprises fossil fuels for our own generation of electricity, steam and cooling energy for our own use and to a small extent for sale to other companies. Secondary energy consumption reflects the purchase of electricity, steam and cooling energy at our sites worldwide. The proportion of renewable energies is determined by the energy mix of our energy suppliers. In our latest [report to CDP](#) (formerly the Carbon Disclosure Project), we address these topics in detail.

Compared with 2018, Bayer's total energy consumption rose by 34.0% to 38.7 petajoules in 2019. This is due to the first full-year inclusion of energy consumption at the sites of the acquired agriculture business. For 2018, energy consumption was reported on a prorated basis following the acquisition in June 2018.

### Energy Consumption

TJ	2018	2019
Primary energy consumption	14,843	20,602
Natural gas	10,057	13,775
Coal	354	2,783
Liquid fuels <sup>1</sup>	3,431	2,770
Waste	984	521
Other <sup>2</sup>	17	753
Secondary energy consumption	14,060	18,142
Electricity <sup>3</sup>	9,020	12,084
Steam	4,266	4,791
Steam from waste heat (process heat)	103	540
Cooling energy	671	726
<b>Total energy consumption</b>	<b>28,903</b>	<b>38,744</b>

2018 figures restated

<sup>1</sup> Liquid fuels include heating oil and fuels used in the Bayer Group vehicle fleet.

<sup>2</sup> For example biomass

<sup>3</sup> The proportion of primary energy sources used in generating the electricity consumed depends on the respective electricity mix of our energy suppliers.

As the production volume rises, the primary and secondary energy consumption required for production processes also increases. Energy management systems such as ISO 50001 help to identify potential energy savings in existing production processes, in the development of new production processes and in the conversion of existing production processes. This not only conserves valuable energy resources, but also takes into account economic factors associated with long-term savings. In our report to CDP we also describe projects to save energy that were implemented at various sites.

## Energy efficiency

Bayer reports energy efficiency as the ratio of energy used to external sales. Energy efficiency deteriorated compared with 2018, due to the first full-year consideration of the sites of the acquired agriculture business. In 2018, data was only reported on a prorated basis following the acquisition in June 2018.

### Energy Efficiency

kWh / € thousand external sales	2018	2019
Energy efficiency	219	247

2018 figures restated

## 7.3 Air Emissions

We consider climate protection and the related reduction of greenhouse gas emissions to be a top priority.

### Climate protection measures

The sustainability strategy was further developed in connection with the strategic realignment of Bayer as a life science company and the integration of the acquired agriculture business and contains a comprehensive package of measures in the area of climate protection. We are endeavoring to achieve carbon-neutral production by 2030 and will apply several strategic levers to reach this goal:

// We aim to achieve an absolute reduction in emissions between 2020 and 2030 through energy efficiency measures – namely process innovations, more efficient facilities and building technology, and the implementation and optimization of energy management systems, particularly at our production sites. We intend to invest in these measures by 2030. We also plan to introduce an internal CO<sub>2</sub> price in our investment projects.

// We want to switch our production to electricity from renewable energies worldwide by 2030, which will lead to an absolute reduction in greenhouse gases. In this connection we are looking at all the options available to us –

from in-house generation at selected sites through long-term electricity purchase agreements with renewable energy producers to the purchase of high-quality green electricity certificates.

// We plan to offset unavoidable emissions through certificates from qualitative compensation projects, especially in forest conservation and agriculture. We pay particular attention to ensuring that the compensation projects enable long-term CO<sub>2</sub> capture (permanence) and that these would not take place without the sale of certificates (additionality). Other quality criteria must be met and the projects must be certified according to internationally recognized standards. In this regard, we prefer projects that not only achieve CO<sub>2</sub> capture, but also provide social benefit for the disadvantaged population and promote biodiversity and water conservation or prevent desertification.

Along with carbon neutrality in our production, we also aim to reduce emissions from our up- and downstream value chain between 2020 and 2030 in absolute terms, and are currently examining available levers – such as the further optimization of our logistics, the reduction of packaging or co-operation with our suppliers.

Bayer has taken up the recommendations of the Task Force on Climate-Related Disclosures (TCFD). We publish the required information in the [report to CDP](#).

### Greenhouse gas emissions

At Bayer, air emissions are primarily caused by the combustion of primary energy sources such as gas and oil. These are used to generate electricity, steam and auxiliary energy (such as for heating and cooling) for the production of our products. Emissions are also generated through our vehicle fleet and in the extraction and processing of raw materials.

In reporting greenhouse gas (GHG) emissions, we take into account the recommendations of the Greenhouse Gas (GHG) Protocol. Direct emissions from our own power

plants, vehicles, waste incineration plants and production facilities (Scope 1) and indirect emissions from the procurement of electricity, steam and cooling energy (Scope 2) are determined at all environmentally relevant sites.

In line with the GHG Protocol, we report indirect emissions (Scope 2) according to both the location-based and the market-based methods.

Greenhouse gases have increased in line with the rise in energy consumption.

### Greenhouse Gas Emissions

Million metric tons of CO <sub>2</sub> equivalents	2018	2019
Direct emissions <sup>1, 2</sup>	1.50	2.03
Indirect emissions <sup>3</sup> according to the location-based method	1.45	1.77
Indirect emissions <sup>3</sup> according to the market-based method <sup>4</sup>	1.38	1.68
<b>Total greenhouse gas emissions according to the market-based method<sup>4</sup></b>	<b>2.88</b>	<b>3.73</b>
Specific greenhouse gas emissions (kg CO <sub>2</sub> e / € thousand external sales) according to the market-based method <sup>4, 5</sup>	78.31	85.20

2018 figures restated

<sup>1</sup> In 2019, 97.2% of direct greenhouse gas emissions were CO<sub>2</sub> emissions, 1.3% were ozone-depleting substances, 1.1% partially fluorinated hydrocarbons, 0.3% nitrous oxide and 0.1% methane.

<sup>2</sup> In line with the GHG Protocol, we also report the direct emissions resulting from the generation of energy for other companies and sold as a site service. For this reason, direct emissions are higher than the actual emissions resulting from Bayer's business activities alone.

<sup>3</sup> Typically, CO<sub>2</sub> accounts for 98% of all energy-related greenhouse gas emissions. When determining indirect emissions, our calculations are therefore limited to these greenhouse gases and we indicate all emissions in CO<sub>2</sub> equivalents.

<sup>4</sup> For Bayer, the market-based method of the GHG Protocol most reliably reflects the values for Scope 2 emissions and the success of emissions reduction measures, so we apply emissions volumes calculated using this method when calculating the total and specific greenhouse gas emissions.

<sup>5</sup> Specific Bayer Group emissions are calculated from the total volume of direct emissions and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2), divided by the external sales volume.



In 2019, the Bayer Group was involved in European emissions trading with five plants in total. The CO<sub>2</sub> emissions of these plants amounted to approximately 325,000 metric tons.

The reporting of all relevant indirect emissions from the value chain is subject to binding regulations set forth in the GHG Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard. Bayer has identified eight key Scope 3 categories: emissions in the value chain from purchased goods and services; emissions from upstream processes; distribution and losses of electricity, thermal or primary energy supply; emissions from transportation and distribution by third parties contracted by Bayer; emissions from the treatment and disposal of waste by third parties; emissions from business travel and employee commuting; emissions from the operation of leased vehicles; and emissions from the end-of-life treatment of products sold. We describe these categories in detail in the current [report to CDP](#).

Other air emissions

Air emissions are monitored as part of our environmental management system at the sites. Emissions of ozone-depleting substances in 2019 rose considerably from 9.3 to 17.8 metric tons. Among the reasons for this is an upsurge in production at the Vapi site in India. The increase in other direct air emissions is primarily due to a shift to the automatic reporting of air emissions from fossil fuels based on international standard emission factors. The first full-year inclusion of the sites of the acquired agriculture business has also contributed to this increase.

Other Direct Air Emissions		
1,000 metric tons	2018	2019
ODS <sup>1</sup>	0.0093	0.0178 <sup>2</sup>
VOC <sup>3</sup>	1.36	1.61
CO (carbon monoxide)	3.99	3.30
NO <sub>x</sub> (nitrous oxides)	3.26	4.70
SO <sub>x</sub> (sulfur oxides)	0.73	2.31
Particulates	2.35	1.58

2018 figures restated  
<sup>1</sup> Ozone-depleting substances (ODS) according to the Montreal Protocol, in CFC-11 equivalents  
<sup>2</sup> In 2019, adjustments were made to the factors (potentials) for converting the ozone-depleting substances (ODS) used into CFC-11 equivalents in line with the scientifically recognized evaluation methods of different organizations. As a result, some of the substances used by us in production were assigned a higher ozone-depleting potential in 2019 than in 2018.  
<sup>3</sup> Volatile organic compounds (VOC) excluding methane

7.4 Water and Wastewater

Responsible water usage is a cornerstone of our commitment to sustainable development. Clean water in sufficient quantities is essential for the health of people, animals and plants. That is why it is crucial that industrial water usage will continue not to lead to local problems such as a shortage of water for the people living in the catchment areas of our production sites. In our [Water Position](#), we commit to complying with international, national and local legislation to protect water resources, using them as sparingly as possible and further reducing emissions into water.

Following the acquisition of the agriculture business in 2018, we used the [Aqueduct Water Risk Atlas](#) published by the World Resources Institute to ascertain whether all our sites that are located in water-scarce areas or in areas identified as being threatened by water scarcity have a water management system. 95% of these sites already have a water management system. We have set ourselves the target of achieving 100% coverage in 2020.

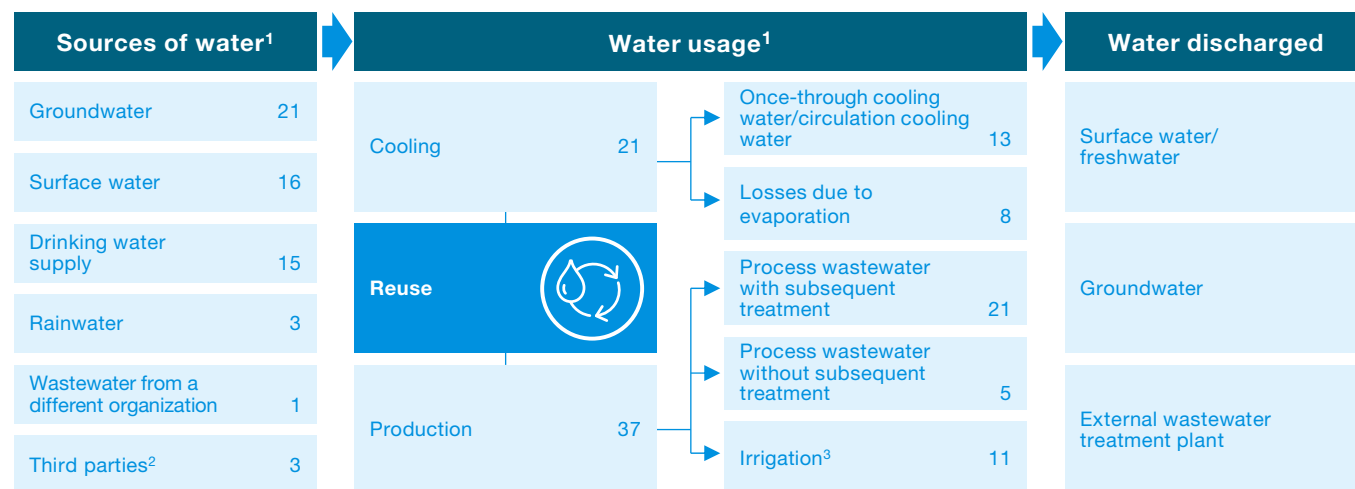
In our water stewardship strategy we address a variety of factors connected with water, from operational water use and innovative products such as seeds with a reduced water requirement to our commitment in the value chain and cooperation with partners. We support the CEO Water Mandate of the U.N. Global Compact with the goal of working with key stakeholders to develop sustainable strategies for water usage. In our annual response to the CDP Water Disclosure, we report in detail on our water usage and the company-specific water footprint. This represents a progress report for the CEO Water Mandate. In recent years, we have repeatedly been included in the [CDP Water A List](#) (leadership status).

Water use

In 2019, total water use in the Bayer Group was 59 million cubic meters (2018: 42 million cubic meters). This year-on-year increase in use is due to the first full-year inclusion of the sites of the acquired agriculture business.

Some 36.3% of all water used by Bayer is cooling water that is only heated in this process and does not come into contact with products. It can be returned to the water cycle without further treatment in line with the relevant official permits.

At our production facilities, we endeavor to use water several times and to recycle it. Water is currently recycled by various means at 47 sites, these being responsible for 47% of the total water used. These means include closed cooling cycles, reuse of treated wastewater, including to water fields, and recirculation of steam condensates as process water. The total volume of water recycled comes to more than 350 million cubic meters, meaning that the 59 million cubic meters of water originally deployed is used almost six times on average.

**Water Use in the Bayer Group 2019 (million m<sup>3</sup>)**

<sup>1</sup> The differences between volumes of water consumed and water discharged can be explained, for example, by quantities of water used as raw materials in products, unquantified losses due to evaporation, leaks and volumes of condensate generated through the use of steam as a source of energy.

<sup>2</sup> E.g. process water, water contained in raw materials used

<sup>3</sup> Mainly agricultural irrigation

**Wastewater**

The total quantity of industrial and mixed wastewater was 26 million cubic meters in 2019, which is 42.1% more than in 2018.

All wastewater is subject to strict monitoring before it is discharged into the various disposal channels. In 2019, 81.9% of Bayer's industrial and mixed wastewater worldwide was purified in wastewater treatment plants (Bayer or third-party facilities). Following careful analysis, the remaining volume was categorized as not environmentally hazardous according to official provisions and returned to the natural water cycle. In 2019, we again applied alternative means of disposing of product-containing wastewater such as incineration, distillation and chemical treatment.

We aim to minimize our emissions into water. Compliance with the relevant wastewater thresholds at our production sites worldwide is monitored by supervisory authorities and external assessors and also reviewed at regular intervals through on-site audits by internal experts. To further reduce or completely exclude the release of active ingredient traces into the environment, we take additional action in our production facilities.

In 2019, total emissions into water increased, attributable in particular to the first full-year inclusion of the sites of the acquired agriculture business and to changes in production at the Kansas City site in the United States.

**Emissions into Water**

1,000 metric tons	2018	2019
Phosphorus	0.18	0.51
Nitrogen	0.39	0.42
TOC <sup>1</sup>	0.60	0.98
Heavy metals	0.0024	0.0026
Inorganic salts	97	167
COD <sup>2</sup>	1.79	2.95

2018 figures restated

<sup>1</sup> Total organic carbon (TOC)

<sup>2</sup> Chemical oxygen demand; calculated value based on TOC figures (TOC x 3 = COD)

**7.5 Waste and Recycling**

We want to minimize material consumption and disposal volumes through systematic waste management. Waste separation, safe disposal channels and economically expedient recycling processes serve this purpose. In accordance with Bayer's corporate policies, all production sites are obliged to prevent, recycle and reduce waste and to dispose of it safely and in line with good environmental practices. Production fluctuations, building refurbishment and land remediation work influence waste volumes and recycling paths.

**Waste volume generated**

The total quantity of waste generated rose in 2019 by 54.7%. The increase is due in particular to the first full-year inclusion of the sites of the acquired agriculture business and to more extensive production and construction measures.

The volume of hazardous waste increased by 4.4% owing to increased production at the sites at Muttenz, Switzerland, and Vapi, India, and building work at the Bergkamen site in Germany. The volume of hazardous waste from production increased slightly by 0.4%.

The volume of nonhazardous waste rose by 112.1% compared to 2018. Reasons for this include significant demolition work at the site in Bergkamen, Germany.

#### Waste Generated 2019 (2018)

1,000 metric tons

#### Nonhazardous waste

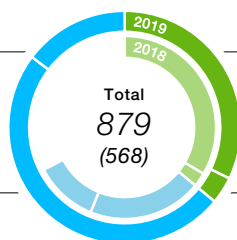
129 (95)  
not from production

434 (170)  
from production

#### Hazardous waste<sup>1</sup>

283 (282)  
from production

33 (21)  
not from production



2018 figures restated

<sup>1</sup> Definition of hazardous waste in accordance with the local laws in each instance

The volume of waste disposed of increased by 53.6%. Some 47.2% of this waste was successfully recycled. The volume of hazardous waste disposed of to landfill increased by 45.4% owing to construction taking place at the Vapi site in India as part of an infrastructure project.

#### Waste by Means of Disposal

1,000 metric tons	2018	2019
<b>Total volume of waste disposed of<sup>1</sup></b>	<b>568</b>	<b>872</b>
Volume removed to landfill	130	123
Volume incinerated	200	268
Volume recycled <sup>2</sup>	165	411
Other <sup>3</sup>	73	70
<b>Hazardous waste disposed of</b>	<b>303</b>	<b>316</b>
Volume removed to landfill	19	28
Volume incinerated/recycled/other <sup>3</sup>	283	288

2018 figures restated

<sup>1</sup> Waste can also be stored at sites as an intermediate step. For this reason, the volume of waste disposed of can differ slightly from the volume of waste generated by Bayer.

<sup>2</sup> Recycling refers to processes through which waste is reused or treated for reutilization.

<sup>3</sup> For example passed on to third parties (e.g. providers / waste disposal companies) for disposal or utilization for energy generation or composting

#### Disposal, recycling and processing

Legislation prohibits the recycling and processing / treatment of a large proportion of our materials, especially pharmaceuticals and crop protection products. In our divisions, we make use of the opportunities for recycling within the framework of legal regulations. Production-specific and substance-specific recycling is carried out in compliance with the individual requirements of a given production site. Packaging materials are recycled in line with national regulations as part of the country-specific infrastructure for waste disposal. In many countries with no legal regulation, the industry has set up a returns system in collaboration with other providers.

Material-based recycling is important in Crop Science's active ingredient and intermediate product manufacture, and is handled individually at the respective production site. Solvents, catalysts and intermediates are processed and returned to the production process. In global process development for active ingredients and intermediates, material recycling is considered an important development criterion.

Processes are in place at Bayer to ensure the safe sale-off of products, including the disposal of obsolete inventories or waste. Returns of obsolete stocks of crop protection products are accepted in individual cases. The crop protection product industry has set up voluntary initiatives in various countries for the proper disposal of obsolete stocks. As part of its activities in the international CropLife association, Crop Science is working with the Food and Agriculture Organization (FAO) of the United Nations and the World Bank to support the proper collection and disposal of obsolete crop protection products in Africa.

At the Pharmaceuticals and Consumer Health divisions, production-specific recycling is carried out in compliance with the individual requirements of a given production site. The disposal of pharmaceutical products is subject to strict safety criteria, so no recycling is possible for the portfolios of the Pharmaceuticals and Consumer Health divisions. Material-based recycling takes place at the Pharmaceuticals site in Bergkamen, Germany, in the form of the recovery of solvents used in production.

## 7.6 Environmental Incidents

There were three environmental incidents – i.e. incidents that resulted in the release of substances into the environment – in 2019 (2018: two). A container ship whose consignment included crop protection products from Bayer sank on the way from Antwerp to Argentina, and two truck accidents in Brazil led to a product leakage of part of the load. Factors that determine whether there is a reporting obligation include, in particular, the nature and quantity of the substance, the amount of damage caused and any consequences for nearby residents. In accordance with our internal voluntary commitment, we report any leakage of substances with a high hazard potential from a quantity of 100 kilograms upward. All three environmental incidents were also transport incidents. For details of the environmental and transport incidents in 2019, please see our [sustainability website](#).

## 7.7 Biodiversity

Bayer aims to use natural resources responsibly in all its activities. This includes respecting and protecting ecosystem, species and genetic biodiversity. We are explicitly committed to the U.N. Convention on Biological Diversity and the associated Nagoya Protocol, and published a supplementary corporate policy on this issue in 2019 that defines principles on how to manage access to and the use and transfer of genetic resources and / or traditional knowledge throughout the company.

We benefit from biodiversity in numerous ways: through active ingredients for pharmaceutical development, but also through agriculture in particular. We are aware that our business operations are highly dependent on biodiversity and functioning ecosystems, and that they mutually influence each other. That's why we undertake to account for the interests of biodiversity as comprehensively as possible in our core business and our research and development activities. We have spelled out this stance both in our [corporate policy on human rights](#) and in our [Position](#) on the Protection and Enhancement of Biodiversity, which we updated in 2019. In the coming year, we want to further consolidate and strategically align our activities to protect biodiversity so that we can take effective measures in this regard, especially in the area of agriculture.

### Challenges in the supply chain

One effect of agricultural intensification is that less and less land is required for food production. While agricultural yields have grown by 60% over the past 40 years, the amount of agricultural land has increased by only 5%. This productivity increase has been made possible by new technological developments in the areas of plant breeding (including genetically modified organisms), crop protection, digitalization, fertilization and irrigation. On the other hand, the intensification of agriculture has led to a local decline in both species and some ecosystem services (positive contributions of nature for people), for example due to the removal of structural landscape elements, the narrowing of crop rotation systems or certain agricultural practices. Bayer invests in research and development to gain more knowledge about how an improved balance between productivity and conserving biodiversity and ecosystem services can be attained, and what measures farmers must take to achieve this, particularly when applying intensive conventional agricultural cultivation systems.

### Impact of our products

Some crop protection products, particularly insecticides, have a reputation for showing adverse effects in bees and other nontarget insects if they are not used properly, such as at the wrong time. Manufacturers and scientific institutes therefore conduct extensive studies in order to develop application protocols that ensure that the products can be

used without leading to unacceptable side-effects. The investigation of effects on honeybees and other nontarget insects are elementary components of these studies, which are then subjected to extensive assessments by regulatory authorities worldwide. Neonicotinoids are also controversially debated with regard to bee safety. These highly effective insecticides protect plants from a broad array of pests and are therefore widespread. Negative effects observed under laboratory or otherwise unrealistic exposure conditions were, however, not determined to be the cause of damage to bee colonies under realistic field conditions when the products were used properly.

There are fears in society that genetically modified plants could spread throughout the environment and thus negatively impact biodiversity. However, cross-pollination between a genetically modified plant and a wild one would require the plants to be very closely related. Various studies demonstrate that the introduction of genetically modified crops has not negatively affected crop biodiversity.

Certain genetically modified crops even have positive effects on the environment. For example, the introduction of herbicide-tolerant (HT) seed has enabled plowless soil tillage, which is applied in particular in North and South America. In combination with good practice such as the cultivation of catch crops, plowless soil tillage has a very positive impact on soil health. It reduces erosion, facilitates the development of humus and thereby ensures increased storage of carbon in the soil. Farmers need less fuel for tillage when there is no plowing requirement.

The use of genetically modified plants that are resistant to insects reduces the application of insecticides.

For Bayer, digital farming is another important tool for creating a better balance between productivity and conservation. The goal of digital farming is to use resources such as water, fertilizer and crop protection products more efficiently and sustainably. This also helps to protect biodiversity. For example, drones equipped with cameras can identify disease-related changes in crop formations at an early stage, thus enabling crop protection products to be applied far more precisely than through large-scale treatment.

### Production sites

When planning new production sites, Bayer takes into account that they must not be set up in areas that are statutorily protected with regard to their natural characteristics, biodiversity or other factors. Due to our portfolio changes, we have begun an updated comparison of the geographical coordinates of our production sites against those of internationally recognized protected areas.

## 7.8 Occupational Health and Safety

Safeguarding the occupational health and safety of our employees, and of the employees of contractors under the direct supervision of Bayer, involves preventing work-related accidents and occupational illnesses, assessing potential hazards, ensuring comprehensive risk management and creating a healthy working environment.

### Occupational injuries and occupational illnesses

The basis of our reporting on occupational injuries is the Recordable Incident Rate (RIR), which covers all injuries to and occupational illnesses of Bayer employees and employees of contractors under the direct supervision of Bayer leading to medical treatment that goes beyond simple first aid. As a result, the RIR covers injuries and occupational illnesses both with and without lost workdays. In 2019, it increased to 0.46 cases per 200,000 hours worked, corresponding to 599 occupational injuries worldwide (2018: 487). This means that, in statistical terms, one recordable incident occurred for more than every 430,000 hours worked. Recordable injuries with lost workdays constituted 354 of the total of 599 occupational injuries, meaning that the corresponding parameter, the Lost Time Recordable Incident Rate (LTRIR), climbed to 0.27 in 2019.

Regrettably, one person lost their life in a work-related accident in 2019. A Bayer employee had a fatal road accident.

#### Recordable Occupational Injuries<sup>1</sup>

	2018	2019
Rate of occupational injuries (RIR <sup>2</sup> )	0.40	0.46
Rate of occupational injuries with lost workdays (LTRIR <sup>3</sup> )	0.24	0.27
Fatal occupational injuries	2	1 <sup>4</sup>

2018 figures restated

<sup>1</sup> The figures include Bayer employees and employees of contractors whose accidents occurred under direct Bayer supervision.

<sup>2</sup> RIR = Recordable Incident Rate

<sup>3</sup> LTRIR = Lost Time Recordable Incident Rate

<sup>4</sup> One Bayer employee

Occupational illnesses are included in the RIR and LTRIR figures, regardless of whether or not they are listed in national registers of occupational diseases. As lists of occupational diseases are not globally standardized and in many countries do not exist at all, we document all occupational illnesses, provided they have been diagnosed and recognized by a physician. In 2019, 34 new cases of occupational illnesses were reported throughout the Bayer Group, 15 of them with lost workdays. These were related to the musculoskeletal system and skin reactions, among other disorders, without a clear pattern of risk areas emerging.

#### Rate of Occupational Injuries (RIR) by Region<sup>1</sup>

	2018	2019
Europe / Middle East / Africa	0.47	0.51
North America	0.70	0.75
Asia / Pacific	0.15	0.18
Latin America	0.28	0.37
<b>Total</b>	<b>0.40</b>	<b>0.46</b>

2018 figures restated

<sup>1</sup> The figures include Bayer employees and employees of contractors whose accidents occurred under direct Bayer supervision.

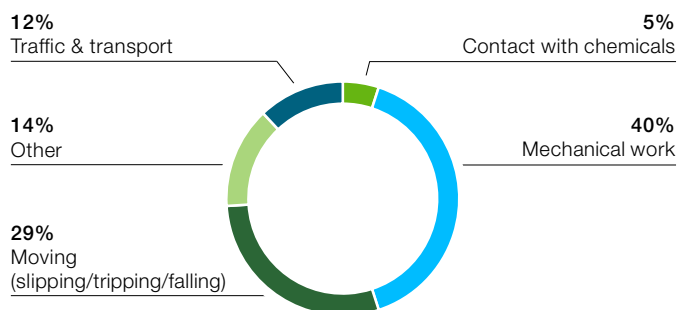
### Risk assessment and preventive measures

All workplaces at Bayer are regularly subjected to a health-related risk assessment and a hazard analysis. These analyses are used to derive measures that, in conjunction with targeted studies, are designed to prevent occupational illnesses. On top of the country-specific regulations on mandatory examinations, we offer our employees regular medical examinations – in some cases on a mandatory basis – in all countries in which this is legally permissible. The focus here is on hazard-based, workplace-related examinations.



In 2019, as in previous years, the number of injuries involving contact with chemicals was small (5%) in relation to the total number of occupational injuries.

#### Notification of Accidents and Injuries in 2019



A significant proportion of the accidents and injuries suffered by our employees have behavior-linked causes. Alongside technical and organizational measures, promoting safety-conscious behavior is an important starting point for preventing accidents and injuries. Our Behavioral Safety Program supports this approach with suitable training measures. Around 13,000 employees have been trained at 143 sites worldwide since 2015. Behavioral improvements have been achieved in areas in which the program has already been implemented, so that the Recordable Incident Rate is therefore expected to decline across the Bayer Group in the medium term. In 2019, the activities undertaken so far were evaluated, the training programs updated and preparations made for the further rollout to the sites of the acquired agriculture business in 2020.

## 7.9 Biological Safety

In accordance with the guidelines of the World Health Organization (WHO) on biorisk management principles, we consider biological safety to comprise the principles, technologies and processes implemented to prevent unintended exposure to biological materials that could pose a risk to people or the environment. Misuse or theft of biological materials is also prevented by corresponding measures.

Biological material must be handled with suitable care to ensure that employees, residents and the environment are protected. This includes microorganisms, invertebrates, vertebrates, plants, cell cultures, genetically modified organisms (GMOs), toxins and allergens. An assessment of the biosafety risk is necessary before biological materials can be used, particularly in R&D and production. These analyses are conducted by the employee responsible for biological safety in each case and verified together with an expert. All employees tasked with biosafety must undergo regular training.

Processes for carrying out assessments and measures are established in a corporate policy on biosafety that is oriented to the specifications of the WHO. Wherever local laws and regulations are more stringent than the standards laid out by the corporate policy, the more stringent variant takes precedence.

A group of biosafety experts from all divisions and regions networks within the Bayer Biosafety Panel under the leadership of the Corporate Health, Safety & Environment enabling function. The panel is responsible for developing, reviewing and implementing Bayer's biosafety rules and regulations throughout the Group. It also advises and supports the Biosafety Community with which it maintains regularly communication to ensure a uniform and high standard of biosafety throughout the company.

The implementation of legal and Bayer Group guidelines on biosafety is also overseen by the HSE audit program.

## 7.10 Plant Safety

We aim to design and operate our processes and production facilities in such a way that they do not pose any inappropriate risks to employees, the environment or neighboring communities. This is conditional upon an effective system to ensure plant safety being in place that enables operational risks to be identified, remedied and reduced and their effects mitigated. We are continuously working to further develop the safety culture, the expertise of employees and the globally applicable corporate policies on process and plant safety, which prescribe uniform processes and standards for evaluating risks and establishing suitable safety measures. In this way we ensure that a uniform safety level is in place at the approximately 40 Bayer sites at which volumes of hazardous substances significant for plant safety are stored or processed, while satisfying at least the local legal requirements. Intensive analyses, site visits and discussions at the expert level have shown that the plant safety approaches pursued at Bayer and in the acquired agriculture business are comparable. Based on this analysis, an integration project was initiated to ensure in-depth harmonization of the systems in the years ahead. Among the aspects involved is the introduction of the Corporate Directive on Process and Plant Safety in the acquired agriculture business from February 2020. Its implementation at the sites will involve appropriate training.

### Responsibilities and verification

To ensure a high safety level at our facilities, we have defined clear responsibilities in our company that are assumed internally by various organizational units. Responsibility for the safe operation of production facilities lies with plant management. Experts from the Engineering & Technology



enabling function are responsible together with the plant operators for conducting risk analysis and drawing up safety concepts. Using systematic analytical methods, the process risks of our facilities are identified in interdisciplinary teams supervised by these experts. On this basis, the team develops robust protective concepts that take into account health, safety and environmental aspects. Everyone involved in this process participate in a Group-wide plant safety training program. In addition, the safety experts must undergo a globally valid internal training and certification program that qualifies them to carry out risk analyses in the teams. The certification program ensures compliance with globally uniform quality standards in the development of safety concepts at our production facilities.

Finally, the Corporate Health, Safety & Environment enabling function performs the necessary governance for process and plant safety in the Bayer Group. This function further develops the Group's safety management system and establishes the internal safety requirements, verifying their observance through special process and plant safety audits.

To maintain the high safety level of our facilities, these safety concepts are reviewed every five years. Technical modifications are subject to a stringent change management process. Furthermore, maintenance and inspection programs are established for the safety facilities to ensure the necessary availability and functionality in case of need.

Plant safety is an integral component at the planning stages of capital expenditure projects. Risk analyses are carried out during the various phases of a capital expenditure project. At very early stages in the development of new production processes, the applicability of the principles of inherently safer design is examined and the feasibility of a sound safety concept established. Finally, before a new production facility

is brought on stream, our safety experts verify all defined safety measures and confirm their proper implementation through plant and equipment inspections.

Further development of plant safety

To maintain and strengthen safety awareness, the globally binding training program TOPPS (Top Performance in Process and Plant Safety) was further improved. Participation in this training program is compulsory for all Bayer employees who are able to influence process and plant safety at production and auxiliary facilities and is documented in the training system. TOPPS training documentation both for face-to-face training and web-based training is available in several languages.

We are further developing plant safety, both within our company and beyond this worldwide in the form of standards, in internal global and regional networks of experts and through our involvement in associations such as the European Process Safety Centre (EPSC), the Center for Chemical Process Safety (CCPS), Dechema ProcesNet and the German Chemical Industry Association (VCI).

Since 2019, we have used the globally standardized key performance indicator (KPI) "Process Safety Incident Rate (PSI-R)" as an early indicator for plant safety incidents. This is integrated into Group-wide safety reporting. Reporting of this indicator is based on the requirements of the International Council of Chemical Associations (ICCA).

Process safety incidents (PSI) refer to the unwanted leakage of chemical substances or energy in amounts above defined thresholds from their primary containment, such as pipelines, pumps, tanks or drums. The PSI Rate indicates the number of incidents per 200,000 hours worked. In 2019, the PSI-R was 0.10 (2018: 0.06 excluding the acquired agriculture business).

Process Safety Incident Rate (PSI-R)		
	2018	2019
Process Safety Incident Rate (PSI-R) <sup>1</sup>	0.06 <sup>2</sup>	0.10
<sup>1</sup> Number of PSI incidents per 200,000 hours worked		
<sup>2</sup> Excluding the acquired agriculture business		

To prevent substance and energy releases in the future, the causes of PSIs are analyzed and relevant findings communicated to potentially affected sites throughout the Bayer Group. The reporting thresholds are intentionally set at such a low level that even material and energy leaks that have no impact on employees, the local community or the environment are systematically recorded and reported. This preventive approach is applied so that weaknesses can be identified and corrected before a more serious incident can occur.

7.11 Transportation and Storage Safety

Logistics at Bayer comprises not just the transportation and warehousing of goods, but also the steering and monitoring of flows of goods and logistics data for the Bayer Group. The acquired agriculture business still has its own regulations and processes for transportation safety that will apply until Bayer's transportation and storage safety requirements have been introduced there as well in 2020. The following qualitative information therefore does not yet include the acquired agriculture business with the exception of centrally managed classification. The number of transport incidents pertains to both Bayer and the acquired business.

Transportation and storage safety is a part of HSE management and is implemented by a network of experts and users with practical experience who cooperate across the Group.

In this case, safety means having procedures in place that ensure that materials are handled, transported and stored according to the relevant regulations and their respective hazard potential and that suitable logistics and warehouse suppliers are selected. Details are specified in the corporate policies “Transportation Safety,” “Warehousing” and “Health, Safety and Environment (HSE) Audits.” The underlying standards comprise not just internal Bayer guidelines, but also the rules of the international crop protection association CropLife International and the European Guidelines on Good Distribution Practice of Medicinal Products for Human Use. Bayer’s corporate policy on storage safety (warehousing) applies equally to internal warehouses and external warehouse sites and equipment.

Transportation safety plays a key role both in the transportation of our products on public routes and in loading, unloading, classification, labeling and packaging, particularly of hazardous goods. We use both internal capacities and external logistics partners for storage and transport services. Our Procurement unit selects logistics partners according to strict safety, environmental and quality criteria, as described in the Safety and Quality Assessment System (SQAS) of the European Chemical Industry Council (CEFIC). The implementation of our requirements ensures that materials are handled and transported in line with applicable regulations and the potential hazard they pose. On top of the legally required training courses for our employees, we offer specific electronic training programs to convey specialist knowledge.

More than five million consignments were transported in 2019 overall (excluding the acquired agriculture business). Despite our extensive safety precautions and training activities, transport incidents nonetheless occur. They are

defined as accidents causing personal injury or significant damage to property, environmental impact resulting from the release of substances, or leakage of hazardous goods. Such accidents are recorded in detail and assessed on the basis of defined criteria. Of the 28 transport incidents in 2019 (2018: 10), 27 comprised road transport accidents, while one occurred at sea. Three of the transport incidents were also environmental incidents.

Utilizing digital technologies, we work continually to develop logistics strategies that take account of safety, environmental and cost aspects. Areas of environmental focus include the reduction of CO<sub>2</sub> emissions, for example by minimizing air transport or using logistics strategies that include railways and waterways.

## 7.12 Incident and Emergency Planning

We ensure safe working conditions and an environment where our employees can work safely and without fear and undertake international business travel without risk.

Bayer has taken steps at the global and local levels to prepare the organization for crisis situations. Accordingly, incidents are recorded, reported and handled in line with a globally applicable standard procedure, the Bayer Emergency Response System.

Processing of such incidents is the responsibility of the Group-wide safety and crisis organization or the local emergency response team. For this purpose, organizational

precautions with defined responsibilities and procedures have been implemented and communicated through training measures at the sites and / or in the countries. Depending on how the situation develops, we involve business partners and the local community around the sites, such as city authorities or neighboring companies.

Bayer also regularly analyzes safety risks and implements suitable identification, prevention and processing measures, including employee safety or cyber security measures, for example.

Crisis management is supported by the established Business Continuity Management System, which is based on ISO standard 22301. Business continuity plans contain pre-defined reaction options for the loss of personnel or downtime of buildings, machinery, IT systems or suppliers. The plans cover various emergency scenarios, such as a longer-term regional blackout or climate-change-related impacts on production sites. The Business Continuity Management System comprises suitable IT measures such as ensuring service performance or rapid restoration following a disruptive event. The plans are regularly updated and communicated through training measures.

Safety and crisis simulation exercises are regularly conducted at site and Group levels. The number of employees and partners involved depends on the type of exercise. In 2019, for example, we simulated an extensive malware attack on our global IT to test our cyber defenses, internal reporting chains and reaction times. We also tested the restoration of IT systems and data for one of our global data centers at another site together with our IT service providers.

## 8. Foundation and Charity Activities

Bayer assumes responsibility worldwide for social needs in keeping with our corporate purpose “Science for a better life.” Our engagement focuses on people who are actively involved in the fields of education, science and health and committed to improving living conditions through social innovation. Our three company foundations and our corporate donations play an important role here.

### 8.1 Management Approach

Bayer’s social engagement comprises extensive donation activities and the local granting of financial and material donations – in part through our company foundations – for charitable causes. We comply with the applicable laws and codices in these activities. We also observe the “Guidelines for medicine donations” of the World Health Organization (WHO).

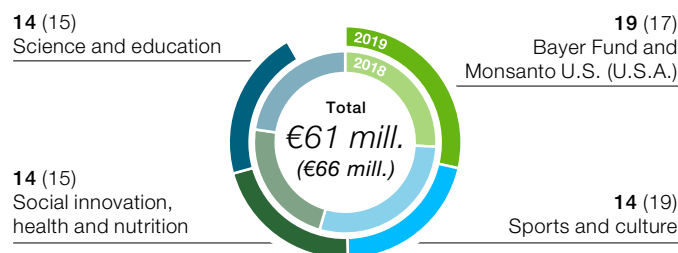
Group-wide donation allocation and management policies ensure that donations, grants and foundation funds are deployed in a targeted and appropriate way, correspond with our strategic alignment and are based on Bayer’s core competencies. The Board of Management is directly involved in major donation decisions.

In 2019, Bayer made available some €61 million (2018: €66 million) worldwide for charitable projects and activities. Our funding priorities included the areas of research and education, social innovation in health and nutrition, and projects in the communities near our sites. Another funding priority was sports and culture in Germany.

#### Foundation and Charity Activities

in 2019 (2018)

€ million



- Bayer Fund (ex Monsanto Fund) and Monsanto U.S.: community projects, food and nutrition, education, disaster aid
- Recreational, disabled and competitive sports, cultural events, support for young artists
- Health education and prevention, social health, access to medical care, sustainable development and smallholder farmer projects, disaster aid, employee volunteering and community projects, Grants4Impact & Aspirin Social Innovation
- School projects, Baylab school laboratories, talent promotion, scholarships, promotion of leading-edge research, scientific awards, promotion of academies, symposia, conferences

### 8.2 Foundation Activities at Bayer

Most of our activities are combined within three company-linked foundations that operate worldwide:

- // Bayer Science & Education Foundation (focused on leading-edge research, scientific education and talent promotion)
- // Bayer Cares Foundation (focused on social innovation and employee engagement)
- // Bayer Fund (United States) (focused on community projects, education, nutrition and disaster aid)

The yearly alignment of all foundation programs is coordinated by a Board of Trustees staffed with members from inside and outside the company. Committees composed of independent experts decide on the awarding of research prizes and scholarships by the foundations.

Within the scope of our foundation activities, we look to build effective partnerships and work together with nongovernmental organizations, patient groups, other foundations, scientific institutions, educational partners and networks of experts around the world to implement many of our programs.

## 8.3 Funding Priorities

In the funding of projects, we focus particularly on social innovation, improving living conditions in the communities surrounding our sites, and the areas of science and education.

### Social innovation

In 2019, the Bayer Cares Foundation established an ecosystem fund, “Lifting the Base of the Pyramid,” which has an endowment of €20 million that is to be used to support technological and entrepreneurial solutions in health care and agriculture. The focus is on promoting (women’s) health by improving access to medical care, as well as on supporting smallholder farmers in sub-Saharan Africa.

In the first step, the program supported four social enterprises and nongovernmental organizations in 2019. This included the digital platform myAgro, which enables smallholders to save small sums of money for the purchase of seed and fertilizer. Through this, we aim to help farmers in Mali and Senegal to improve their agricultural productivity and nutritional situation. The nongovernmental organization PATH uses money from the fund to assist 50,000 households in southern Senegal in combating malaria. These households comprise around 250,000 people.

### Neighboring communities

As part of the international volunteering program, the U.S.-based Bayer Fund supports projects by employees who want to help improve living conditions near our sites. Through programs established by our Bayer Science & Education Foundation, we also promote scientific learning at schools in the communities close to our sites around the world. In addition, the PRO Social Initiatives (PROSi) program was launched in Germany in 2019; PROSi was founded by employees and currently supports voluntary social projects in four countries.

### Science and education

We regard pioneering achievements in science and society as a basic condition for progress and success. Promoting leading-edge research and supporting education and talent are therefore central issues for the Bayer Science & Education Foundation. In this way, we want to attract a flow of new employees over the long term and promote acceptance of technology within society as a whole.

Among the efforts we honor with the Hansen Family Award of the Bayer Science & Education Foundation are pioneering achievements in basic medical research that have the potential to improve health care and the treatment of illnesses in the long term. Furthermore, our Early Excellence

in Science Award honors young scientists who have achieved outstanding research results already at the beginning of their career. In addition, we have established the Bayer Thrombosis Research Award to reward special achievements in that field. In partnership with the Alexander von Humboldt Foundation, we support doctoral students in a postdoctoral program.

Bayer has created various programs to support young scientists at the earliest possible stage. Through the Bayer Fellowship Program, for example, we enable students and apprentices from scientific and medical disciplines to participate in training and research projects in Germany and abroad. We engage young school students with the Science@School program of the Bayer Science & Education Foundation, which supports teachers in designing curricula in the scientific disciplines. The goal is to awaken interest in the subjects of mathematics, information technology, science and technology through innovative projects and unique insights. In 2019, 22 projects in these disciplines received funding through the Science@School program.

# *Independent Auditor's Report on a Limited Assurance Engagement Concerning Sustainability Information*

To Bayer Aktiengesellschaft, Leverkusen (Germany)

## **Our engagement**

According to our engagement, we have performed a limited assurance engagement on the Sustainability Report 2019 of Bayer Aktiengesellschaft, Leverkusen (Germany), for the period from January 1 to December 31, 2019.

Our engagement does not include links to the annual report and web pages of the company, interviews and personal statements.

## **Responsibility of the executive directors**

The executive directors of Bayer Aktiengesellschaft are responsible for the preparation of information in the Sustainability Report in accordance with the Sustainability Reporting Standards of the Global Reporting Initiative provided in the "Core" option (hereafter: "GRI Standards").

This responsibility of the company's executive directors includes the selection and application of appropriate methods for the sustainability reporting as well as making assumptions and estimates related to individual disclosures, which are reasonable in the circumstances. In addition, the executive directors are responsible for such internal controls they have determined necessary to enable the preparation of information listed above that is free from material misstatements, whether intentional or unintentional.

The accuracy and completeness of environmental data in the Sustainability Report is subject to inherent boundaries, which result from the nature and type of data collection, data aggregation and respective necessary assumptions.

## **Practitioner's responsibility**

Our responsibility is to express a limited assurance conclusion on the disclosures in the Sustainability Report 2019, based on the assurance engagement we have performed.

We are independent of Bayer Aktiengesellschaft in accordance with the provisions under German commercial law and professional requirements, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

Our audit company applies the German national legal requirements and the German profession's pronouncements for quality control, in particular the by-laws governing the rights and duties of public auditors and chartered accountants (Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer) as well as the IDW Standard on Quality Control 1: Requirements for Quality Control in Audit Firms [IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis (IDW QS 1)], which comply with the International Standard on Quality Control 1 (ISQC 1) issued by the International Auditing and Assurance Standards Board (IAASB).

We conducted our assurance engagement in compliance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements Other than Audits or Reviews of Historical Financial Information" issued by the IAASB. This standard requires that we plan and perform the assurance engagement in a form that enables us to conclude with limited assurance that nothing has come to our attention that causes us to believe that the information in the Sustainability Report 2019 of Bayer Aktiengesellschaft for the period from January 1 to December 31, 2019 has not been prepared, in all material respects, in compliance with the GRI Standards. In a limited assurance engagement the assurance procedures are less in extent than for a reasonable assurance engagement and, therefore, a substantially lower level of assurance is obtained. The assurance procedures selected depend on the practitioner's professional judgment.

Within the scope of our limited assurance engagement, which was performed – with work stoppages – from October 2019 to February 2020, we conducted, amongst others, the following audit procedures and other activities:

- // Obtaining an understanding of the structure of the sustainability organization and of the stakeholder engagement
- // On-site visits to Bergkamen, Dormagen, Frankfurt, Knapsack, Leverkusen, Berlin, Grenzach and Wuppertal (Germany), Antwerp (Belgium), Muttentz (Switzerland), Vapi (India) as well as Uberlandia, Sao Jose dos Campos, Itai and Camacari (Brazil), Zarate (Argentina), Ica (Peru), Orizaba (Mexico) and Grinell, St. Louis, Kunia, Muscatine, Soda Springs, Rock Springs, Kansas City and Luling (USA) as part of an investigation into the processes for collecting, analyzing and aggregating selected data
- // Interview of the relevant employees that participated in the preparation of the Sustainability Report about the preparation process, about the internal control system relating to the process as well as about the disclosures
- // Identification of the possible risks of material misstatement concerning the information in the Sustainability Report as listed above
- // Analytical assessment of disclosures in the Sustainability Report
- // Comparison of selected disclosures with corresponding data in the consolidated financial statements, the annual financial statements and combined management report
- // Evaluation of the presentation of the disclosures

## Practitioner's conclusion

Based on the assurance work performed and evidence obtained, nothing has come to our attention that causes us to believe that the information in the Sustainability Report of Bayer Aktiengesellschaft as listed above, for the period from January 1 to December 31, 2019 has not been prepared, in all material respects, in compliance with the GRI Standards: Option "Core".

Our conclusion does not include links to internet pages, nor interviews or personal statements.

## Purpose of the assurance statement

We issue this report on the basis of the engagement agreed with Bayer Aktiengesellschaft. The limited assurance engagement has been performed for purposes of Bayer Aktiengesellschaft and the report is solely intended to inform Bayer Aktiengesellschaft on the results of the assurance engagement.

## Liability

The report is not intended to provide third parties with support in making (financial) decisions. Our responsibility exclusively refers to Bayer Aktiengesellschaft and is also restricted under the engagement agreed with Bayer Aktiengesellschaft on October 14, 2019 as well as in accordance with the "General engagement terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften (German public auditors and German public audit firms)" from January 1, 2017 of the Institut der Wirtschaftsprüfer in Deutschland e.V. We do not assume any responsibility to third parties.

Munich (Germany), February 25, 2020

Deloitte GmbH  
Wirtschaftsprüfungsgesellschaft

Prof. Dr. Beine  
German Public Auditor

Dingel  
Director



# GRI Content Index with the 10 Principles of the U.N. Global Compact

For fiscal 2019 we are again applying the GRI standards. This report has been prepared in accordance with the GRI Standards: Core option. If there is insufficient information available on a GRI disclosure, we have explained this. The GRI Content Index additionally includes the corresponding UNGC principles.

For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of the report. The service was performed on the German version of the report.



## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	<b>GRI 101: Foundation 2016</b>		
	<b>GRI 102: General Disclosures 2016</b>		
	<b>Organisational Profile</b>		
	GRI 102-1: Name of the organisation	12	
	GRI 102-2: Activities, brands, products and services	12/13	
	GRI 102-3: Location of headquarters	12	
	GRI 102-4: Location of operations	12; <a href="#">AR</a> 28	
	GRI 102-5: Ownership and legal form	12; <a href="#">AR</a> 21	
	GRI 102-6: Markets served	12/13	
	GRI 102-7: Scale of the organisation	12; <a href="#">AR</a> 137	
6	GRI 102-8: Information on employees and other workers	40, 44/45	
	GRI 102-9: Supply chain	32	
	GRI 102-10: Significant changes to the organisation and its supply chain	12; <a href="#">AR</a> 62	
	GRI 102-11: Precautionary Principle or approach	16, 18, 22, 48, 55, 57	
	GRI 102-12: External initiatives	5, 9, 14, 18/19, 21–23, 34, 36, 46	
	GRI 102-13: Membership of associations	23	

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	<b>Strategy</b>		
1–10	GRI 102-14: Statement from senior decision-maker	3	
	GRI 102-15: Key impacts, risks, and opportunities	5-10, 12, 15, 18/19	
	<b>Ethics and Integrity</b>		
10	GRI 102-16: Values, principles, standards, and norms of behaviour	10, 12, 14, 16–18, 33, 36, 38, 40	
10	GRI 102-17: Mechanisms for advice and concerns about ethics	16/17, 36	
	<b>Governance</b>		
	GRI 102-18: Governance structure	14; <a href="#">AR 15</a>	
	GRI 102-19: Delegating authority	15, 16, 19, 38, 48	
	GRI 102-20: Executive-level responsibility for economic, environmental, and social topics	14, 16, 19, 48	
	GRI 102-21: Consulting stakeholders on economic, environmental, and social topics	<a href="#">AR 18</a> , <a href="http://www.bayer.com/asm">www.bayer.com/asm</a>	
	GRI 102-22: Composition of the highest governance body and its committees	46; <a href="#">AR 103/104</a> , 235–237	
	GRI 102-23: Chair of the highest governing body	14; <a href="#">AR 18</a>	
	GRI 102-24: Nominating and selecting the highest governance body	<a href="#">AR 15</a> , 17, 103	
	GRI 102-25: Conflicts of interest	<a href="#">AR 104</a>	
	GRI 102-26: Role of highest governance body in setting purpose, values, and strategies	15; <a href="#">AR 14/15</a>	
	GRI 102-27: Collective knowledge of highest governance body	<a href="#">AR 103/104</a>	
	GRI 102-28: Evaluating the highest governance body's performance	<a href="#">AR 13</a> , 105	
	GRI 102-29: Identifying and managing economic, environmental, and social impacts	14	
	GRI 102-30: Effectiveness of the risk management processes	14	
	GRI 102-31: Review of economic, environmental, and social topics	16; <a href="#">AR 14</a>	
	GRI 102-32: Highest governance body's role in sustainability reporting	19; <a href="#">AR 23</a>	
	GRI 102-33: Communicating critical concerns	<a href="#">AR 13/14</a> , 17/18, <a href="http://www.bayer.com/asm">www.bayer.com/asm</a>	
	GRI 102-34: Nature and total number of critical concerns	<a href="#">AR 13/14</a> , 17/18, <a href="http://www.bayer.com/asm">www.bayer.com/asm</a>	
	GRI 102-35: Remuneration policy	10, 15/16; <a href="#">AR 109/110</a> , 124–126	
	GRI 102-36: Process for determining remuneration	<a href="#">AR 15</a> , 108	
	GRI 102-37: Stakeholders' involvement in remuneration	<a href="#">AR 108</a> , 115	
	GRI 102-38: Annual total compensation ratio	<a href="#">AR 123/124</a>	
	GRI 102-39: Percentage increase in annual total compensation ratio	<a href="#">AR 123/124</a>	
	<b>Stakeholder Engagement</b>		
	GRI 102-40: List of stakeholder groups	19	
3	GRI 102-41: Collective bargaining agreements	47	

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 102-42: Identifying and selecting stakeholders	20	
	GRI 102-43: Approach to stakeholder engagement	14, 19/20, 23, 35, 38, 44	
	GRI 102-44: Key topics and concerns raised	19/20	
	<b>Reporting Practice</b>		
	GRI 102-45: Entities included in the consolidated financial statements	4; <a href="#">AR</a> 158/159	
	GRI 102-46: Defining report content and topic boundaries	4, 19	
	GRI 102-47: List of material topics	65–69	
	GRI 102-48: Restatements of information	4	
	GRI 102-49: Changes in reporting	None	
	GRI 102-50: Reporting period	4	
	GRI 102-51: Date of most recent report	2019-02-27	
	GRI 102-52: Reporting cycle	Annually	
	GRI 102-53: Contact point for questions regarding the report	Masthead	
	GRI 102-54: Claims of reporting in accordance with the GRI Standards	4, 63	
	GRI 102-55: GRI Content index	63–69	
	GRI 102-56: External assurance	61/62	
	<b>Material Topics</b>		
	<b>Economic</b>		
	GRI 201: Economic Performance 2016		
7	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	13, 43, 50	
	GRI 201-1: Direct economic value generated and distributed	13	
7	GRI 201-2: Financial implications and other risks and opportunities due to climate change	9/10; <a href="http://www.bayer.com/cdp-climate">www.bayer.com/cdp-climate</a>	
	GRI 201-3: Defined benefit plan obligations and other retirement plans	43, <a href="#">AR</a> 186–194	
	GRI 202: Market Presence 2016		
6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	45	
6	GRI 202-1: Ratios of standard entry level wage by gender compared to local minimum wage	42	We do not report on the margin between standard entry salary according to gender and local minimum wage because this data is not available to us. Nor do we plan to collect it. We compensate employees on both permanent and temporary employment contracts in excess of the statutory minimum wage in the respective countries, paying a living wage regardless of gender.
6	GRI 202-2: Proportion of senior management hired from the local community	46	
	GRI 203: Indirect Economic Impacts 2016		

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	8, 13, 59	
	GRI 203-1: Infrastructure investments and services supported	8, 60	
	GRI 203-2: Significant indirect economic impact	13	
	GRI 204: Procurement Practices 2016		
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	32	
	GRI 204-1: Proportion of spending on local suppliers	32	
	GRI 205: Anti-corruption 2016		
10	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16–18	
10	GRI 205-1: Operations assessed for risks related to corruption	16	Complete coverage is crucial for compliance/anti-corruption in the first instance. Areas at risk are monitored more frequently than others. As major businesses and parts of companies are subject to shorter audit cycles and smaller units to longer cycles, we do not report at the business unit level. Nor do we report on the identified significant corruption risks, as such information would constitute a business secret.
10	GRI 205-2: Communication and training about anti-corruption policies and procedures	17	We do not report quantitatively on training for the Board of Management and Supervisory Board because data on this meeting GRI requirements is not available to us. Anticorruption training courses for employees are implemented globally. Following the complete integration of the acquired agriculture business we shall review the data by region for the 2020 reporting year.
	GRI 206: Anti-competitive Behavior 2016		
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16–18	
	206-1: Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	AR 215–219	
	<b>Environment</b>		
	GRI 302: Energy 2016		
7–9	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	9, 48–50	
7, 8	GRI 302-1: Energy consumption within the organisation	49	
8	GRI 302-3: Energy intensity	50	
	GRI 303: Water 2016		
7, 8	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	5, 31, 48/49, 51	
7, 8	GRI 303-1: Water withdrawal by source	52	
8	GRI 303-3: Water recycled and reused	52	
	GRI 304: Biodiversity 2016		
8	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	5, 27/28, 48/49, 54/55	

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
8	GRI 304-1: Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	55	
8	GRI 304-2: Significant impacts of activities, products, and services on biodiversity	27/28, 54/55	
	GRI 305: Emissions 2016		
7–9	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	5, 9, 48–51, 58	
7, 8	GRI 305-1 Direct (Scope 1) GHG emissions	50	
7, 8	GRI 305-2: Energy indirect (Scope 2) GHG emissions	50	
7, 8	GRI 305-3: Other indirect (Scope 3) GHG emissions	51; <a href="http://www.bayer.com/cdp-climate">www.bayer.com/cdp-climate</a>	
8	GRI 305-4: GHG emissions intensity	50	
7, 8	GRI 305-6: Emissions of ozone-depleting substances (ODS)	51	
7, 8	GRI 305-7: Nitrogen oxides (NOX), sulphur oxides (SOX) and other significant air emissions	51	
	GRI 306: Effluents and Waste 2016		
8	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	48/49, 51–53, 56/57	
8	GRI 306-1: Water discharge by quality and destination	52	
8	GRI 306-2: Waste by type and disposal method	53	
8	GRI 306-3: Significant spills	53, 57; <a href="http://www.bayer.com/en/safety">www.bayer.com/en/safety</a>	
	GRI 307: Environmental-Compliance 2016		
8	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16, 21, 48/49,	
8	GRI 307-1: Non-compliance with environmental laws and regulations	AR 219/220	
	GRI 308: Supplier Environmental Assessment 2016		
8	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	32–35, 58	
8	GRI 308-1: New suppliers that were screen using environmental criteria	34	As the reported procedure for evaluating our suppliers (including according to environmental criteria) includes the new suppliers, we do not report the percentage of new suppliers separately
8	GRI 308-2: Negative environmental impacts in the supply chain and actions taken	34/35	
	<b>Social</b>		
	GRI 401: Employment 2016		
6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	38, 40, 44	
6	GRI 401-1: New employee hires and employee turnover	41	
	GRI 401-2: Benefits provided to full-time employees that are not provided to temporary or part-time employees	43	
6	GRI 401-3: Parental leave	45	
	GRI 402: Labour/Management Relations 2016		

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
3	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	44, 47	
3	GRI 402-1: Minimum notice periods regarding operational changes	44	
	GRI 403: Occupational Health and Safety 2016		
1, 6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	41, 46-49, 55-57	
	GRI 403-2: Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	55/56	We do not report on occupational injuries by gender, as this data has to be collected in certain regions anonymously. It is important for us to have classification by accident type and a detailed analysis of the causes of the individual accidents.
	GRI 403-3: Workers with high incidence or high risk of diseases related to their occupation	54/55	
	GRI 404: Training and Education 2016		
6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	38, 43/44	
6	GRI 404-1: Average hours of training per year per employee	43	
	GRI 404-2: Programmes for upgrading employee skills and transition assistance programmes	42/43	
6	GRI 404-3: Percentage of employees receiving regular performance and career development reviews	44	We do not currently report the percentage by employee category, because this data is not available. Following the complete integration of the acquired agriculture business we shall examine the possibility of reporting this in the future.
	GRI 405: Diversity and Equal Opportunity 2016		
1, 6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	38, 40, 42/43, 45/46	
6	GRI 405-1: Diversity of governance bodies and employees	39, 42, 45/46; AR 102, 104	
6	GRI 405-2: Ratio of basic salary and remuneration of women to men	42/43	We do not report quantitatively on the ratio of the basic salary and compensation of women to men. Male and female employees at Bayer receive equal compensation. It is awarded on the basis of qualifications and responsibility.
	GRI 406: Non-discrimination 2016		
6	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16/17, 38, 40	
6	GRI 406-1: Incidents of discrimination and corrective actions taken		We do not report on the number of incidents of discrimination. We report on the total number of notifications registered with the compliance hotline. We internally record the precise reason for the grievance, track how it is followed up and take corresponding action in line with our corporate policy. More detailed information on this would constitute a business secret.
	GRI 407: Freedom of Association and Collective Bargaining 2016		
2, 3	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	36/37, 47	
2, 3	GRI 407-1: Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	37, 47	
	GRI 408: Child Labor 2016		



## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
2, 5	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	36–38	
2, 5	GRI 408-1: Operations and suppliers at significant risk for incidents of child labor	36/37	
	GRI 409: Forced or Compulsory Labor 2016		
2, 4	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	36/37	
2, 4	GRI 409-1: Operations and suppliers at significant risk for incidents of forced or compulsory labor	37	
	GRI 412: Human Rights Assessment 2016		
1, 2	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	36, 48	
2	GRI 412-1: Operations that have been subject to human rights reviews or impact assessments	36	
1	GRI 412-2: Employee training on human rights policies or procedures	36	
2	GRI 412-3: Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	48	
	GRI 413: Local Communities 2016		
1	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	48, 51, 56/57, 59	
1	GRI 413-1: Operations with local community engagement, impact assessments, and development programmes	60	
1	GRI 413-2: Operations with significant actual and potential negative impacts on local communities	51, 56–58	
	GRI 414: Supplier Social Assessment 2016		
2	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	32–36, 58	
	GRI 414-1: New suppliers that were screened using social criteria	34	As the reported procedure for evaluating our suppliers (including according to social criteria) includes the new suppliers, we do not report the percentage of new suppliers separately.
2	GRI 414-2: Negative social impacts in the supply chain and actions taken	34/35, 37	
	GRI 415: Public Policy 2016		
10	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	18	
10	GRI 415-1: Political contributions	18	
	GRI 416: Customer Health and Safety 2016		
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	21/22, 25–27, 29–31	
	GRI 416-1: Assessment of the health and safety impacts of product and service categories	21/22, 25–27, 29–31	
	GRI 416-2: Incidents of non-compliance concerning the health and safety impacts of products and services	28; AR 215–217, 220	
	GRI 417: Marketing and Labelling 2016		
7	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	17/18, 21/22, 24, 26/27, 29, 31	
7	GRI 417-1: Requirements for product and service information and labelling	22, 24, 26/27, 29, 31	

## GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 417-2: Incidents of non-compliance concerning product and service information and labeling	<a href="#">AR</a> 215–217	
	GRI 417-3: Incidents of non-compliance concerning marketing communications	<a href="#">AR</a> 216, 219	
	GRI 418: Customer Privacy 2016		
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16–18	
	GRI 418-1: Substantiated complaints concerning breaches of customer privacy and losses of customer data		We do not report on the number of breaches of customer privacy and losses of customer data. We report on the total number of notifications registered with the compliance hotline. We internally record the precise reason for the grievance, track how it is followed up and take corresponding action in line with our corporate policy. More detailed information on this would constitute a business secret.
	GRI 419: Socioeconomic Compliance 2016		
	GRI 103: Management Approach 2016 (including 103-1, 103-2, 103-3)	16	
	GRI 419-1: Non-compliance with laws and regulations in the social and economic area	<a href="#">AR</a> 151/152, 167, 195, 215, 217–220	

AR = [Bayer Annual Report 2019](#)

# Glossary

## B

**Biocides** are substances and products that control pests such as insects, mice and rats, as well as algae, fungi and bacteria.

**Bt (Bacillus thuringiensis)** is a bacterium that can be found primarily in soil, as well as on plants and in insect cadavers. The Bt toxins produced by the bacterium are used for biological pest control in agriculture and forestry, as well as to control disease-transmitting mosquitoes.

## C

### Corruption Perceptions Index (CPI)

Since 1995, NGO Transparency International has produced an annual index of countries by the perceived level of public-sector corruption. The CPI ranks countries according to the extent to which public servants and politicians are believed to engage in bribery and to grant or accept undue advantage.

**CRISPR-Cas** is a new molecular-biological method of specifically modifying genetic material. It enables individual DNA building blocks to be inserted, removed or modified. This process basically works with all organisms. It is used in animal and plant breeding, as well as in biotechnology.

## E

### Ecosystem Fund

The term 'Ecosystem Fund' refers to a sum of grants or other funding opportunities created for organizations that address key global societal challenges while incentivizing participation in expanding and shaping an ecosystem through cross-sector and multi-stakeholder collaboration, in order to enhance the positive impact of the provided funds.

**Ecosystem services** are the benefits people obtain from ecosystems. Ecosystem services upon which crop production depends include, for instance, soil fertility, soil erosion prevention, nutrient cycling, soil organic matter provision, pest control, water regulation and pollination.

**Environmentally relevant sites** are Bayer locations with annual net energy consumption of over 1.5 terajoules.

## G

### GHG Protocol

The Greenhouse Gas Protocol is an internationally recognized tool for recording, quantifying and reporting greenhouse gas emissions. Its standards cover all emissions within a company's value chain. Bayer aligns itself to the Corporate Standard for direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions and also to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which covers further indirect emissions along the value chain. Dual reporting was introduced for Scope 2. Indirect emissions have to be reported using both the location-based and the market-based methods. The location-based method uses regional or national average emissions factors, while the market-based method applies provider- or product-specific emissions factors based on contractual instruments.

## H

**Herbicide-tolerant seed** enables the crop that grows from it to be resistant to the mechanism of action of a herbicide.

## I

**Inherent safety** of a system means that its safety is facilitated by its operational principle.

## P

**Plowless soil tillage (no-till farming)** involves conservation-oriented soil cultivation that does not require soil to be overturned through plowing.

**Phase I-IV studies** are clinical phases in the development of a drug product. The active ingredient candidate is generally tested in healthy subjects in Phase I, and in patients in Phases II and III. The studies test the therapeutic tolerability and efficacy of active ingredients in a specific indication. Phase IV studies are conducted following the approval of a new drug product to monitor its safety and efficacy over an extended period of time. The studies are subject to strict legal requirements and documentation procedures.

## R

### 3Rs principle (replace, reduce, refine)

**Replace:** prior to each project, Bayer checks whether an approved method is available that does not rely on animal studies and then applies it. **Reduce:** in case no alternative method exists, only as many animals are used as are needed to achieve scientifically meaningful results based on statutory requirements. **Refine:** Bayer ensures that animal studies are performed in a way that minimizes any suffering.

## S

### Significant locations of operation

A selection of countries that accounted for more than 80% of total Bayer Group sales in 2019 (Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, India, Italy, Japan, Mexico, Netherlands, Russia, Spain, Switzerland, the United Kingdom and the United States).



# Masthead

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