Sustainability Report

2022

Science for a **better life**

Contents

We Are Driving the Fight against the Climate Crisis

Dear Bayer stakeholders,

We will remember 2022 as a year of unprecedented events: the war against Ukraine, the massive energy and food supply crisis and the persistent problem of disrupted supply chains. German Chancellor Olaf Scholz talked about the dawning of a new era – a paradigm change that is transforming the face of globalization and complicating the attainment of the UN Sustainable Development Goals (SDGs).

With regard to food security in particular, 2022 was a devastating year – and as a leading agriculture company worldwide, we have undertaken significant efforts to support farmers in Ukraine, stabilize the global food supply and continue to resolutely fight climate change. In this context, we must not forget how closely nutritional and climate issues are interlinked. While grain cannot be effectively harvested and exported due to the war in Ukraine, many countries depend on these imports particularly because local climate conditions make it (increasingly) impossible for them to produce a sufficient quantity themselves. Be it in times of war or peace – protecting the climate must remain the top priority.

There are always two sides here: we must reduce emissions and thus limit the further increase in the Earth's temperature – and we must address the current and future effects of climate change on human health and the cultivation of food. Mitigation and adaptation go hand in hand. They are two sides of the same coin. At Bayer, we resolutely pursue both goals:

// In 2022, we once again succeeded in reducing our total greenhouse gas emissions (Scope 1, 2 and 3) – while at the same time achieving dynamic growth in our businesses. We are well on track to become completely climate-neutral in our own operations (Scope 1 and 2) by 2030.
// We invest more than almost any other company in adapting to climate change, particularly in crops that are resilient to extreme climate conditions and require fewer resources. We are now introducing a new corn variety that is climate-resistant and more sustainable. And our teams are working diligently on other groundbreaking innovations for the food staples rice and wheat. For the first time, adapting agriculture to climate change was also a major topic at the recent COP27 Summit in Egypt. That is an important signal.

We are also on course – and making significant progress – on our other sustainability targets:

// We are continuously increasing access to our medicines in low- and middle-income countries. In 2022, we entered the top 10 for the first time in the illustrious Access to Medicine index. That is a tremendous success.
// We are on track with all our social sustainability targets to reach – in each case – 100 million women, smallholder farmers and people in medically or agriculturally underserved regions by 2030.
// We are steadily working to achieve a 30% reduction in the environmental impact of our crop protection products by 2030, and had registered an approximately 14% reduction already by 2021.
// We are making further progress in the acknowledgment of our contributions to climate protection and sustainability. The rating agency MSCI ESG Research lifted its red flag for Bayer in 2022. The organization CDP designated us as a leader in climate protection for the fifth consecutive time.
// Since 2020, the Board of Management has been advised by a Sustainability Council composed of prominent international experts and chaired by Sabine Miltner and Christian Klein. Last year, the Supervisory Board established a separate ESG Committee chaired by Ertharin Cousin. Furthermore, the new position of Human Rights Officer was created in 2022, reporting directly to the Board of Management.

Bayer CEO Werner Baumann

Bayer is dedicated to scientific research and technological progress – that has always been the secret of our company's success, and it is also the key to transitioning to a sustainable economy. After all, research laboratories around the world indeed are also currently facing the dawning of a new era that is evolving ever more rapidly at the interface between biology, chemistry and artificial intelligence. This offers a tremendous opportunity to link green targets with profitable numbers. That's what we are focused on.

Through our expertise and solutions, we want to make an important contribution to the Sustainable Development Goals (SDGs) – guided by the principles of the UN Global Compact and in keeping with our vision "Health for all, hunger for none." You can and should evaluate us based on that ambition again in 2023.

My own career as the head of our company will come to an end this year. I have served Bayer for 35 years with enthusiasm and dedication. On June 1, I will turn over to my successor Bill Anderson a very well-positioned company – with outstanding and highly motivated employees, leading businesses of systemic relevance in health and nutrition, with sustainability at our core. I am convinced that on that basis, Bayer has a great future.

Thank you for continuing to support our company.

Sincerely,

Werner Baumann
CEO 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 2022 Annual Report.

The reporting period is the 2022 fiscal year. The closing date for all data and facts was December 31, 2022.

The Bayer Group's sustainability reporting has been aligned to the guidelines of the Global Reporting Initiative (GRI) and the 10 principles of the UN Global Compact (UNGC) since 2000. This report has been prepared in accordance with the GRI Standards. This report also serves as a reference for the questionnaire on the Communication on Progress in line with the UN Global Compact. We also take into account the relevant requirements of the Sustainability Accounting Standards Board (SASB). A summarized index according to the three SASB Industry Standards relevant to us – "Biotechnology & Pharmaceuticals," "Chemicals" and "Agricultural Products" – can be found on our website. In our climate reporting we follow the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) and publish a separate report in PDF format also on our website. For the first time, we also publish an overview of the Principal Adverse Indicators according to the Sustainable Finance Disclosure Regulation (SFDR) on our website.

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, the European Chemical Industry Council (CEFIC) and the International Council of Chemical Associations (ICCA) 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.

Reporting of the Group's HSE data includes all fully consolidated companies in which we hold at least a 50% 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 2022, this covered 15 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.

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, 2022, to December 31, 2022, 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.

The Sustainability Report is published in PDF format together with the 2022 Annual Report, the SASB Index, the TCFD Report and the Sustainability Highlight Report on Bayer AG's website.

The next Sustainability Report is due to be published in March 2024.

Sustainability Drives Value and Growth

A growing world population and the increasing burden on natural ecosystems are among the biggest challenges humanity is facing. This situation is further complicated by the effects of the COVID-19 pandemic and the war in Ukraine. Furthermore, both crises have clearly shown how important it is to protect health and ensure food security worldwide – and how these goals are in jeopardy.

As a global leader in healthcare and nutrition, Bayer can contribute more than any other enterprise to solving global challenges through its business. With this goal in mind, Bayer is committed to ambitious targets that it aims to achieve through its own business activity and the endeavors of its employees.

Sustainability is part of our corporate strategy

We consider sustainability to be at the core of our corporate responsibility – and it also safeguards our future growth. Sustainability is therefore an essential component of our corporate strategy, our business activities, our corporate values and the way in which we conduct our business. Sustainability is at the center of our corporate vision of “Health for all, hunger for none.” The following strategic sustainability targets apply as a guideline for the actions of all divisions:

// Create inclusive growth and value added for society and our investors
// Reduce our ecological footprint
// Embrace responsible business practices along our value chain

Our contribution to the Sustainable Development Goals

We align our own strategic sustainability targets to the global Sustainable Development Goals (SDGs) of the United Nations, which apply through 2030. The global community lags behind the goals in many areas, which means that the contribution we as a company can make to achieving them becomes all the more important.

At Bayer, we are convinced that we can have a particular impact here, owing to our portfolio, our global reach and our innovative power. In this context, we consciously support those Sustainable Development Goals where there is a pressing need to act and where we can make the greatest impact through our businesses and their sustainability-focused transformation.

SDG 1 – No poverty

As farming is often the only source of income in low- and middle-income countries (LMICs), we help to fight poverty there through our engagement with smallholder farmers and by supporting women.

SDG 2 – Zero hunger

Our products and services help the global agricultural industry to increase production, and thus to feed a growing world population, while consuming fewer natural resources. This also benefits smallholder farmers in LMICs.

SDG 3 – Good health and well-being

Our products directly impact people’s health. Some prevent diseases and others treat illnesses. This applies worldwide – but particularly in LMICs, where we endeavor to make existing products and services accessible and affordable.

SDG 5 – Gender equality

We work to achieve gender equality in our business and throughout our supply chain. Through modern contraception, we support women around the world in self-determined family planning. We promote equal opportunity within our company.

SDG 6 – Clean water and sanitation

Our products and services serve to reduce future water consumption in agriculture. We undertake to protect water resources, use them as sparingly as possible and further reduce water pollution.

SDG 13 – Climate action

We pursue a climate protection and decarbonization strategy that is aligned with the goals of the Paris Agreement. In our value chain, we promote resilient, low-emissions farming that helps to capture CO_2 through new methods.

SDG 15 – Life on land

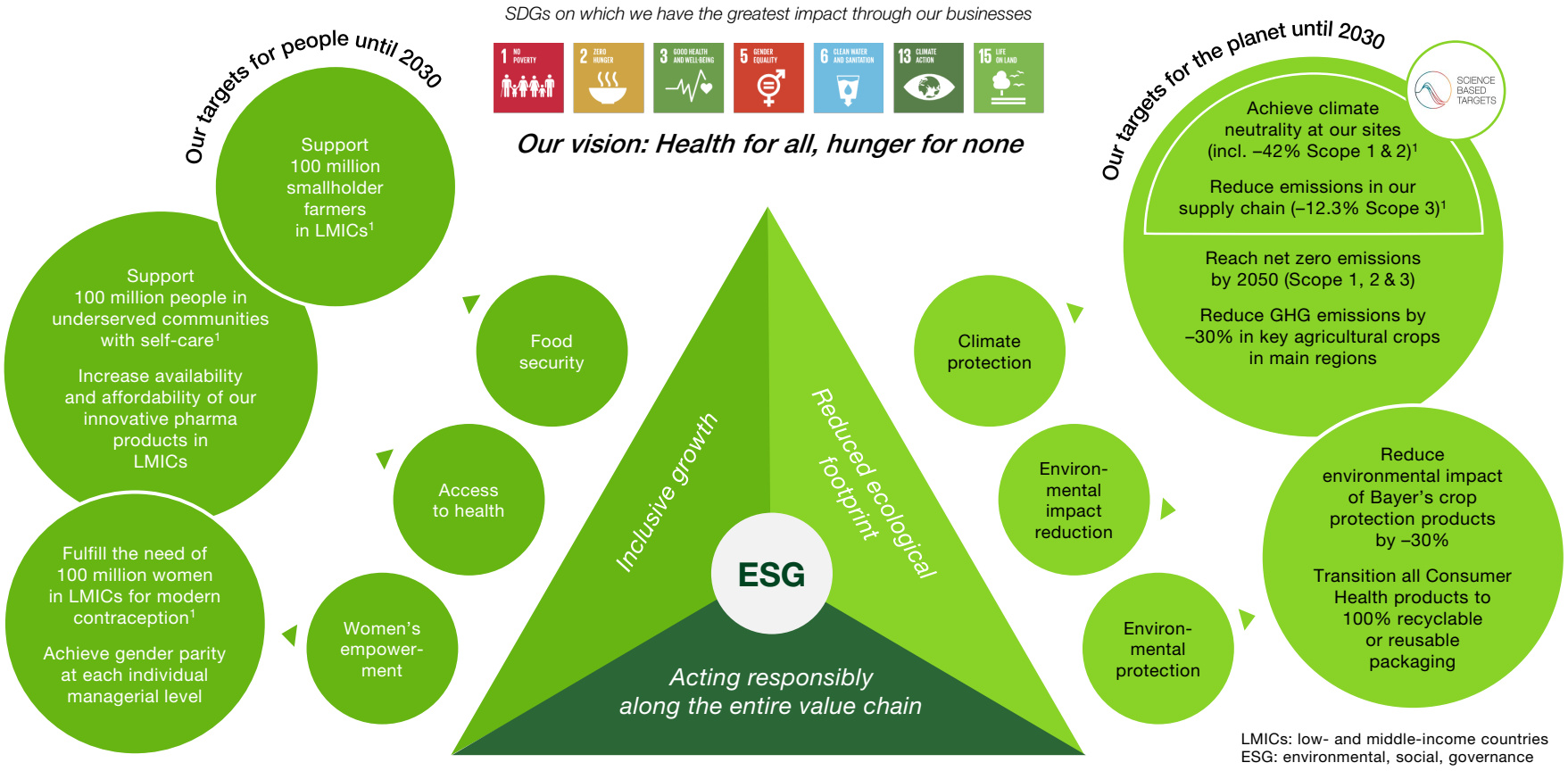
By reducing the environmental impact of crop protection products (Crop Protection Environmental Impact Reduction, CP EIR), we support sustainable farming that helps to protect the environment within our value chain and to conserve biodiversity.

Our strategic approach

Bayer aims to promote sustainable development worldwide in accordance with the SDGs, while at the same time focusing on the future in how it aligns its businesses so as to grow in line with the sustainability targets. To achieve this, we link the concept of inclusive growth with a reduction in our ecological footprint based on responsible business practices along our entire value chain.

The Group-wide goals for inclusive growth and climate protection are accounted for in the long-term variable compensation (LTI) of our Board of Management and our LTI-entitled managerial employees. Our strategic focuses also address the demands increasingly expressed by the capital market that we transform our business from an ESG perspective (environmental, social and governance) and report transparently on this using key data. In doing so, we want to be trustworthy and binding in our actions in relation to our stakeholders.

Sustainability: Strategic Elements, Impacts and 2030 Targets



[1] These targets are accounted for in the long-term variable compensation (LTI) of our Board of Management and our LTI-entitled managerial employees.

Focus areas: Value added for people and the environment

In 2019, Bayer initiated an ambitious program that combines inclusive growth with the reduction of our ecological footprint and aims to establish responsible business practices throughout our entire value chain. Bayer is thus living up to its responsibility toward the environment and people, and has integrated this into its corporate governance (ESG).

Inclusive growth

For Bayer, inclusive growth means not achieving objectives at the expense of others. We want the products and services we offer to enable growth and well-being worldwide – in keeping with our vision of "Health for all, hunger for none."

Healthcare

Millions of people still do not have access to basic medical care. As a leading pharmaceutical company, we believe we have a responsibility to improve access to healthcare for a growing world population. We reach people all over the world with the products and solutions of our Pharmaceuticals and Consumer Health divisions. In this, we also align ourselves to the needs of people in LMICs, for whom we make existing products and services accessible and affordable. At the same time, we are driving forward innovations to increase access to healthcare worldwide and thus improve people's health and well-being. In this way, we are making a significant contribution to the attainment of SDG 3 "Good health and well-being."

Nutrition and agriculture

Hunger has increased worldwide in recent years, as the impact of climate change and the effects of armed conflicts are contributing to food shortages. In the area of agriculture and nutrition, our innovative products and services help to better feed the growing world population and fight hunger. In this way we are contributing to SDG 2 "Zero hunger" by targeting inclusive growth in LMICs. The 550 million or so smallholder farmers worldwide play a central role in improving the food supply in these countries. As farming is often the only source of income for many people there, our engagement with smallholder farmers helps achieve SDG 1 "No poverty."

Reducing the ecological footprint

We want to reduce our ecological footprint along our entire value chain. With our solutions for more sustainable farming, we play a key role in protecting the environment and biodiversity in accordance with SDG 15 "Life on land." We endeavor to reduce the environmental impact of crop protection products in farming and support the use of innovative cultivation methods. We also want to help reduce the consumption of water resources in the future and thus support SDG 6 "Clean water and sanitation."

Climate protection

In view of advancing climate change and its devastating consequences for human nutrition and health, one area of focus for reducing the ecological footprint is an ambitious decarbonization strategy. Our targets are in line with the Paris Agreement. To this end, we pursue extensive measures to support SDG 13 "Climate action." For example, we are reducing our own greenhouse gas emissions (Scope 1 & 2) and greenhouse gas emissions along our value chain (Scope 3). Our reduction targets were confirmed by the Science Based Targets initiative (SBTi). We want to achieve net zero emissions in our entire value chain by 2050.

Climate resilience

We also help to increase the resilience of our customers against the effects of climate change. Among the approaches we develop in this connection are transformative solutions that aim to enable agriculture to emit fewer greenhouse gases and instead help to capture CO_2. This makes agriculture an important enabler in the fight against climate change.

Responsible business practices

Responsible business practices along the value chain define our company values and shape the way in which we conduct our business – from our commitment to environmental protection to our endeavors in relation to gender equality and respecting human rights.

Gender equality

We promote inclusion and diversity (I&D) throughout Bayer, including gender equality – SDG 5. We achieve the greatest impact through our business, particularly through our products to promote women's health and family planning or through our targeted support for female smallholder farmers as entrepreneurs in LMICs. We also promote equality in our own company and aim to achieve gender parity at all management levels by 2030.

Respect for human rights

We fully respect human rights and updated our human rights strategy in 2022 to address risks and effects in that area. The strategy supports the attainment of our company vision and the implementation of the SDGs. Bayer is a founding member of the UN Global Compact and respects the Universal Declaration of Human Rights of the United Nations.

Access to healthcare as an element of sustainability

The ongoing COVID-19 pandemic and the tangible effects of climate change are highlighting the importance of social issues – and particularly healthcare. People in many parts of the world still do not have access to basic medical care. Regional and global crises are further driving inequality in global society.

As part of our vision of "Health for all, hunger for none" and the business strategy based on it, we are addressing important medical needs and expanding access to our products and services, in both the prescription and the over-the-counter sector. We are thus helping to improve access to healthcare for a growing world population (→ SDG 3).

Our programs specifically focus on the health of women and children, thus also supporting gender equality (→ SDG 5).

Access to prescription medicines

With our prescription medicines, we make a valuable contribution to individual health and well-being, as well as sustainable development in general. This particularly applies to our globally leading products in women's healthcare, including with respect to family planning, and in areas such as cardiovascular disease, eye diseases and cancer (→ SDG 3).

Modern contraception – a key factor

In many parts of the world, self-determination for girls and women depends largely on whether and when they start a family. Young women's desire to participate in education can only be fulfilled if the advantages and opportunities of family planning are recognized and suitable healthcare services and contraceptives are available.

It is therefore not just a question of self-determined health, but also a human right to give women and girls the opportunity to choose the number, timing and intervals of their pregnancies. Data also shows that women who have access to contraceptives can strengthen their societal role, with a corresponding positive overall impact on their families, communities and society at large.

For many women, a lack of social acceptance for contraception – along with incomplete information or limited choices as regards the methods of contraception – is the biggest obstacle when it comes to deciding how to go about their own reproductive life planning. According to the United Nations, more than 200 million women in LMICs would like to prevent pregnancy but do not have access to safe and effective family planning methods.

As a component of family planning, modern contraception plays a key role in improving the health, rights and economic situation of women around the world. It thus provides the foundation for more equality and affluence, and plays a crucial role in enabling participation in better education and improving health (→ SDG 3) and reducing poverty (→ SDG 1) and hunger (→ SDG 2). Family planning also strengthens gender equality (→ SDG 5), which in turn promotes economic and social development. According to the United States Agency for International Development (USAID), investment in family planning is therefore a "best buy" for development.

Access to modern contraception

As a leading global pharmaceutical producer of contraceptives, we have been active in this field for many years. We aim to enable 100 million women in LMICs to have their need for modern contraception fulfilled by 2030. In 2022, we already reached 44 million women in LMICs.

Target 2030:
Fulfill the need of 100 million women in LMICs for modern contraception

// Reference year 2019: 38 million
// Status 2020: 40 million
// Status 2021: 41 million
// Status 2022: 44 million

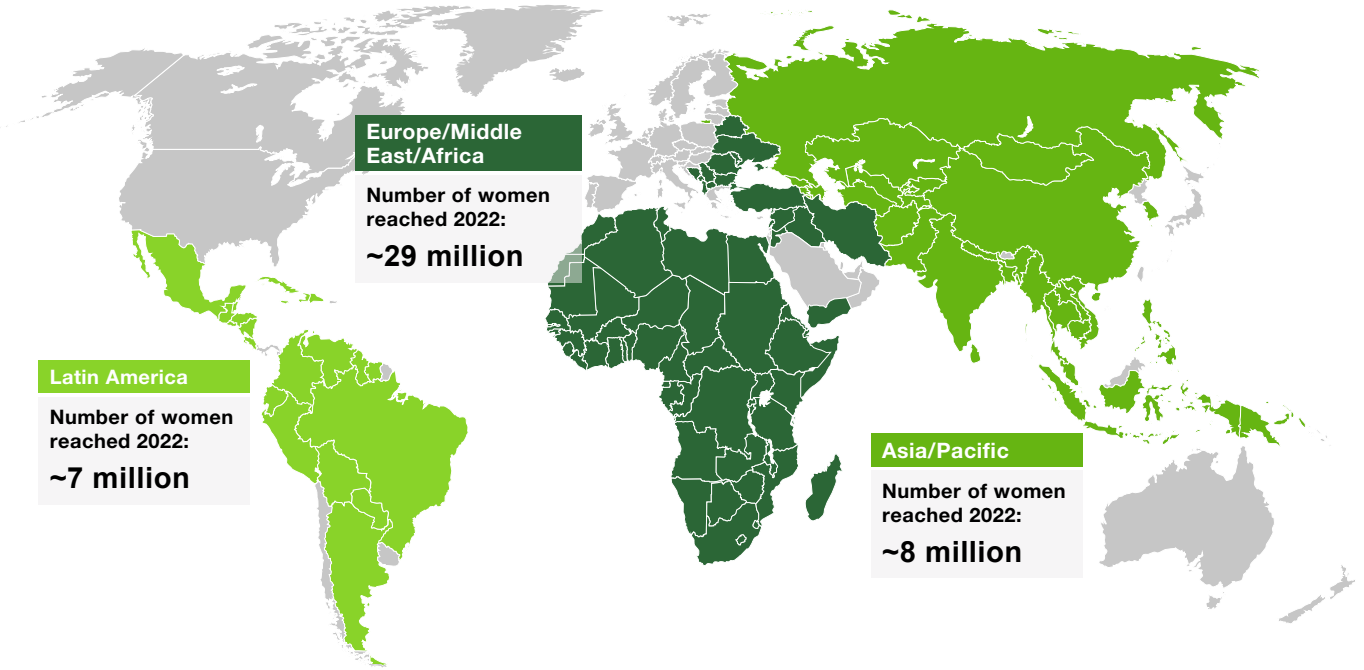
To attain our target, we focus on the accessibility of our products and on measures for sustainable structure and capacity building. This also takes place through partnerships that we plan to expand further in the coming years.

Product accessibility
When choosing a method of contraception, a woman's personal circumstances can play an important role, as can personal preference and medical indications. Long-acting methods such as contraceptive implants or intrauterine systems are among the most effective reversible birth control methods and offer particular benefits in regions where there are gaps in medical care. These methods generally do not require any further effort for lasting, effective use following their insertion. We expect the demand for long-acting methods to further increase in the coming years.

In LMICs with a local pharmaceutical market where women have to pay for contraceptives themselves, we aim to apply a fair pricing approach to enable more women to access these products.

We also cooperate with international family planning programs and aid organizations to enable women to freely access contraceptives. With this goal in mind, we provide our partner organizations with a broad range of contraceptives at low cost. An important role is played here by long-term contraceptives (implants, hormonal intrauterine systems) that can be found in the product catalogues of the United Nations Population Fund (UNFPA) and the United States Agency for International Development (USAID).
For more information, please see Chapter 9. Giving and Foundations.

Access to Modern Contraception 2022



Expansion of production capacities

In 2021, we approved capital expenditures of more than €400 million to expand the contraceptive production facility at our site in Finland and build a new plant in Costa Rica. The planning and construction activities continued in 2022 as scheduled. This will enable us to 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™ hormonal intrauterine system.

Capacity building
We understand capacity building to mean the development of knowledge, skills, engagement, structures and systems to strengthen the autonomy and resilience of local healthcare systems. To this end, we are active in numerous initiatives and collaborations worldwide. In addition to cooperating with our partners in education programs and campaigns such as World Contraception Day, we focus our capacity-building efforts on three main areas:

1. Urban areas
Together with the Bill & Melinda Gates Foundation, we support The Challenge Initiative (TCI). TCI is a global platform that supports the sexual and reproductive health needs of women and girls who live in low-income urban areas in Africa and Asia. We support this initiative irrespective of whether Bayer products are used or not.

2. Rural areas
TCI's work has already shown that positive impact can also be generated beyond urban areas in the connected rural regions. We will also continue to seek ways to further strengthen family planning options in rural areas in combination with our smallholder farmer program.

3. Humanitarian crisis situations
We want to cooperate more intensively with partners with a strong presence and experience in humanitarian crisis situations. At the interface between family planning and humanitarian aid, we want to support partners with Bayer's technological, logistical and medical expertise and meet the demand for information pertaining to family planning and sexual and reproductive health. Together with the German Red Cross (DRK) we are developing a family planning module for DRK deployments in immediate and emergency humanitarian aid and in ongoing crisis situations.

Differentiated pricing strategy
Our established approach to pricing and access to our prescription medicines not only ensures that our products are sold in so-called reimbursement markets but is also geared specifically toward enabling these products to be offered in LMICs while taking into account the local purchasing power. In this, we work together with patients, charitable organizations, governmental authorities and other players to enable easier, sustainable access to our products based on adjusted pricing.

For some of our most important products (Adempas™, Eylea™, Kerendia™, Kyleena™, Mirena™, Nexavar™, Stivarga™, Verquvo™ and Xarelto™), we have implemented the framework conditions for equitable pricing.

Further engagement
For more information on our additional activities in connection with neglected tropical diseases (NTDs), malaria and non-communicable diseases, please see the Focus on: Access to Healthcare chapter.

Access to self-care
More than half the world's population has no access to basic and essential health services due to insufficient income, health deserts and a lack of access to clinics, pharmacies or other treatment options. Consequently, billions of people must rely on self-care to prevent disease, maintain their health or treat illness.

Our goal is to provide access to everyday health to 100 million people a year in economically or medically underserved communities by 2030. As a leader in science-based self-care solutions, we are already present and investing in many countries and regions where self-care is a health lifeline.

Target 2030:
Support 100 million people in economically or medically underserved communities with self-care

// Reference year 2019: 41 million
// Status 2020: 43 million
// Status 2021: 46 million (total 59 million[1])
// Status 2022: 49 million (total 70 million[1])

[1] Including our strategic investments in India

In 2022, we therefore reached around 70 million people[1] worldwide.

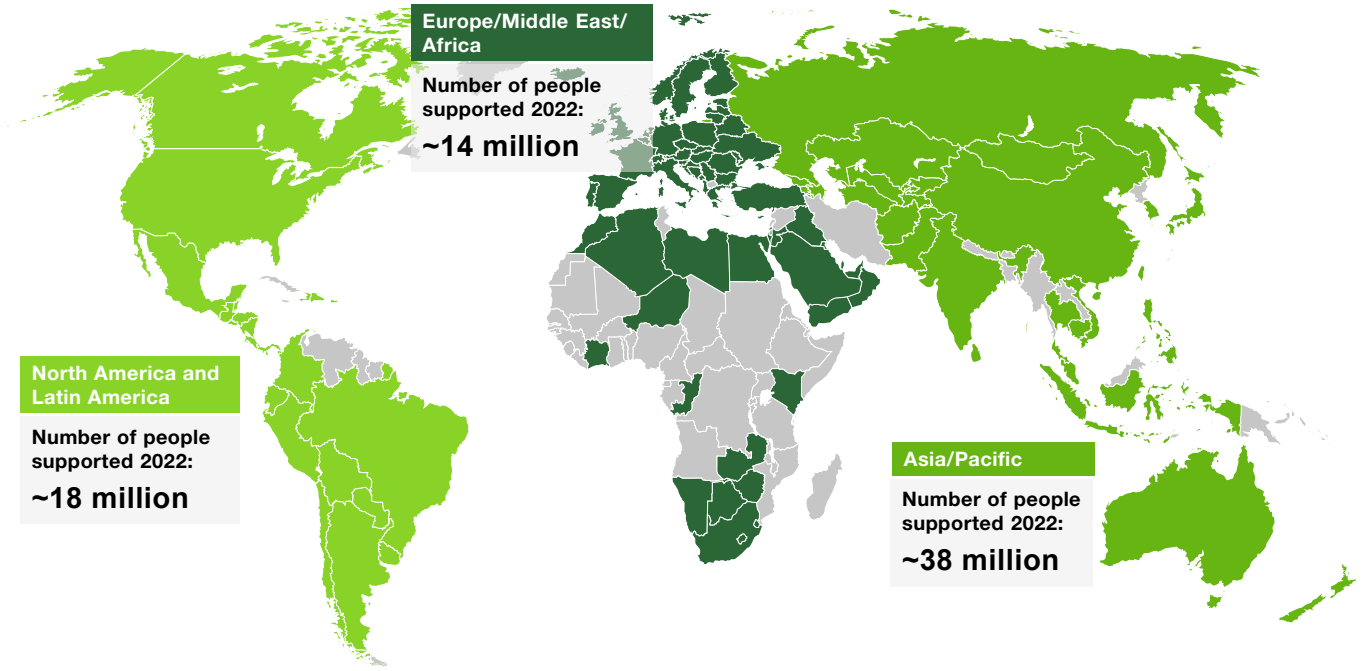
To achieve our target, we are adapting our brands, products and solutions to meet the medical, pricing, packaging and distribution needs of people in underserved communities. We are developing and expanding our self-care education offerings in order to provide people with the information and tools that they need to make well-founded decisions about their own health and that of their families.

In 2022, we commissioned a global study to understand the socioeconomic determinants behind the health outcomes of low-income consumers. The study supports the identification of unmet medical needs in often overlooked populations.

To maximize our impact, we are making our products accessible and affordable in the regions where they are urgently needed, namely in LMICs in Latin America, Africa and Asia/Pacific, as well as in underserved regions of the United States. For example, in 2022 we launched our product Cardio Aspirina™ in Guatemala with a focus on affordability and access for low-income consumers. A QR code is printed on each sachet, enabling users to access the patient information sheet and additional health education information online.

Partnerships help us provide people with access to essential self-care solutions and health education in contexts where self-care is often the only option available. In Kenya and South Africa, for example, we partner with the organization reach52 to support people in rural communities with health education and access to everyday health solutions by training community health workers to provide healthcare using their "offline-first" health technology platform. In Central America, we partner with nongovernmental organizations (NGOs) to train midwives, who act as healthcare professionals in remote communities and also educate women about vaginal health.

Access to Self-Care 2022



Nutrient Gap Initiative

Vitamin and mineral deficiency, often described as "hidden hunger," is one of the most significant problems in underserved regions and affects primarily women and children. Nearly 50% of young women and adolescent girls in LMICs do not consume sufficient vitamins and minerals. At least half of the world's children under five suffer from nutrient deficiency. The effects worsen over time, leading to long-term health problems and further accelerating the poverty cycle.

In 2021, we launched the Nutrient Gap Initiative to enable access to essential minerals and vitamins for 50 million people a year in underserved communities by 2030 through direct interventions and in partnership with NGOs. The Nutrient Gap Initiative addresses the main barriers to accessing micronutrients by advocating for affordable nutrients, education about vitamins and minerals, and improved nutrition through leveraging our own portfolio and various partnerships. In a collaboration between our Consumer Health and Crop Science divisions, we intend to expand the Nutrient Gap Initiative to include access to vitamin- and mineral-rich food – fruit, vegetables and grains. Pilot projects for this have been initiated in India and Indonesia.

Partnership with Vitamin Angels

The first days (during pregnancy through age two) are critical for a child's growth and development. Proper nutrition, including the intake of multiple micronutrient supplements (MMS), is a powerful way of supporting healthy pregnancies, improving birth outcomes and reducing infant mortality. The World Health Organization (WHO) recognized MMS as an evidence-based intervention by adding it to the Essential Medicines List in 2021.

To support the accessibility of MMS as a key component of antenatal care, we partner with Vitamin Angels, a nonprofit organization dedicated to improving nutrition around the world. Vitamin Angels works with local organizations, including governments, to reach the most nutritionally vulnerable populations – pregnant women, infants and children – who are underserved by existing systems. In 2022, our partnership reached over four million underserved pregnant women and their babies across 12 priority countries, including Indonesia, Vietnam, Mexico and the United States.

We also worked with Vitamin Angels and academic partners in the development of a continuing medical education (CME) curriculum to train healthcare providers on the importance of micronutrients.

Further partnerships within the scope of the Nutrient Gap Initiative have been forged with Direct Relief in the United States, the China Health Promotion Foundation, Mercy Corps in Indonesia and Un Kilo de Ayuda and Fundación Esquipulas in Mexico.

Further engagement

As part of our chairmanship of the Global Self-Care Federation (GSCF), we partnered across the industry to develop and introduce the WHO-supported Self-Care Readiness Index – Phase 2, for which a total of 20 countries were evaluated. The index is designed to draw political decision-makers' attention to gaps in national healthcare systems that can be closed through greater and better use of self-care solutions.

On the occasion of the World Health Assembly (WHA) in Geneva in May 2022, the GSCF published a study on the economic and social value of self-care solutions, which detailed the substantial monetary savings in health systems that would benefit low-income consumers in particular.

Sustainability at the core of our brands

Sustainability is firmly anchored in our brand and product strategies. We integrate our sustainability commitments into the earliest stages of product development through our "Sustainability by Design" program. For example, we introduced a refillable bottle in the development of our new range of Bepanthen™ dermatology products. The refill pack uses 80% less packaging by weight.

Moreover, we are evolving our brands to ensure their full sustainable impact – from environmental and social goals to education and advanced training in health matters. This includes the following measures:

// Elevit™, our prenatal supplement brand, has launched its purpose platform "Every Beginning" in Australia, Mexico, China, Japan, Germany and Vietnam. The program focuses on giving every baby the best start in life by extending access to essential prenatal vitamins for women and their babies through our partnership with Vitamin Angels.
// Through its Clarity Parks Project™, our allergy brand Claritin™ supports the Outsideologist Project™, which was launched in Australia and the United States. The project is designed to encourage children and their parents to spend more time outdoors. With this goal in mind, funding was made available to create public green spaces in disadvantaged areas. The Outsideologist Project™ also supports the development of easy-to-follow, family-friendly activities so that families can spend more time together outdoors.
// Our skin and intimate health brand Canesten™ encourages vaginal health education and tackles body shame through its digital platform "Vagina Academy." The brand's campaign achieved the world-first decensorship of the word "vagina" on TikTok in Brazil and Meta's platforms in Italy. This educational program has already been introduced in over 10 countries, with more to follow.

More sustainable solutions

Wherever quality and safety standards and legal regulations allow, we will make the packaging for our Consumer Health products reusable or recyclable by 2030. Furthermore, it is planned for the packaging to include an average of 50% recycled content. We want to find ways of using biodegradable and innovative materials for flexible packaging solutions. We will invest €100 million by 2030 in sustainable solutions to deliver on both our environmental and accessibility targets.

As a signatory to the Environmental Charter of the Global Self-Care Federation (GSCF) we want to achieve industry-wide environmental progress focused on delivering greenhouse gas emission (GHG) reductions and more sustainable packaging. In 2022, we supported the GSCF launch of two working groups focusing on reducing greenhouse gas emissions in the supply chain and implementing sustainable packaging.

Transformation toward sustainable agriculture

Global agriculture and food systems are facing major challenges, such as climate change, water scarcity and biodiversity loss. At the same time, the world population continues to grow, and millions of people are suffering from hunger and poverty.

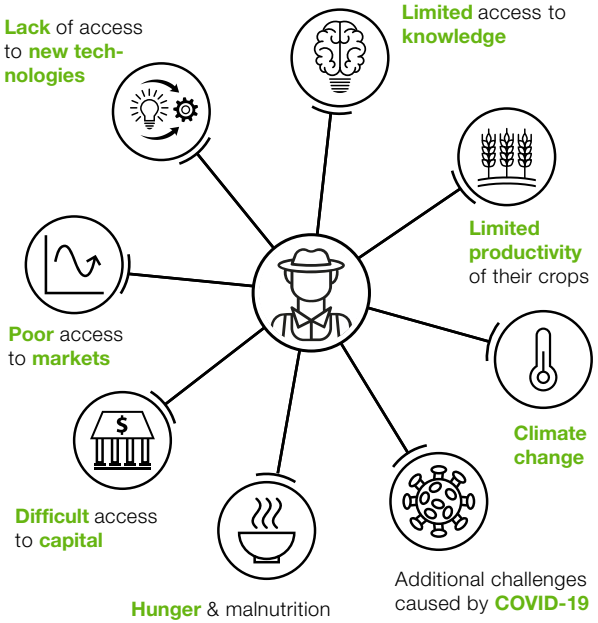
We work toward achieving sustainable agriculture that addresses the biggest challenges with innovation – agriculture that is capable of feeding a growing world population while conserving natural resources (→ SDG 2); agriculture that emits fewer greenhouse gases and instead contributes to capturing CO_2; and agriculture that protects biodiversity and helps farmers worldwide to deal with the effects of climate change and become more resilient. The focus here is on increasing yields through innovative seeds, products and services, as well as on disseminating agricultural practices and forms of cultivation with ever-reduced environmental impact.

Smallholder farmers

The 550 million or so smallholder farmers worldwide play a central role in improving the quality of life in LMICs and thus implementing our vision of "Health for all, hunger for none." They form the backbone of food security in many rural regions of the world.

Many of these smallholder farmers are facing significant challenges, however. Their yields are often low because they do not have access to high-quality crops and practical knowledge about more productive and environmentally friendly cultivation methods. Often, they do not have affordable financing opportunities and access to markets on which they can sell their products at appropriate prices. At the same time, smallholder farmers are also highly exposed to the impacts of climate change and increasingly to harvest losses. For all these reasons, they are often not able to achieve a stable income through farming.

Typical Challenges Smallholder Farmers Are Facing



As a global leader in the field of crop science, we will support a total of 100 million smallholder farmers in LMICs by 2030 by improving their access to agricultural products and services, including in collaboration with our partners. To achieve this, we are increasing the range of our commercial efforts and strategic initiatives tailored to the needs of smallholder farmers. Our strategy for strengthening smallholder farmers is embedded in our regional commercial strategies.

Target 2030:
Support 100 million smallholder farmers in LMICs

// Reference year 2019: 42 million
// Status 2020: 45 million
// Status 2021: 49 million
// Status 2022: 52 million

In 2022, together with our partners, we supported 52 million smallholder farmers in LMICs with our products and services – three million more than in the previous year. We achieved this by significantly expanding business activities, especially in Asia/Pacific.

We are successively expanding our product and service portfolio for smallholder farmers, including innovative business models and digital solutions across the entire crop system. This includes solutions from the areas of digital farming and market access, a differentiated product portfolio, biotechnological solutions and the formation of partnerships along the value chain.

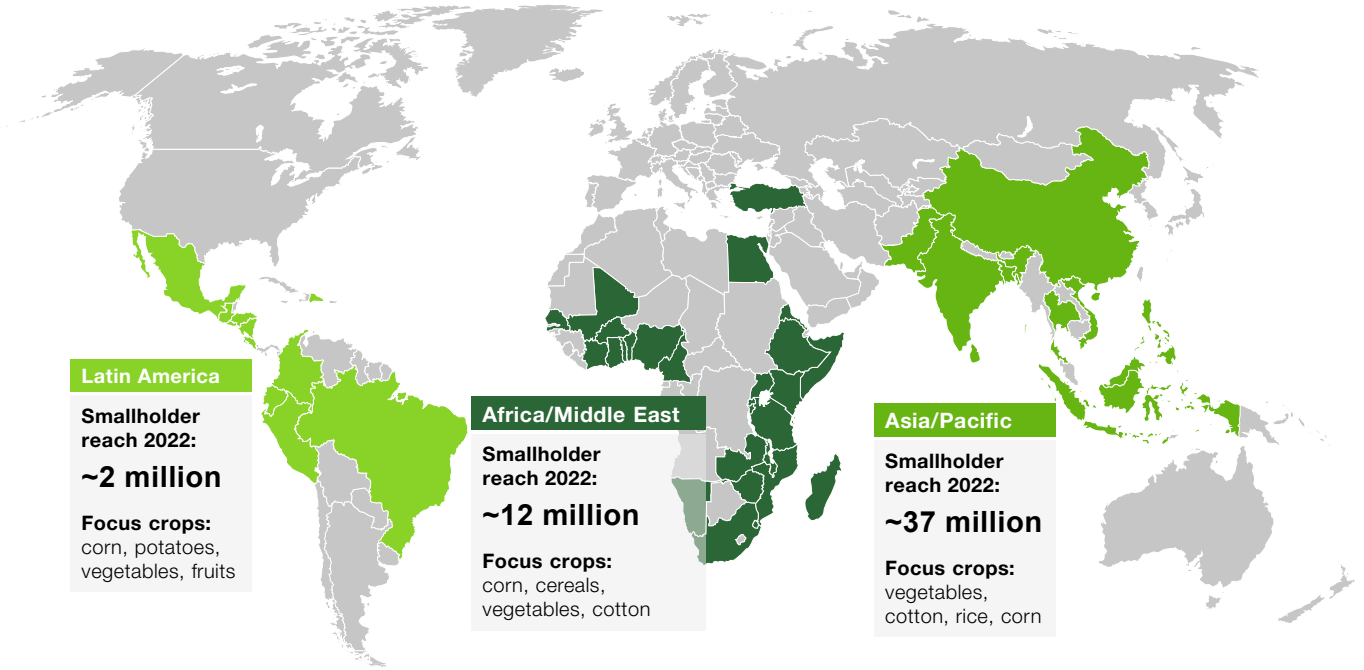
We aim to create market models that generate benefit and reduce business risks for all partners in the value chain, including smallholder farmers. This is implemented by helping smallholder farmers gain access to the agricultural value chain and increase their productivity and income, as well as by creating resilience to ensure the long-term food security of smallholder farmers, their families and rural regions in LMICs.

Bayer does not plan to assert its intellectual property rights against smallholder farmers who save seeds on their farms for private and noncommercial use in order to avoid extreme poverty. Instead, we want to work together with these smallholder farmers to introduce them to the world of commercial farming and enable them to improve their livelihoods.

Value chain partnerships

As no one can overcome every challenge alone, we establish crop value chain partnerships to provide smallholder farmers with high-quality inputs, agronomic knowledge, cost-effective financing and risk mitigation solutions, as well as market access to sell their products. These include collaborations with government research institutes, nongovernmental organizations (NGOs) and international financial institutions. We have already forged a number of key partnerships:

Smallholder Reach 2022



Better Life Farming

Better Life Farming is a long-term partnership between Bayer, the International Finance Corporation (IFC, part of the World Bank), Netafim and more than 30 local public and private partners as well as NGOs. This partnership helps smallholder farmers make their farms commercially profitable and sustainable.

Within the partners' network, the Better Life Farming centers improve access to agricultural products in remote rural regions through the so-called last-mile delivery model. They also offer access to agricultural education and consulting, adapted farming solutions, financing, market access and fair prices. We are also introducing special approaches for the advancement of women such as the targeted development of women as agricultural entrepreneurs.

In 2022, we increased the number of Better Life Farming centers in India, Indonesia and Bangladesh to more than 2,500 and opened the first centers in Mexico and Honduras. We are planning further growth in the Asia/Pacific and Latin America regions and also aim to expand to Africa.

Noncommercial partnerships

Together with the Bill & Melinda Gates Foundation, the Bayer Cares Foundation funds the Digital Farmer II program of our partner Mercy Corps AgriFin. This leverages the spread of digital technologies to develop more efficient digital information and financial products and services for smallholder farmers. The goal is for the program to serve up to five million farmers in Nigeria, Kenya and Ethiopia by 2025. In 2022, we reached some 950,000 smallholder farmers via noncommercial partnerships.

Agriculture and climate change

Climate change is presenting major challenges for farmers worldwide. Crop losses not only threaten the farmers' future and that of their families but also pose a risk to the global food supply. At the same time, food cultivation produces greenhouse gas emissions. Farming therefore plays a key role on the road to a climate-neutral global economy (→ SDG 13).

Through innovations in the areas of seeds, crop protection and agricultural practices, as well as through digital solutions, we are helping to make farming both climate-neutral and climate-resilient. In this, we are working with farmers and partners throughout the entire value chain.

Decarbonization

We aim to reduce greenhouse gas emissions from our highest-emitting crops by 30% in our sales regions by 2030. Key levers in this endeavor include climate-friendly cultivation practices such as plowless soil tillage or the sowing of cover crops. These enable CO_2 to be captured in the soil, making the agricultural industry a key player in the fight against climate change. The dry seeding method of rice cultivation also offers tremendous potential for reducing the greenhouse gas emissions traditionally associated with this crop.

We work to ensure that farmers benefit financially from such solutions, too, as that is the only way to enable their rapid implementation. Launched in 2020, our Carbon Farming Initiative offers farmers in Brazil, the United States, Europe and Asia financial incentives to apply climate-friendly methods and capture greenhouse gases in the soil. For more information, please see the Focus on: Agriculture chapter.

New technologies

We help farmers to increase their resilience against the effects of climate change, for example through our innovative seeds for plants that can better withstand extreme weather conditions, and through improved agricultural practices. For more information, please see the Focus on: Agriculture chapter.

We also invest in new technologies and conduct research into questions such as how plants could use nitrogen from the air for their growth with the help of soil microorganisms. This would enable the use of nitrogen fertilizer to be greatly reduced in the future. Currently, this substance is essential for plant growth, yet its production and use result in significant greenhouse gas emissions.

Through our Leaps by Bayer participation in Fork & Goode, we are investing in research into animal protein produced from cell cultures to cover the growing demand for protein without stockbreeding.

Further reducing the ecological footprint

By 2030, we aim to reduce the environmental impact of using crop protection products by 30%. Changes in agricultural practices and how crop protection products are applied, as well as the use of digital solutions, help ensure that the required crop protection products are applied as precisely and sparingly as possible to the area requiring treatment. For more information, please see the Focus on: Agriculture chapter.

We promote the sustainable intensification of farming through innovative, more productive crops. This allows farmers to produce more food from the same amount of farmland with a smaller impact on the environment. In this way, we play an important role in reducing deforestation and the conversion of forests into farmland. At the same time, this can reduce the consumption of natural resources and the use of crop protection products and fertilizer. For more information, please see the Focus on: Agriculture chapter.

In 2023, we will continue to work on a new water strategy that will reflect the special challenges of creating value through farming.

Group targets at a glance

We use these indicators to measure the implementation of our Group targets through 2030. They also serve as a basis for determining the variable compensation component of the Board of Management and entitled managerial employees.

Target: Support 100 million smallholder farmers in LMICs

Key figure:
// Number of smallholder farmers in LMICs[1] supported by products, services and partnerships
// Partnership: Mercy Corps AgriFin

Reference year 2019:	Status 2020:	Status 2021:	Status 2022:
42 million	45 million	49 million	52 million

Target: Fulfill the need of 100 million women in LMICs for modern contraception

Key figure:
// Number of women reached in LMICs[1] who have their need for modern contraception fulfilled due to interventions supported by Bayer
// Partnerships: The Challenge Initiative (TCI), UNFPA Egypt

Reference year 2019:	Status 2020:	Status 2021:	Status 2022:
38 million	40 million	41 million	44 million

Target: Support 100 million people in economically or medically underserved communities with self-care

Key figure:
// Number of people in economically or medically underserved communities whose self-care is supported by interventions from Bayer
// Partnership: Vitamin Angels

Reference year 2019:	Status 2020:	Status 2021:	Status 2022:
41 million	43 million	46 million (total 59 million[2])	49 million (total 70 million[2])

Target: Climate neutrality at own sites[3] and achievement of Science Based Targets

Key figure:
// Reduction of Scope 1 and 2[4] greenhouse gas emissions by 42 percent
// Reduction of Scope 3 emissions[5] by 12.3 percent
// Offsetting of remaining Scope 1 and 2 greenhouse gas emissions

Supporting figures:
// 100% electricity procurement from renewable sources

	Reference year 2019:	Status 2022:
Scope 1 and 2[4]:	3.76 million metric tons CO_2e	Scope 1 and 2[4]: 3.03 million metric tons CO_2e
Scope 3[5]:	8.82 million metric tons CO_2e	Scope 3[5]: 8.90 million metric tons CO_2e

A more detailed description of the calculation methodologies (including adjustments) is available on our website www.bayer.com/en/sustainability/targets.
[1] LMICs: low- and middle-income countries
[2] Including our strategic investments in India
[3] In accordance with the Paris Agreement and the objective of limiting global warming to 1.5°C relative to the pre-industrial level
[4] Comprises direct emissions (Scope 1) and indirect emissions (Scope 2, market-based) from Bayer sites whose annual energy consumption exceeds 1.5 terajoules
[5] In accordance with the criteria set out by the Science-Based Targets initiative (SBTi), the following Scope 3 categories of the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard are relevant for Bayer: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution and (3.6) business travel.

Sustainability firmly anchored in governance

As the core element of our corporate strategy, sustainability is integrated into all our major processes. This is ensured not just through binding targets and a broad set of directives but also through fundamental Group management decisions.

Responsibility in the Group

As Bayer's Chief Sustainability Officer, the Chairman of the Board of Management is responsible for implementing the strategic objectives. The Public Affairs, Science, Sustainability & HSE Enabling Function is tasked with the operational design of sustainability.

ESG Committee of the Supervisory Board

At the beginning of 2022, an ESG Committee was established within Bayer's Supervisory Board to deal with ecological and social responsibility matters and sustainable corporate governance. This mainly pertains to the incorporation of sustainability into the business strategy; the establishment of sustainability targets; the nonmandatory ESG reporting and the auditing thereof, where applicable; the opportunities and risks; and the organizational structures and processes in ESG areas, provided the Audit Committee is not already responsible for these matters. Within its scope of responsibility, the ESG Committee advises and oversees management and prepares possible resolutions by the Supervisory Board.

The ESG Committee is composed of the Chairman of the Supervisory Board and seven other Supervisory Board members. It includes an equal number of stockholder and employee representatives. The Supervisory Board elected Ertharin Cousin as Chair of the committee (see the interview on the next page).

The Supervisory Board is also closely involved in the implementation of the sustainability targets independently of the ESG Committee. It addresses this issue several times a year along with the nonfinancial statement of the company as part of the Annual Report.

Integration of ESG into compensation

Qualitative sustainability targets have been factored into the compensation systems for the Board of Management and entitled managerial employees since 2020. Since 2021, the quantitative targets have accounted for 20% of the long-term variable compensation (LTI) of Bayer's Board of Management and LTI-entitled managerial employees. For more information, please see the Compensation Report in the 2022 Annual Report.

Measuring progress

To measure progress in the attainment of our Group targets, we have defined key sustainability data that makes our performance transparent. Our "sustainability cockpit" brings together key data in one place and facilitates decision-making by the management. The data is compiled in the countries and centrally validated. We have thus established a reliable due diligence process for our sustainability targets.

Sustainability Council

We need a large network to realize our objectives. We have therefore intensified our cooperation with social organizations in order to understand different perspectives and jointly achieve a greater impact. In 2020, we convened a Sustainability Council composed of independent international experts. This body brings together expertise and experience in the areas of biodiversity, digitalization, health systems, the food and agriculture industries, fair trade strategies, women's rights, sustainable technologies, sustainable finance and transformation strategies. The nine-member body advises the Board of Management, oversees the implementation of the sustainability strategy and reports transparently each year on its work and recommendations, as well as our progress.

Stakeholder dialogue

Bayer also seeks and maintains dialogue with stakeholders at various levels beyond the Sustainability Council. Of particular importance is contact with those who publicly evaluate Bayer with respect to sustainability aspects, including especially nongovernmental organizations and sustainability-oriented rating agencies. We take all criticism seriously and regard it as an incentive to improve.

ESG ratings

For many years, we have maintained a close dialogue with leading ESG rating agencies to achieve a fair and transparent assessment of our company. At the same time, the comparison with other companies has provided us with important information for the expansion of our own sustainability activities. We have achieved significant progress in recent years through constructive dialogue with what we regard as the most important rating agencies.

Examples include the lifting of the red flag by MSCI ESG Research, an improved position in the Access to Medicine Index (ninth position) and a leading position in the Access to Seeds Index. The rating organization CDP gave Bayer the highest rating – "A" – and thus once again confirmed that we are an internationally leading company in the area of climate protection. In the Sustainalytics ESG Risk Rating, Bayer is among the best 12% in its industry, and above the pharmaceutical industry average.

Interview with Ertharin Cousin

We are actively committed to sustainability

Since the beginning of 2022, Bayer's Supervisory Board has had its own committee dedicated to ESG and sustainability topics. Its chairwoman is Ertharin Cousin.

Mrs. Cousin, what made you decide to join the Supervisory Board of Bayer AG?
I have dedicated my life to the fight against hunger. We won't defeat hunger without the multinational agricultural companies. Corporations must be part of the solution. That's what I want to work toward. Bayer has laid a good foundation with its vision "Health for all, hunger for none."

As Chair of the ESG Committee, how can you work toward greater sustainability?
In the ESG committee, we examine how the United Nations SDGs are integrated into the business strategy, whether the ambitious corporate sustainability goals have been achieved and how these goals are linked to the remuneration of the Board of Management and LTI-entitled managerial employees. In other words, the compensation system is designed in such a way that it provides real incentives to achieve the sustainability targets.

The committee also discusses the ESG-related opportunities and risks for the company. The committee oversees management's operational plans and asks whether the organizational structures and processes are suitable for capturing opportunities and avoiding risks. To this end, we maintain open and trusting contact with the Board of Management.

What do you see as the biggest challenges for Bayer?
The Bayer sustainability vision summarizes and specifically addresses the challenges very well. Specifically, the three 100 million targets and the climate protection objectives. The biggest challenge for Bayer is recognizing that sustainability includes not only achieving our targets but also ensuring the principles of ESG are appropriately infused across the entire organization's operation and practices.

Consider, hunger has worsened again, and at the same time the world's population continues to grow. We need an agricultural sector that is capable of feeding more people sustainably and safely. Bayer has developed new biological and digital tools which can help all farmers everywhere to produce more and better. Therefore, Bayer has initiated good programs that support smallholder farmers worldwide, offering them know-how on new cultivation methods and new digital solutions.

Climate catastrophes such as droughts or floods are increasingly to blame when people go hungry. How can Bayer really help in this context?
The fact is: sustainable cultivation will potentially make all farmers more resilient, through better soil-specific and context-specific agricultural practices. During my years with the World Food Program, 80 percent of the people we served lived in climate-vulnerable places. When properly cultivated, new drought-resistant or drought-tolerant seeds offer these vulnerable farmers the opportunity to withstand the drought. New tools like short-stature corn provide the possibility for corn crops to withstand crop-devastating windstorms. These and other new digital and biological tools could truly deliver elusive resilience to all farmers including those in vulnerable places, creating what I call preemptive humanitarian action by avoiding the need in vulnerable places after every climate disaster for emergency food assistance. Because these farmers would be better able to feed their own families and maintain their livelihoods.

What role does the promotion of gender equality play for you?
I think it's extremely important, especially in low- and middle-income countries (LMICs) where often 40% of all farmers are women. Women's empowerment is central to economic and social development, yet too often, women are being disadvantaged.


// **Ertharin Cousin**
Member of the Supervisory Board and Chair of the ESG Committee of Bayer AG

We engage for gender equity through various programs and support women's empowerment, including through access to modern contraception. According to the United States Agency for International Development (USAID), investing in family planning is the best investment you can make for sustainable development and the achievement of several SDGs – from health to education and climate protection. From my experience, I know that wherever women are engaged in entrepreneurship, new potential and visible positive change occurs for the entire society. That's why we must get policymakers and business leaders to offer women equal opportunities. Women care not only about health, feeding their families and educating their children, but also about the well-being of the entire village community.

It is a fact: Women are the key to solving a lot of sustainability problems. Women compose nearly half of Bayer's Supervisory Board and are raising the questions to ensure the company provides stakeholder value while not shying away from the hard questions about women's empowerment both inside and outside the organization.

Performance Report

// Climate protection targets
in harmony with the Paris Agreement and net zero emissions by 2050

// Proportion of women in top management
33% by 2025 and 50% by 2030

// Sustainability targets
as part of the variable compensation of the Board of Management

1. The Company

The Bayer Group comprises 354 consolidated companies in 84 countries throughout the world and employs 101,369 people. Its headquarters is in Leverkusen, Germany. Sales at the Bayer Group in 2022 amounted to €50.7 billion.

1.1 Corporate Profile

We are a life science company and a global leader in healthcare 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. In line with our vision "Health for all, hunger for none," we aim to put an end to hunger and help everyone lead a healthy life, while at the same time protecting ecosystems. That is what we aspire to achieve, guided by our purpose "Science for a better life."

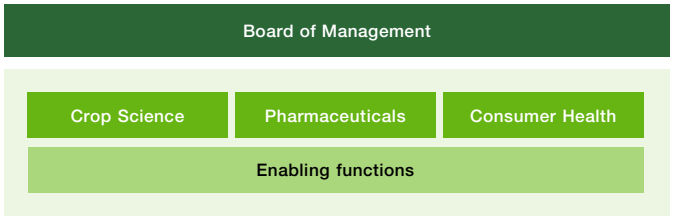
We aim to continuously enhance our company's earning power and create value for customers, patients, shareholders, employees and society. Growth and sustainability are integral parts of our strategy, while our corporate values of leadership, integrity, flexibility and efficiency, or LIFE for short, lay the foundation for the way we operate. These values shape our culture and ensure a common identity throughout the Bayer Group. Based on this, our Bayer Societal Engagement (BASE) principles provide clear orientation for communicating with social interest groups.

1.2 Corporate Structure

Corporate structure as of December 31, 2022

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.

Structure of the Bayer Group 2022



Our divisions are active in the following areas:

Crop Science

Crop Science is the world's leading agriculture enterprise, with businesses in crop protection, seeds and traits, and digital farming. 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 respond quickly to the needs of local markets. The breeding, propagation, production and/or processing of seeds, including seed dressing, take 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 healthcare, and on specialty therapeutics focused on the areas of oncology, hematology, ophthalmology and, in the medium term, cell and gene therapy. We have established a strategic unit for cell and gene therapy spanning the entire value creation chain – from research and development to marketing and patients. The division also comprises the radiology business, which markets diagnostic imaging equipment and digital solutions 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 of our Pharmaceuticals Division 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 pain, cardiovascular risk prevention, dermatology, digestive health, allergy, and cough & cold. The products are generally sold by pharmacies and pharmacy chains, supermarkets, online retailers and other large and small retailers.

Enabling functions

The enabling functions, such as Public Affairs, Science, Sustainability & HSE; Group Finance; Information Technology; and Human Resources, serve as Group-wide competence centers and bundle business support processes and services for the divisions. Our Leaps by Bayer unit, which invests in disruptive innovations, also forms part of the enabling functions.

For more information on the divisions' products and activities and the distribution of sales across the divisions and our global sites, please see our 2022 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 therefore 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 calculation shows the direct financial value we generate for our stakeholders with our commercial operations. We define value added as the company's total operating performance in the previous fiscal year (net sales + other operating income + financial income + net income/loss from investments accounted for using the equity method) less the costs of procured and consumed goods and services, depreciation, amortization, impairment losses and impairment loss reversals.

Our total operating performance amounted to €54.1 billion in 2022. The cost of materials and other expenses totaled €28.6 billion. We recorded depreciation, amortization, impairment losses and impairment loss reversals of €6.5 billion. We posted a value added of €19 billion in 2022.

In 2022, the value added we generated enabled us to make the following financial contributions to our stakeholders: employees €12.6 billion, taxes €2.8 billion, providers of equity and debt €1.4 billion and stockholders €2.4 billion (Bayer AG dividend proposal for 2022).

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 integration of sustainability aspects into 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. The Board of Management manages the company based on a strategy that is geared toward its long-term success. The Supervisory Board oversees and monitors the Board of Management. Since 2022, the Supervisory Board has had its own ESG Committee, comprising the Chairman of the Supervisory Board and seven further members of the Supervisory Board. This focuses on Bayer's sustainable governance and business activities in the areas of environmental protection, social affairs and corporate governance (ESG) within the scope of responsibility of the Supervisory Board.

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. Compliance with responsible practices at every stage of the value chain is crucial in corporate governance. The main guidelines are summarized primarily in our Group regulations on compliance, human rights, and fairness and respect at work, as well as in our Supplier Code of Conduct and the Bayer Societal Engagement (BASE) principles. In addition, Bayer has established compliance management and risk management systems.

In our 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 also on compensation in the Compensation Report along with the objectives to be defined and the underlying concepts.

2.2 Behavioral Principles (BASE)

As a leading healthcare and agriculture company, we bear a great responsibility. To ensure that we meet current societal expectations, we introduced the Bayer Societal Engagement (BASE) principles in 2019. These principles are set out in a publicly available Board of Management-approved Group regulation, which establishes 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 healthcare 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," our vision "Health for all, hunger for none" and the Bayer LIFE values of 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 stockholders

2.3 Transparency

As our activities concern the sensitive areas of health and nutrition, they lead to inquiries and the desire to understand even better what we do. Against this background, we endeavor to strengthen trust further – 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 rated.

We supply information about our transparency efforts in the following areas, for instance:

// We make detailed disclosures on, for example, material and project expenses and headcount of the essential political liaison offices in the transparency registers of the German Parliament, the European institutions and the US Congress, for instance. We also report data for countries in which there is no legal disclosure obligation. For more information, please see Chapter 2.6 Compliance and our website.
// As regards tax transparency, we maintain a discourse with interested stakeholders – such as within the transparency initiative of the VBDO.
// Through our website, we provide public access to safety-relevant studies that regulatory authorities use to approve crop protection product registrations. We also publish the safety results for our genetically modified crops on our website.
// Our OpenLabs provide insight into the scientific work in our laboratories and field trial facilities.
// We publish information on planned and ongoing clinical trials on the publicly funded https://www.clinicaltrials.gov/ website. Trials sponsored by Bayer are published on our Clinical Trials Explorer website.
// We publish summaries of clinical trial results on our Clinical Trials Explorer website in clearly understandable language.
// For many years, we have shared patient-based clinical trial data with qualified researchers. Since 2022, this has been possible via Vivli, the website of the Center for Global Clinical Research Data. For more information, please see Chapter 3.8 Pharmaceuticals and Consumer Health.
// In relations between the pharmaceutical industry and physicians, other healing professions and healthcare organizations, Bayer ensures compliance with the EFPIA (European Federation of Pharmaceutical Industries and Associations) Disclosure Code, and, for example, the US Physician Payments Sunshine Act.
// To generate more transparency around our scientific collaborations, we launched the Bayer Science Collaboration Explorer in Germany in 2021 and expanded it to the United States in 2022. In this publicly accessible database, we disclose information on new contract-based scientific collaborations with universities, public research institutions and individuals to increase public confidence in our innovations, scientific processes and research. We plan to expand the Bayer Science Collaboration Explorer to additional countries in 2023.

Publications

We strive for maximum transparency in our publications. As stated in our Group Regulation on Bayer Societal Engagement (BASE) Principles, all Bayer employees are obliged to properly reflect and disclose our participation in any scientific work and publications of third parties and the participation of third parties in the development of our publications. Our Group Regulation on Scientific Publications prohibits ghostwriting and guest authorship. All authors must fully disclose all financial relationships, including material support for research, and other potential conflicts of interest related to the publication.

In addition to our sustainability reporting, we published further reports in 2022 that describe topics in detail and are available to interested stakeholders on our website. These include:

// Industry Association Climate Report
// Neonicotinoids
// Genetically Modified Crops (GMOs)
// UN Global Compact Adherence
// Leaps by Bayer

For more information on our transparency initiative, please see our website.

2.4 Bioethics

Emerging life science technologies are advancing rapidly and deliver the opportunity for significant positive impact on society, people and the environment. As a leading healthcare and nutrition company, Bayer can contribute more to this development than almost any other enterprise. The speed at which science is advancing and the possibilities these innovations create, however, also raise complex ethical issues for us as a research company.

With Bayer's Group Regulation on the topic of bioethics, we are currently developing a company-wide, bindingly valid ethical framework for decisions relevant to innovations in life-science research and development.

The focus is on medical issues, bioengineering and artificial intelligence – in connection with discovery, development and manufacture, and use of treatments and therapies to advance human health as well as agricultural products and practices.

Bioethics Council

As a core element of our approach to bioethics, Bayer has established the Bayer Bioethics Council, an external advisory body consisting of 10 independent experts. By bringing in an ethical and societal perspective, it helps Bayer identify relevant bioethical questions and consults on how to answer them. The Council's purpose is to support Bayer in further developing bioethical guidelines for its decision-making. The Bioethics Council:

// Advises Bayer on how to ensure bioethics is an integral part of our R&D work
// Examines our directives from a bioethics perspective and advises us on shifts in strategy
// Evaluates our progress in implementing bioethics strategies and guidelines
// Advises on the main drivers behind current bioethics topics (i.e. technological advances and social change) relevant to our work

Its members, who convene twice a year, come from five different continents. Together, they offer expertise in ethics relating to a variety of academic disciplines in the fields of agriculture and medicine, ranging from expertise in genetic engineering and artificial intelligence to philosophy and sociology. For more information, please see our website.

2.5 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 alignment toward increased sustainability. These are integrated into the Bayer Group's planning and steering process as management and key performance indicators.

Our Group-wide sustainability targets are integrated into the compensation system for the Board of Management. In so doing, we aim to continuously increase value for stockholders and other stakeholders and ensure the continuity of our company for the long term. Quantitative targets derived from the sustainability strategy are integrated into the long-term variable compensation (LTI) of the Board of Management and LTI-entitled managerial employees with a weighting of 20%. For more information, please see the Compensation Report (Chapter C 2) in the 2022 Annual Report. For details of the financial indicators we employ to plan, steer and monitor the development of our business, please see Chapter 1.2.3 Management Systems of the 2022 Annual Report.

Integrated management system

Bayer maintains an integrated management system (IMS) based on the overarching Plan-Do-Check-Act (PDCA) principle.

The IMS is the overarching framework for all management systems at Bayer, ensuring compliance with laws and internal and external requirements, while also ensuring efficient ways of working. Thus, it applies to all established management systems pertaining to quality, health, safety and environmental protection (HSE), as well as compliance.

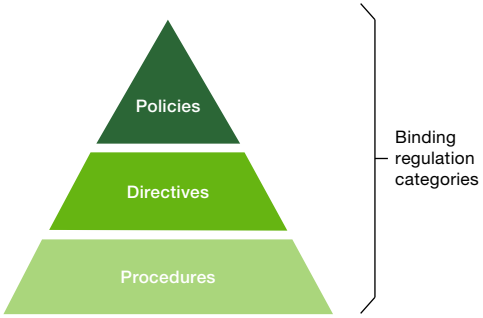
Group-wide requirements for the management of internal regulations and processes, regular effectiveness evaluation and continuous improvement are core elements of the IMS, which plays a key role in safeguarding our license to operate. All IMS requirements are specified in a Group regulation issued by the Board of Management. Additional information on the IMS is provided through internal communication channels.

At the global level, each division and enabling function – such as Corporate Quality, Human Resources, Compliance, Risk Management, Procurement, or Public Affairs, Science, Sustainability & HSE – is responsible for its own management system in accordance with business requirements, international standards and the applicable legal and regulatory requirements.

As part of the IMS, Bayer has established a clearly defined structure of binding internal regulations for the Group that describe fundamental principles and framework conditions, standards of conduct, proceedings and methods, as well as the related roles and responsibilities. The binding requirements contained therein incorporate both internal and corresponding external international standards, as well as legal and regulatory requirements.

Group regulations serve as key management tools that are classified in three categories. This structure also applies to country-specific regulations.

Group Regulations



// At the top level of the pyramid are policies with global, interdisciplinary content that are relevant to all employees and approved by the Board of Management.
// Directives apply to specific groups.
// Procedures occupy the third level and comprise all specific, detailed process instructions.

To ensure effective regulation management, global provisions are in place for the creation, approval, publication and distribution, implementation and regular review of internal regulations. Global and local IT applications support the management of regulations as well as general access.

The regulations approved by the Board of Management are managed centrally and follow a uniform, global process that includes notifying employees about changes and new aspects via a newsletter and the intranet. Bayer has also actively established a system that transparently describes the enactment and implementation status of these regulations. A selection of Group regulations representing the respective areas is presented in more detail in chapters 2.6 Compliance, 6. Employees and 8. Environmental Protection and Safety.

2.6 Compliance

Bayer manages its businesses responsibly and in compliance with the statutory requirements and regulations of the countries in which it operates. What we mean by compliance is the legally impeccable behavior of our employees in their daily work. After all, the way each employee conducts the company's business can affect our company's public image. We do not tolerate any violation of applicable laws, codes of conduct or internal regulations. Compliance is essential for our long-term commercial success.

Bayer compliance management

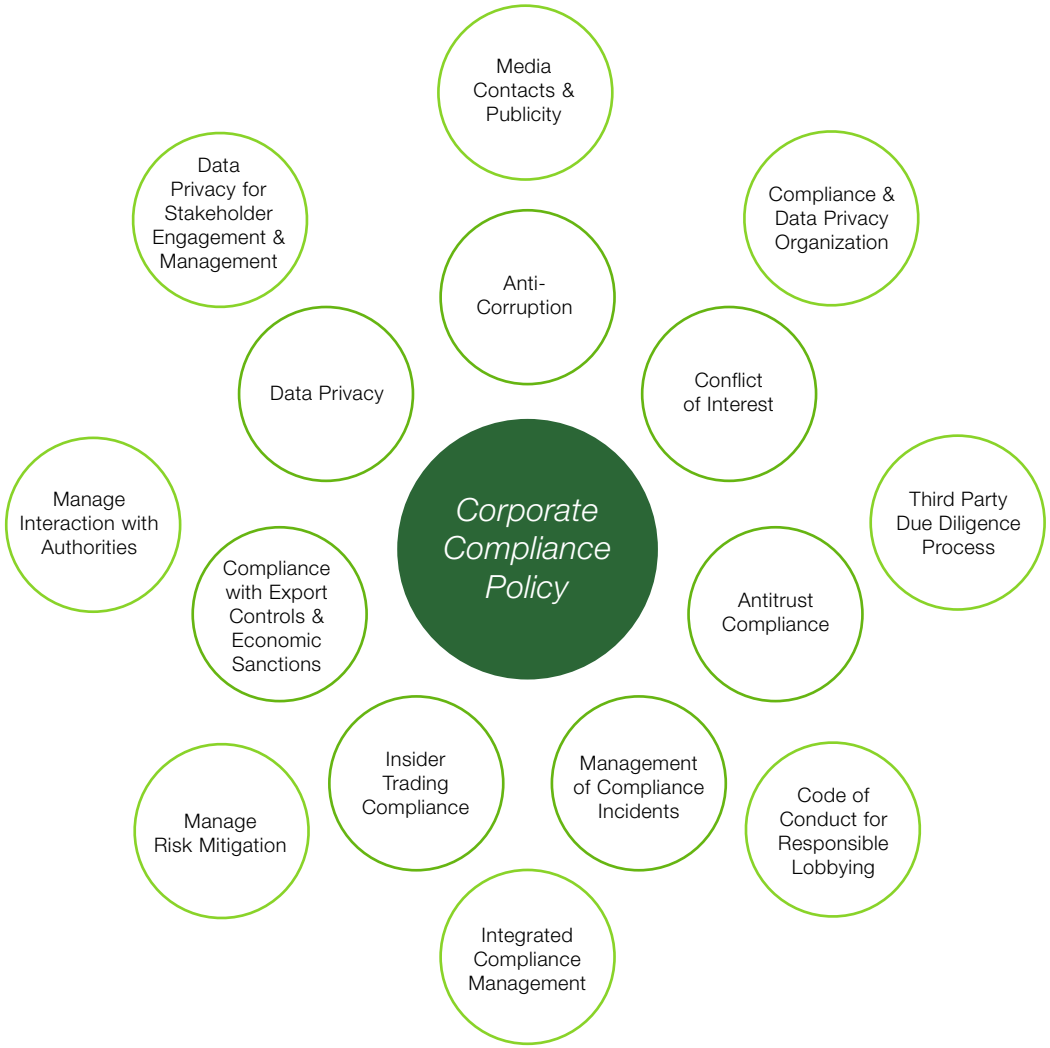
The Board of Management is unreservedly committed to compliance, and Bayer will forgo any business transaction that would violate any of the 10 principles in our Corporate Compliance Policy approved by the Board of Management and observed throughout the Bayer Group. These principles are as follows:

// 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 all 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 immediately report any violation of the Corporate Compliance Policy. Infringements are sanctioned. This applies in particular to managerial employees, who, as role models, may, for example, lose their entitlement to variable compensation components and be subject to further disciplinary measures if violations that they could have prevented have occurred in their sphere of responsibility. Compliant and lawful conduct is also factored into the performance evaluations of all managerial employees.

The principles are additionally described in more detail in separate Group regulations that were approved by the Board of Management. Please see the graphic "Binding Group Regulations" for more details.

Binding Group Regulations



Details of compliance-related topics are specified in further binding Group regulations.

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 Chief Financial Officer (CFO) and to the Audit Committee of the Supervisory Board. The CFO is responsible for the compliance organization, while the Audit Committee of the Supervisory Board oversees the effectiveness and further development of compliance within the Group. Within the compliance organization, specialized compliance managers are responsible for establishing business-, industry- and country-specific standards.

Potential compliance risks (such as corruption) are identified together with the operational units to ensure the systematic and preventive detection and assessment of risks. Potential risks are then entered into global databases 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 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 respective relevant stakeholders (e.g. manage-

ment, employees, distributors or service providers) participate in audits depending on the type of audit. The larger business areas and units are audited at shorter intervals, and the smaller units at longer intervals. A total of 89 audit reports were compiled in 2022, of which nine concerned preventive compliance system audits or incident-related investigations.

Handling of suspected and actual compliance violations

All Bayer Group employees are obligated to report suspected compliance violations. The principles for dealing with compliance incidents are described in the Group Regulation on Management of Compliance Incidents, which establishes the respective roles and responsibilities and explains the procedure for handling suspected and actual compliance violations. This Group regulation was signed by our CFO.

Suspected compliance violations can be reported – anonymously if desired and if permitted by respective national law – to a worldwide compliance hotline operated by an independent service provider. Suspected violations can be reported by anyone either via the internet or through a phone call made in the caller's preferred language and answered by independent specialists. The hotline is also accessible to the general public. In 2022, the compliance organization received a total of 372 compliance reports in this way (including 254 anonymous reports), with 19 reports coming from Germany and 353 from other countries. Overall, 28% of suspected violations reported to the compliance hotline were not compliance-relevant, while 72% were processed by way of a compliance investigation.

In addition, an internal mailbox – the Speak-Up Inbox – was introduced in 2020 for the submission of suspected compliance violations. Alternatively, suspected violations may also be reported to the respective local Compliance functions, Internal Audit, Human Resources or directly to a supervisor. Since 2021, it has also been possible to report suspected compliance violations by logging a so-called incident request on a newly implemented platform. Furthermore, suspected compliance violations are recorded and processed within the scope of monitoring activities conducted by the Compliance function. A total of 1,243 suspected compliance violations were recorded in 2022.

An actual compliance violation was confirmed in 53% of the total cases. Compliance violations include all possible types of infringements of internal and external requirements and 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 dealt with under the rules set forth in Bayer's Group Regulation on 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.

The company ensures that no employees are disadvantaged or exposed to retaliatory measures because they reported a suspected compliance violation in good faith. If it is determined that an employee is responsible for disadvantaging or retaliating against another employee due to the reporting in good faith of a suspected compliance violation, appropriate steps are taken against the employee responsible according to the aforementioned catalogue of measures.

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 are available to answer employees' questions about lawful behavior.

Each year, the company publishes a new, obligatory training course for all Bayer employees. In 2022, around 96.5% (41,633) of Bayer's managerial employees worldwide completed at least one compliance training program. We launched a new web-based training program in 93 countries dealing with the topic conflicts of interest, which is also addressed in our Corporate Compliance Policy. The training program is available in 20 languages and had been completed by around 85.1% (88,710) of our employees as of December 31, 2022.

Our annual, company-wide “Speak Up” campaign to foster an open reporting culture communicates the various options for reporting compliance violations. This is designed to create an environment in which compliance violations can be addressed without reservations.

Data privacy

Data is very important in today’s world – it is often 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, suppliers or customers. 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 Group Regulation on Data Privacy approved by the Board of Management 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 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 through 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 adhered to. These measures are being rolled out as an obligatory training course for all new employees. The content conveyed includes the fundamentals of data privacy, the principles and life cycle for the processing of personal data, the affected individuals’ rights and conduct in the event of a data privacy violation. Harmonized documentation of the data privacy activities (processing registry, assessment of data privacy consequences, incidents, inquiries from affected individuals and interactions with authorities) enables an understanding of the degree of data privacy maturity and the monitoring of quality by management and the (local) legal departments.

Marketing compliance and the validity of recognized standards

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 Group regulation in this context is our Group Regulation on Anti-Corruption, which is supplemented by the rules of conduct for responsible marketing. Furthermore, we are committed to ethical advertising and communication for all our products and services. Sales employees may, for example, lose their entitlement to variable compensation if violations that they could have prevented have occurred in their sphere of responsibility. Like any third party, intermediaries and contractors must undergo a separate audit prior to signing a contract that involves criteria related to anti-corruption and antitrust requirements.

Directives and regulations are also in place at Bayer to prevent price fixing and ensure data privacy. Where several regulations are applicable, we fundamentally comply with the most stringent standards. The respective Group regulations and training programs are implemented in the divisions and enabling functions. Thereby, general global training measures dealing, for example, with anti-corruption aspects are supplemented with training courses pertaining to local codes. The respective countries or, in some cases, the Corporate Law Department, are primarily responsible for implementing these training measures. Employees with customer contact and/or business responsibility undergo especially intensive training.

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 of Bayer’s human pharmaceutical products in their area of application. In addition, Bayer observes the codes of the European Federation of Pharmaceutical Industries and Associations (EFPIA) in its interaction with healthcare professionals and patient organizations. Regarding the advertising of human pharmaceutical products, Bayer complies with the regulations set out in the IFPMA Code of Practice as the minimum global standard, along with those set forth in regional and national codes.

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. Pharmaceuticals observes the applicable transparency rules (e.g. the Physician Payments Sunshine Act in the United States) and participates in voluntary programs such as the EFPIA Disclosure Code. In accordance with the EFPIA Disclosure Code, Bayer discloses benefits in kind to medical specialists and health organizations in connection with the development and marketing of prescription (and, where legally required, nonprescription) medicines. Bayer is convinced that better results can be achieved for patients through cooperation with, and the continuous training of, medical specialists. Total spending in Europe subject to disclosure according to the EFPIA Disclosure Code and numerous local codes and/or legislation amounted to €187.9 million in 2021; these expenditures are published on a global disclosure site of Bayer (https://www.bayer.com/tov-hcp) and/or reported to the respective local authorities.

Internal Audit at Bayer AG regularly conducts audits to verify conformity with internal compliance rules and external regulations in the area of marketing. The audit program of Internal Audit is focused on compliance with local pharmaceutical codes and with antitrust and anti-corruption rules by the marketing departments of the divisions and country organizations. Coverage of this issue is achieved by way of an audit cycle that regularly assesses the country organizations, as well as audits of management systems (compliance program audits). The audit plan is discussed with the Board of Management and the Supervisory Board and approved by both bodies.

In line with the principles of sustainable development and the responsible use of crop protection products and seeds, Crop Science follows the guidelines of the Group Regulation on Product Stewardship Commitment, Principles and Key Requirements. This regulation, which also fulfills our rules of conduct for responsible marketing, 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 privacy 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, including in particular those in the healthcare 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 healthcare professionals.

Lobbying

Bayer's commitment to ensuring transparent lobbying forms part of our Bayer Societal Engagement Principles (BASE) principles. In line with this, our 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 representatives of political institutions. In close cooperation with various stakeholder groups, we are also currently producing a detailed report on our political lobbying work that is scheduled for publication in 2023.

As set out in our Code of Conduct for Responsible Lobbying, Bayer as a company does not make any donations to political parties, politicians or candidates for political office. An exception to this rule existed in the United States until the end of 2021. Since 2022, a new Group regulation has applied, according to which the company will not make any political donations in any country in the world.

Under US law, however, local company employees can support individual candidates for parliamentary office at federal level by making private donations through political action committees, or PACs. These voluntary donations are made only by employees, not the company. PACs are separate, segregated funds governed by employees and further regulated by the US Federal Election Commission (FEC) and some state governments.

Decisions on how these contributions are allocated are made by an independent committee composed of employees. At BAYERPAC, the name of the corresponding committee at Bayer, new allocation criteria were introduced in 2020 to reflect societal challenges, among other factors. For example, candidates' positions on issues such as climate change and the protection of biodiversity play an important role here. BAYERPAC also supports candidates from both parties. These donations are subject to stringent conditions and mandatory transparency measures. The BAYERPAC contributions are regularly reported to the US Federal Election Commission (FEC). Full details can be viewed on the FEC website. BAYERPAC does not support presidential candidates. Bayer employees donated a total of US$384,600 to political candidates at all levels through BAYERPAC in 2022.

In other countries, industry associations of which we are a member (such as the German Chemical Industry Association) sometimes make donations on their own responsibility in observation of the respective statutory regulations, and particularly laws concerning political parties.

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 according to the respective provisions of the lobby and transparency register, such as those of the German Parliament (Bundestag), European institutions and the US Congress. We even go beyond the statutory requirements by also publishing data for countries where – as yet – there is no legal disclosure requirement. In 2022, the costs incurred at the liaison offices totaled approximately €4.0 million in Berlin, Germany; €2.5 million in Brussels, Belgium; €20.3 million in Washington, D.C., United States; €1.5 million in Brasília, Brazil; and €2.5 million in Beijing, China.

2.7 Tax

Bayer's Approach to Tax sets out our management approach and tax strategy. The most important principles are:

// We do not tolerate any rule violations or tax fraud.
// We pay taxes in line with value creation in each respective country.
// We work cooperatively with the tax authorities.
// We place great importance on transparency and verifiable compliance and reporting standards.
// Our tax considerations are consistent with business activities, processes and requirements.

Bayer observes the principle that we pay the taxes we owe in every country based on the statutory requirements put in place by the respective governments. The payment of taxes in an appropriate amount is a core element of our corporate social responsibility. In the respective countries in which we do business, the taxes paid by Bayer represent an important source of revenue for funding social and economic activities. We comply with the relevant tax regulations of the countries in question, as well as the requirements that must be observed in the payment, documentation, disclosure and auditing of our taxes.

Bayer's tax concept is publicly available on our website and transparently describes our approach to taxation. The objectives and principles of tax management at Bayer are established in the Group Regulation on Taxes. This applies to the entire Group, and updates are reviewed and approved by the head of Group Finance and the Group CFO.

Responsibility for all taxes and tax effects worldwide in connection with Bayer's activities lies with the global head of Taxes, who reports to the head of Group Finance. Both executives regularly inform the Bayer CFO about all important tax matters. The head of Group Finance and/or the global head of Taxes also regularly report to the Board of Management and the Audit Committee of the Supervisory Board.

Bayer observes the applicable regulations and the associated disclosure obligations. These efforts may include the involvement of external experts or consultation with the respective tax authorities, for example. These principles additionally apply whenever service providers are commissioned. As the continuous further development of tax legislation is also in our interests, we participate in the political discourse while observing the stipulations of the Code of Conduct for Responsible Lobbying and our BASE principles (please see Chapter 2.2 Behavioral Principles (BASE)).

Tax risks are accounted for in the Bayer Group's global risk management system (please see also Chapter 2.8 Risk Management), responsibility for which lies with the Board of Management of Bayer AG. As an element of financial reporting, it is also subject to regular review by the external auditor. In this connection, and in observation of the legal requirements, Bayer separates corporate auditing from tax consulting so as to rule out conflicts of interest in advance.

2.8 Risk Management

As an international life science enterprise, we are exposed to a wide range of internal and external developments and events that could significantly impact the achievement of our financial and nonfinancial targets. Opportunity and risk management is therefore an integral part of corporate management at Bayer. We regard opportunities as positive deviations, and risks as negative deviations, from projected or target values for potential future developments. In addition, our risk definition is supplemented by potential negative impacts that our business operations could have, for example, on environmental or social matters.

We have 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. Our risk management system is aligned to internationally recognized standards and principles such as the ISO 31000 standard of the International Organization for Standardization, and is defined and implemented with the help of binding Group regulations.

The Board of Management of Bayer AG holds overall responsibility for an effective risk management system. The Audit Committee of the Supervisory Board reviews the appropriateness and effectiveness of the risk management system at least once a year, and also reports correspondingly to the full Supervisory Board.

The Bayer Assurance Committee, which is chaired by the Chief Financial Officer, is a committee of the Board of Management. A second Board of Management member participates on a rotating basis. Besides ensuring that appropriate action is taken to control any substantial risks, the Bayer Assurance Committee regularly discusses and reviews the risk portfolio and the status of the risk control measures.

Responsibility for the identification, assessment, treatment and reporting of risks lies with the operational business units in the divisions and enabling functions. The risk managers are responsible for identifying risks.

To help ensure we identify risks as comprehensively as possible, we maintain a risk universe that reflects the company's potential risk categories. The Bayer Risk Portfolio, which is regularly updated, also expressly accounts for risks of a nonfinancial nature that are linked to our business activity or to our business relationships, products and services. Included are risks pursuant to the Corporate Social Responsibility (CSR) Directive Implementation Act that relate to environmental, employee and social issues, human rights, corruption and bribery (compliance).

Where possible, the identified risks are evaluated with regard to their potential impact and likelihood of occurrence. Risks are assessed on a net basis, taking into account the risk control measures in place to mitigate the potential impact and likelihood of occurrence. Examples of such risk control measures can also be found in this Sustainability Report in the descriptions of how various sustainability issues are managed. The extent of the impact is rated in quantitative and/or qualitative terms. The quantitative assessment reflects a potentially negative effect on cash flows. A qualitative assessment of the impact is based on criteria such as the effect on our strategy or reputation, the potential loss of stakeholder confidence, and potential incomplete compliance with sustainability principles (e.g. in the area of safety, environmental protection or human rights). The higher rating – qualitative or quantitative – determines the overall assessment.

For detailed information on the basic elements of the risk management system, including the risk management process, and details on our risk status, please see Chapter 3.2 Opportunity and Risk Report of the 2022 Annual Report.

Material legal risks are described in the 2022 Annual Report under Note [30] to B Consolidated Financial Statements (Legal Risks).

2.9 Sustainability Management

Sustainability is one of our strategic focuses, manifesting itself in the consistent alignment of our business activities to positive contributions for people and the environment. Clearly defined roles and responsibilities ensure effective sustainability management throughout the organization. The top level of responsibility is held by the Chairman of the Board of Management in his role as Chief Sustainability Officer (CSO) together with the entire Board of Management. An external Sustainability Council provides the Board of Management with constructive criticism in all sustainability matters. In October 2022, the Board of Management introduced the position of Human Rights Officer, who will oversee risk management as regards human rights in the future and report directly to the Board of Management about their work.

At the beginning of 2022, the Supervisory Board established a separate committee for the areas of environmental protection, social affairs and corporate governance (ESG Committee). The ESG Committee oversees and advises the Bayer management on integrating sustainability into the business strategy and corporate governance, as well as on sustainability-related opportunities and risks, including possible consequences for the company's reputation.

The Public Affairs, Science, Sustainability & HSE Enabling Function helps the CSO and the Board of Management to identify risks and opportunities, develop strategies and define targets and guidelines for sustainability management, and also ensures the governance of all sustainability issues. Sustainability management is embedded in the existing management and governance structures as well as the core processes of the organization.

Operational implementation takes place in the divisions and along the value chain. Each of our divisions has an established sustainability organization, with sustainability aspects also being integrated into the processes of enabling functions such as Internal Audit & Risk Management, Human Resources, Procurement, and Mergers, Acquisitions & Licensing.

Our Group Regulation on Sustainability was updated in 2022. This defines sustainability's importance at Bayer and according to which standards and with which roles and responsibilities sustainability is managed. The Group regulation was approved by the Chairman of the Board of Management, who is also the Chief Sustainability Officer (CSO), and is valid throughout the Group.

Our new Sustainability Decision Committee, composed of members of the management from the divisions and enabling functions, came together for the first time in 2022 to coordinate sustainability measures Group-wide. These measures pertain to areas such as human rights, development of our water strategy, reduction in the environmental impact of product packaging and investors' expectations as regards sustainability. Wherever required, the CSO and Board of Management are integrated into the decision-making process. Measures under the responsibility of the Supervisory Board also need to be approved by this body.

The attainment of sustainability targets is also integrated as an additional parameter into the long-term variable compensation (LTI) of the LTI-entitled managerial employees, similar to the compensation of the Board of Management.

Our commitment to the UN Global Compact and the Responsible Care™ initiative of the chemical industry and our involvement in the World Business Council for Sustainable Development (WBCSD) underline our mission as a company that acts sustainably. In 2022, Bayer also published an additional report on compliance with the principles of the UN Global Compact.

Sustainability Council

A major element of our intensified sustainability efforts is the independent Sustainability Council established in 2020. This currently comprises eight internationally recognized experts from the areas of human rights, healthcare, nutrition, agriculture and the environment, representing a broad range of views, differing geographical origins and different genders. The Sustainability Council advises the Board of Management on the further development of its business strategy regarding sustainability as well as further sustainability-related issues. The Sustainability Council also evaluates performance and planned activities, and counsels Bayer on how research and development can contribute to sustainability. The contributions of the Sustainability Council inform our strategic planning. The Sustainability Council convenes twice a year for deliberations and reports annually on the progress of its work. The Chairman and other members of the Board of Management also attend these meetings. The Sustainability Council also handles specific topics together with Bayer's experts at additional meetings.

Employee involvement

We actively involve our employees in the achievement of our sustainability targets and aim to enhance their awareness about this issue. "Act sustainably and be a role model" is therefore also anchored in our LIFE company values.

The Advancing Sustainability@Bayer learning platform offers a wealth of information on sustainability issues for employees to promote knowledge and open dialogue on various sustainability-related topics.

To reach our employees at all levels and in all areas of the company, we have built a global network of over 170 Sustainability Champions from various countries, divisions and enabling functions. Our Sustainability Champions act as role models and multipliers for our sustainability initiatives: for example, they conduct local workshops or initiate campaigns and discussion rounds to enable the exchange of best practices.

As our managerial employees also act as multipliers to promote and embrace sustainable behavior on an everyday basis, sustainability issues are integrated into the global management development programs offered through the Bayer Leadership Academy.

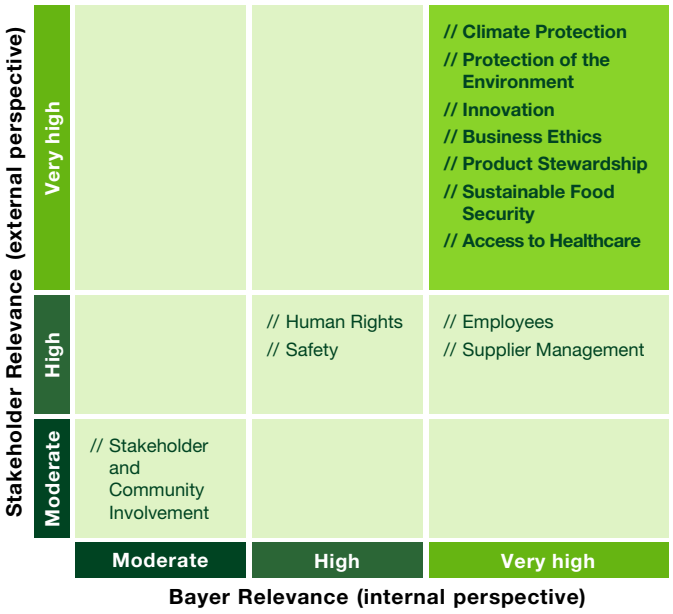
Sustainability is also addressed in our employee survey, which was conducted twice in 2022.

Materiality analysis

We determine the expectations and requirements of the various stakeholders using a materiality analysis that surveys managerial staff from various areas of the company worldwide and representatives of important stakeholder groups. The results thereof reveal relevant issues and the latest developments, along with sustainability-related opportunities and risks, and help us to assess these accordingly. The survey of external stakeholders also reflects how our sustainability performance is perceived, which enables us to identify weaknesses and areas for improvement.

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.

Results of the Materiality Analysis



The following stakeholder groups were included in the survey:

Surveyed Stakeholder Groups

Residents near Bayer sites	Politicians and public authorities
Banks	Rating agencies
Bayer management	Nongovernmental organizations (NGOs)
Consultants/corporate auditors	Associations
Investors	Representatives/distribution partners
Customers	Competitors
Suppliers	Scientists/universities/schools
Media	Other

The materiality analysis serves to meet external requirements in accordance with the CSR Directive Implementation Act (CSR-RUG), the German Commercial Code (Sections 289b to e) and the GRI Standards.

In accordance with the GRI Standards, the following two dimensions were among the factors applied for the identification and prioritization of key issues:

// Impact of Bayer's business operations on economic, social or environmental matters
// Impact on decisions by Bayer stakeholders

The results of the internal and external viewpoint survey were combined in a materiality matrix.

The areas of activity in the current materiality analysis are accounted for in our sustainability strategy and determine the focal points of our sustainability management approach and our nonfinancial Group targets. For detailed information, please see the 2022 Annual Report.

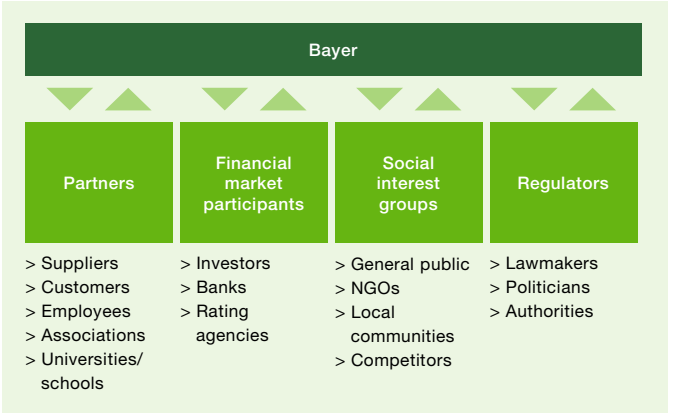
The further validity of the materiality analysis was reviewed internally in 2022 and confirmed. Due to changing legal requirements, for example as a result of the adoption of the Corporate Sustainability Reporting Directive (CSRD) by the European Union, we are working on a new materiality analysis, the purpose of which is to satisfy the requirements of the European Sustainability Reporting Standards (ESRS), which are currently undergoing the political development process and are designed to more specifically define the requirements of the CSRD.

2.10 Stakeholder Dialogue

As a company, Bayer is a part of society and 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.

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

Stakeholder Groups



Stakeholder 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. Our BASE principles (please see also Chapter 2.2 Behavioral Principles (BASE)) serve as the foundation for all dialogue.

In strategic decision-making processes, regarding investment projects and product launches for example, Bayer proactively approaches key social and political players right from the start of a new project. Such 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 dialogues at the 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 insight into our engagement with our most important stakeholder groups.

In 2022, we engaged in intensive discussions with stakeholder groups (see graphic) that focused on topics such as sustainable agriculture, healthcare, nutrition, climate change, biodiversity and water, taxes, political lobbying as well as poverty alleviation and family planning.

Examples include our contributions to the World Economic Forum (WEF) Annual Meeting in Davos, Switzerland (Zero Hunger Pledge); our participation in the Economist Sustainability Week and the Climate Week in New York, United States; as well as our event series Fields of Opportunities: the Breakthrough Innovation Forum; the Field Technology Showcase for investors at our Agronomy Center in Jerseyville, Illinois, United States; and our sustainability event at a Bayer ForwardFarm in Germany.

CEMUNE

In 2022, Bayer became a founding member of CEMUNE's Global Circle, which advocates in particular – including in an advisory role vis-à-vis stakeholders – that multilateral negotiations such as those held at climate summits take place according to state-of-the-art negotiating standards.

COP27 and COP15

Bayer attended both the UN Climate Conference COP27 in Sharm el-Sheikh, Egypt, and the UN Biodiversity Conference COP15 in Montreal, Canada, to drive partnerships and advance the sustainable development goals. On the respective agendas were important issues such as agriculture, water, nutrition and biodiversity. Bayer announced its support and is contributing, for example, in the following ways:

// We support inclusive and sustainable agriculture.
// We promote existing partnerships such as the LEAF Coalition – which has announced the mobilization of US$1.5 billion since COP26 – for investments in nature and the reforestation of tropical rain forests.
// We have entered into new partnerships such as the International Drought Resilience Alliance sponsored by the United Nations Convention to Combat Desertification (UNCCD).
// We also consider supplementary partnerships, for example to advance the introduction of direct seeded rice with the goal of improving farmers' livelihoods and reducing greenhouse gas emissions.

We also discussed geopolitical challenges at the Munich Security Conference, food security with the Food and Agriculture Organization of the United Nations (FAO) and innovation at the World Economic Forum Annual Meeting, in addition to leading stakeholder dialogues on sustainability during the UN General Assembly.

Through a multi-stakeholder dialogue and the coalition Bayer formed in 2021 with organizations such as the World Bank and the Global Economic Forum, we raised awareness about the challenges faced by smallholder farmers. For example, we conveyed to governmental organizations that smallholder farmers need access to technology and innovations to improve their living conditions.

We have led various live discussions on socially relevant issues on LinkedIn – including in areas where Bayer is viewed critically. These discussions focused on themes such as climate change, biodiversity, water, inclusion and diversity (I&D) and sustainable economic activity.

Bayer is committed to being a reliable partner that is aware of its societal responsibility toward the communities adjacent to our sites. Hence, we maintain an open dialogue between local management and community members, particularly at our production sites, which is supported by each site's respective country organization. This dialogue involves personal discussions with residents, citizens' initiatives, representatives of religious communities and the regional press. It also includes the Product Supply Community Outreach program, which focuses on making a direct positive impact in the communities where our employees live and work. Based on impact analyses, the material needs at our sites are identified and suitable measures defined that range, for example, from internship offers for girls to the planting of vegetable gardens, projects directed at health promotion and healthy eating, and teaching units in the STEM disciplines at schools. The target achievement of the implemented measures is monitored. Our activities here are ongoing. At more than 140 sites worldwide, we want to create significant impact and value added with the program.

Stakeholder engagement in the divisions

We engage in everyday dialogue with our customers. Our divisions navigate different regulatory frameworks. For example, direct contact between Pharmaceuticals or Consumer Health and the respective customer environment, and especially patients, is regulated in different ways for each division. With regard to the collection of customer satisfaction data, different legal requirements apply to prescription medicines from Pharmaceuticals than to nonprescription medicines, for example. Any primary market research and data searches that must be conducted, including systematic internet analysis, strictly adheres to the legal requirements, which can vary significantly depending on the market.

To facilitate global access to medicines, we cooperate with various partner organizations and other stakeholders. In addition to our focus on neglected tropical diseases (please see the Focus on: Access to Healthcare chapter), we collaborated with other pharmaceutical companies – e.g. within the Access Accelerated initiative – on solutions for access to medicines for treating noncommunicable diseases in less affluent countries.

We seek dialogue with farmers' associations, including the World Farmers' Organization and the Global Farmer Network. In 2022, we established a global advisory group for farmers to formalize this dialogue worldwide and across different types of farming enterprises – from conventional to organic.

As demographic changes also impact farming, Bayer has initiated the multi-stakeholder platform Next Generation Ag Impact Network (NGIN) to explore the future of farming. Student associations and youth movements, academic institutions, agricultural associations and think tanks, as well as international organizations, are involved. The goal is to make agriculture attractive for future generations, with the direct involvement of junior managers.

One way in which Crop Science achieves customer centricity is through our Food Chain Partnership, which includes several hundred initiatives throughout the entire value chain. These strategic alliances and cooperation models are aimed at driving improvements in food security, sustainability and economic opportunities for farmers. The programs center on innovative crop solutions and services for sustainable agriculture.

In our Bayer Forward Farming programs, we work together directly with a network of independent farmers who test more sustainable agricultural practices. Our goal is to create ecosystems that reduce business risks for our customers and all participating partners. With this goal in mind, we form partnerships with NGOs, participants in our value chain and the public sector, and jointly develop new solutions such as the Global Alliance Against TR4 to contain pathogens such as TR4 (Tropical Race 4) in banana plants; the MidWest Row Crop Collaborative Platform; the Living Soils of the Americas Initiative to improve soil health and food security; and Better Life Farming (BLF). Also included are IFC (International Finance Corporation, part of the World Bank), Netafim and other local partners that aim to empower smallholder farmers.

Bayer is active in several multi-stakeholder partnerships, including the Sustainable Markets Initiative (SMI) and the Agricultural Climate Markets Collaborative of the Keystone Policy Center, in which supply chain participants, nongovernmental organizations and competitors are represented. In 2022, Bayer contributed to two crucial results of these groups that are intended to create more transparency and understanding in regard to approaches for regenerative farming and financial compensation for ecosystem services. With Bayer's active participation, furthermore, SMI's Agribusiness task force published its first report entitled "Scaling Regenerative Farming: An Action Plan," which describes five key measures for the agricultural sector's entire value chain.

Bayer is also a signatory to the Principles for Transparency in Agricultural Climate Markets published by the Agricultural Climate Markets Collaborative – thus underscoring the company's commitment to a better understanding of voluntary emissions trading in the United States. In this connection, we updated our Bayer Carbon website to ensure that we provide all information required by the aforementioned principles.

For more information on dialogue with stakeholders, please see the chapters 2.9 Sustainability Management, 3. Product Stewardship (Commitment), 4. Procurement (Sustainability supplier development), 5. Human Rights (Stakeholder Engagement) and 6. Employees (Promoting dialogue and exchange) and our website.

Dialogue with investors and ESG rating agencies

In 2022, we once again engaged in intensive dialogue with the capital market regarding various environmental, social and governance (ESG) issues. The focus here was on the issues of climate protection, biodiversity, safe product use particularly with regard to crop protection, corporate governance and access to medicines by people in low- and middle-income countries (LMICs).

Through targeted discourse with ESG rating agencies, we want to achieve an objective assessment of our company while also addressing weaknesses identified in this way. This enabled us to improve Bayer's rating last year, with MSCI ESG Research upgrading Bayer's ESG rating from BB to A. In addition, the previously assigned red flag and the associated assertion of a violation against the principles of the UN Global Compact were withdrawn. The improved rating was partly thanks to a reevaluation by MSCI ESG Research of the alleged environmental risks presented by genetically modified crops (GMOs), as well as the additional disclosure of relevant Bayer data to investors and ESG rating agencies.

In early 2021, our ranking in the Access to Medicine Index (ATM Index) of the ATM Foundation had already improved by three places from 16th to 13th. Since 2022, we have been ranked 9th and are therefore among the top 10 of the world's 20 largest healthcare companies in the Access to Medicine Index 2022. We achieved this performance due in part to our ambitious sustainability targets and our commitment to access to medicines, family planning and the eradication of neglected tropical diseases.

In 2022, CDP (formerly the Carbon Disclosure Project) once again gave the highest rating (A) to our company's climate strategy. We also achieved good results again in the areas "Water Security" (A–) and "Forests" (B).

Bayer is one of only a few German companies to have been included in the Bloomberg Gender Equality Index since 2020.

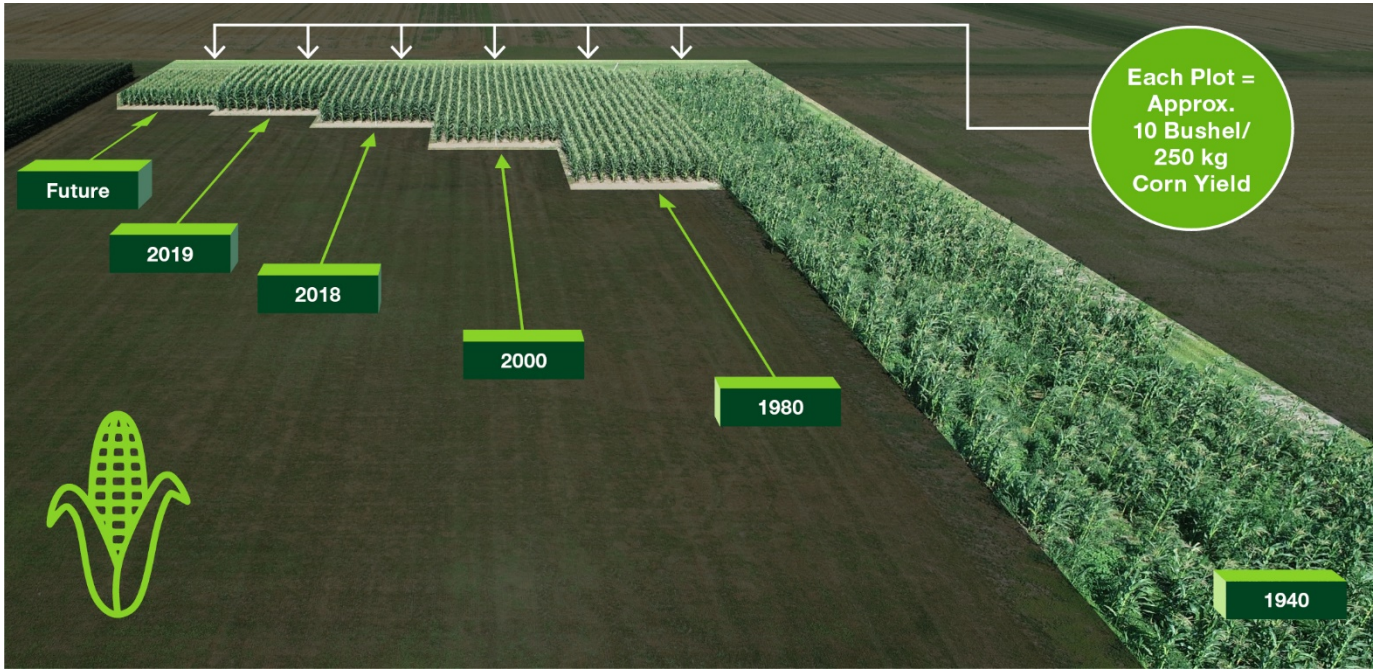
We are also currently producing a detailed report on our political lobbying work. In this process, we are taking account of the expectations of different stakeholder groups, particularly those of investors. This report is scheduled to be published at the beginning of 2023.This report supplements the publication of our climate policy activities in the Industry Association Climate Review. For more information, please see Chapter 7. Climate Protection.

Focus on: Agriculture

Challenges and Approaches

Global agriculture and food systems are confronted with major challenges, such as climate change (with respect to climate change mitigation as well as climate change adaptation), water scarcity and population growth. Scientists and UN organizations expect the world population to grow to around 10 billion people by 2050 – an increase of around two billion people relative to 2022. In addition, both the Food and Agriculture Organization (FAO) of the United Nations and the World Resources Institute (WRI) envisage a 50% increase in the demand for food and animal feed by 2050. The demand for animal-based protein and thus also for animal feed is expected to increase further, especially in the emerging markets. At the same time, the already limited farmland will decline due to climate change, water problems, soil erosion and other factors. The agricultural sector therefore has to meet the needs of a growing population, while at the same time promoting sustainability and protecting our ecosystems.

In addition to the challenges already mentioned, there is the issue of food loss and waste. It is estimated that around 33 – 40% of all the food produced for human consumption (including meat from animals previously fed animal feed) is lost or wasted along the value chain. This means that around 30% of our global agricultural land is used for food and feed that is never consumed. Besides food security, this has also a critical dimension for climate change: it is estimated that food loss and waste account for approximately 10% of global greenhouse gas emissions.



Bayer's solutions help farmers make the best out of their fields and to enable food security. This starts with the choice of a seed e.g. high-performing and improved with resistance against common diseases and pests as well as possibly being adapted to local environmental conditions, followed by pest, disease and weed management supported by digital decision-making on the field and farm management.

Optimized seed varieties can help reduce food loss and waste in later steps of the value chain too e.g. through improved shelf life, fruit firmness to withstand long-distance transport or an increase in the efficiency of processing products.

Sustainable intensification

Intensive agriculture with high yields per hectare of farmland is a crucial factor for ensuring the continued availability of high-quality and affordable food. Agricultural intensification leads to less land being required for the same amount of food produced. 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 was substantially enabled by technological developments in the areas of plant breeding and – since the 1990s – plant biotechnology as well as management practices such as fertilization, irrigation and crop protection. Insecticides and fungicides have played a crucial part in minimizing harvest losses. Crops compete with weeds for water, nutrients and light, resulting in a potential crop loss of up to 30%. Herbicides are an important tool for reducing this growth competition.

Bayer helps farmers cultivate more food for a growing population, improving food security while at the same time reducing the environmental impact of agriculture. Digital technologies play an important role here, as do improved seed and good agricultural practices. To reduce harvest losses caused by insect pests, competitors for nutrients or fungal infestation, we combine our high-performance seeds with the targeted use of crop protection products. We offer farmers a selection of these innovative tools and recommend optimal combinations that enable the use of crop management practices at the correct time and in the correct place for optimal production. For more information on the responsible use of crop protection products and the application of digital farming technologies, please see Chapter 3.6 Crop Science.

Our innovations in the areas of plant breeding and crop protection are designed to further improve both the quality and the quantity of harvests, while ensuring the highest safety standards, and to enhance plants' resilience against insect pests, diseases and a changing climate. For more information on our innovations, please see Chapter 1.3 Focus on Innovation in the 2022 Annual Report.

For more information on our commitment to smallholder farmers in low- and middle-income countries (LMICs), please see the Sustainability Strategy chapter.

The impact of intensive agriculture certainly has the potential to disrupt local species and the associated ecosystem. We invest in research and development here too to attain an improved balance between productivity and conserving biodiversity and ecosystem services. For more information on our activities to conserve biodiversity, including pollinator insects, please see chapters 3.6 Crop Science and 3.7 Biodiversity.

Plant Breeding

Plant breeding (including hybrid crops) plays a key role in reducing in-field losses, achieving improved agricultural yields and reducing food loss and waste in later steps of the value chain. Bayer supports the responsible use of different breeding techniques and technologies.

In selective plant breeding, existing species of a crop (e.g. corn) are crossed to transfer the desired traits to the next generation of plants. Our scientists combine large volumes of genomic, phenotypic and environmental data in order to select the highest performing plants for local farmer environments around the world. We use greenhouse- and field-based product testing over multiple years to determine whether the desired traits have been transferred to the following generations.

Our greenhouse- and field-based product testing and our scalable data analysis and automation functions provide additional insight into the special characteristics of our products, such as plants' ability to resist diseases and thrive during water scarcity. This enables us to give our farmers tailored recommendations that take into account factors such as the climatic circumstances of a region.

Especially for perishable crops like fruits and vegetables, breeding for a long shelf life is an important factor. Longer shelf lives can improve the tradability of fruit and vegetables, increase flexibility in the value chain (e.g. to reach markets further away) and reduce food loss and waste along the value chain up to the consumer.

Supporting USDA-GEM

Bayer donated 1,990 corn breeding lines to the USDA-GEM (United States Department of Agriculture – Germplasm Enhancement of Maize) program in 2020. These contained a combination of Bayer genetics and a genetic diversity of 31 maize landraces from across the Americas, bred to flower in the US Central Corn Belt.

In 2021, the USDA-GEM program started evaluating this material. USDA-GEM observed different plant characteristics relating to plant stature, unique traits such as dwarfism or multi-ears, and noted resistance levels to several diseases such as gray leaf spot, rust and Fusarium stalk rot. Evaluations proceeded in 2022.

Improved breeding stocks that USDA-GEM develops from such diverse germplasm are made available to a global network of private and public collaborators, and eventually to the entire maize research community. These collaborators are free to use them directly for making new hybrid corn varieties, or as breeding parents in their own breeding programs.

Plant Biotechnology

Plant breeders use the genetic diversity of plants to generate new and unique plant varieties and hybrids for farmers.

Plant biotechnology can be employed to transfer genes and their associated beneficial traits from one organism to another. Genetically modified crops provide substantial agronomic, economic and ecological benefits. They can help farmers to increase productivity despite difficult growing conditions by protecting harvests from specific pests and weeds while consuming fewer natural resources. Farmers in large and small enterprises from industrialized and developing countries alike can benefit from genetically modified crops, especially corn, soybeans, cotton and oilseed rape/canola. According to information from the nonprofit organization ISAAA (International Service for the Acquisition of Agri-biotech Applications), crops that are the product of modern biotechnology are grown on more than 190 million hectares in over 29 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 containing Bacillus thuringiensis (Bt) control specific insect pests that feed directly 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 broad-spectrum insecticides.

Bt corn was introduced in 1996 in the United States and since then has been grown in many countries. According to studies, between 1996 and 2008 growing Bt corn in the United States reduced the usage of insecticides by 35%, reduced in-field losses by 10% or more and increased grain quality. Decreased insect damage reduces the occurrence of higher levels of mycotoxins. Increased concentrations of mycotoxin can result in animal and human health issues. In many cases, high levels of mycotoxin resulted in full harvests being discarded. In LMICs, where corn is an important staple crop, Bt corn can improve food safety and food security.

Crops compete with weeds for water, nutrients and light, resulting in a potential crop loss of up to 30%. Our herbicide-tolerant plants are tolerant to certain herbicides such as glyphosate or dicamba. This enables weeds in fields to be eliminated using herbicides without damaging the crops. Using these plants enables farmers to reduce or completely forgo tillage as a method of weed control and instead use techniques such as plowless soil tillage, which is applied in particular in North and South America. In combination with good agricultural practices such as the cultivation of cover crops, no-till has a positive impact on soil health. It reduces erosion in the long term, facilitates the development of humus and thereby ensures increased storage of carbon in the soil. This in turn reduces the release of greenhouse gases from the soil that can contribute to climate change. Furthermore, farmers need less fuel for tillage when there is no plowing and cultivation requirement.

The development and approval of genetically modified seeds is subject to comprehensive international guidelines and stringent national laws and regulations. For more information, please see our website. The safety of genetically modified crops has been confirmed by numerous studies, which have been evaluated by regulatory authorities in 70 countries. Some believe that genetically modified plants could spread throughout the environment and thus negatively impact plant 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.

Preserving plants' integrity

Breeding for conventional and ecological farming requires measures to preserve the plants' integrity and thus maintain seed quality. This means that the uncontrolled pollination or cross-breeding of plants must be prevented. Pollen flow plays a key role here, including for genetically modified plants. For example, in our breeding of corn, an open pollinated crop, it is essential to be aware of and limit the possible pollen flow under different conditions. Detailed agricultural practice requirements are in place for our own sites and those of our seed producers to prevent inadvertent pollination. These rules are spelled out in our publicly accessible Technology Use Guide for corn, soybeans, oilseed rape/canola and other row crops. Among other

information, this contains provisions for planting at a prescribed distance to other fields of the same crop type or planting at different times to prevent simultaneous pollination in two fields.

There is no evidence that local or native plants are reduced in the unlikely event of inadvertent cross-pollination between genetically modified and nongenetically modified plants from the same species. There is also no evidence that seed diversity has decreased because of the introduction of genetically modified crops. After reviewing more than 900 studies, the US Academies of Science published a report in 2016 stating that it did not see any indication that the genetic diversity of major seed varieties in countries such as the United States had declined due to the introduction of genetically modified seeds. The number of available seed varieties had instead declined already during the 20th century due to strong demand for high-yielding seeds.

Innovations in plant breeding: genome editing

Bayer employs new breeding methods that contribute to the development of modern varieties better suited to their environments, making it possible to farm more sustainably.

One targeted breeding approach is a molecular biology process known as genome editing, which is largely based on improving plants' characteristics by leveraging their existing genetics, for example by deactivating unfavorable traits (such as disease vulnerability) or supporting beneficial traits (such as drought tolerance or improved nutrition). The use of breeding innovations, including CRISPR-Cas, can improve the efficiency and precision of plant breeding and contribute to the development of new crop varieties needed to sustainably secure the supply of safe and healthy food.

Smart Corn System

One example of the possibilities offered by plant breeding innovations is our short-stature corn hybrids, planned to be commercialized in the coming years within the Smart Corn System.

Through breeding, plant biotechnology and genome editing, we have succeeded in developing seed varieties that enable the growth of shorter corn plants that have the potential to not bend or break as easily as corn plants of regular height in the presence of strong winds or heavy rain. Losses in the United States due to bent plants amount to between 5% and 25% a year depending on the severity of weather events. Short-stature corn hybrids also have the potential to enable an optimized uptake of water and nutrients such as nitrogen.

Accessing modern plant breeding

Facilitating access and enhancing plant genetic diversity is essential for plant breeders to enable sustainable, higher yielding and healthy crops amid continued climate challenges. In order to make these improvements accessible to smallholder farmers, we engage in various collaborations and public–private partnerships to share knowledge and resources:

- The Modern Breeding Project is a cooperation with the International Institute for Tropical Agriculture (IITA), providing know-how in technology advancements to plant breeders so they can increase genetic gain in local crops grown in countries like Mali and Nigeria.
- We participate in the International Maize Improvement Consortium for Africa (IMIC-Africa) to enhance African farmers' access to high-quality, affordable, high-yielding and locally adapted maize seed.
- We are a member of the International Rice Informatics Consortium (IRIC), with germplasm diversity in rice as a focal point for engaging communities in Asia.
- We participate in the TELA project (previously Water-Efficient Maize for Africa, WEMA) to improve sub-Saharan farmers' yields, food quality and profitability through improved drought-tolerant hybrids.
- In the European Union, we offer small vegetable breeders free access to our European patents for vegetable traits, which are contained in the Euroseeds PINTO database and can be licensed by Bayer.

Leading position on the Access to Seeds Index

The Access to Seeds Index of the World Benchmarking Alliance (WBA) compares seed producers' efforts to help smallholder farmers in LMICs. The 2021 index compared 67 seed companies in three regions. Bayer took the top spot in the Western/Central Africa and Eastern/Southern Africa regions and placed third in the South and Southeast Asia region, among other things for establishing support programs to strengthen smallholder farmers.

TR4-resistant varieties of banana

Bananas, a key crop for global food security and the livelihoods of millions of smallholder farmers, are facing the most serious threat in decades – the Tropical Race 4 (TR4) strain of the Fusarium fungus, which has triggered a pandemic on banana plantations and is devastating the crop harvest across banana-cultivating regions. At present, control of the disease using fungicides is impossible. The only way to protect bananas is to prevent the fungus from spreading, which is extremely difficult, or to develop resistant varieties. Joining forces with partners from the private and academic sectors, civil society organizations and state entities within the Global Alliance Against TR4, Bayer supports the establishment of breeding programs, capacity building for high-throughput screening, and the development of new editing techniques to mass-produce new varieties of banana that are resistant to TR4.

The Zero Hunger Private Sector Pledge

In 2022, Bayer signed the Zero Hunger Private Sector Pledge and committed to contribute US$160 million to support the goal of combating hunger worldwide, together with other organizations. This pledge was created within the scope of the UN Food Systems Summit. As part of the Zero Hunger Coalition, we are working to help end food scarcity on various regions of the world.

The Zero Hunger Private Sector Pledge aligns governments, agencies, civil society and businesses with the 10 high-impact intervention areas from the CERES2030 evidence, a research project by scientists from Cornell University, the International Institute for Sustainable Development (IISD) and the International Food Policy Research Institute (IFPRI) that provides practical recommendations on how to end hunger by 2030 worldwide and on a lasting basis.

Enabling a Climate-Smart Agriculture

According to a report of the Intergovernmental Panel on Climate Change (IPCC), agriculture, forestry and other land use account for about 25% of all greenhouse gas (GHG) emissions worldwide. Climate change places significant pressures on agriculture in the form of reduced yields, land degradation and increased threats from pathogens and diseases. At Bayer, we have a responsibility to advance a net-zero carbon future for agriculture in close collaboration with farmers and global and local players. This requires the development of new technologies, digital enablement and the transformation of agricultural practices. In addition to our commitments to carbon neutrality for our own operations (please see Chapter 7. Climate Protection), we aim to enable our farming customers to reduce their greenhouse gas emissions per kilogram of crop produced by 30% through 2030. This applies to the highest greenhouse gas emitting crop systems and in the regions Bayer serves with its products. Therefore, our focus lies on soybeans and corn in the United States, Brazil and Argentina; paddy rice in India; and wheat, cotton and oilseed rape/canola in various regions.

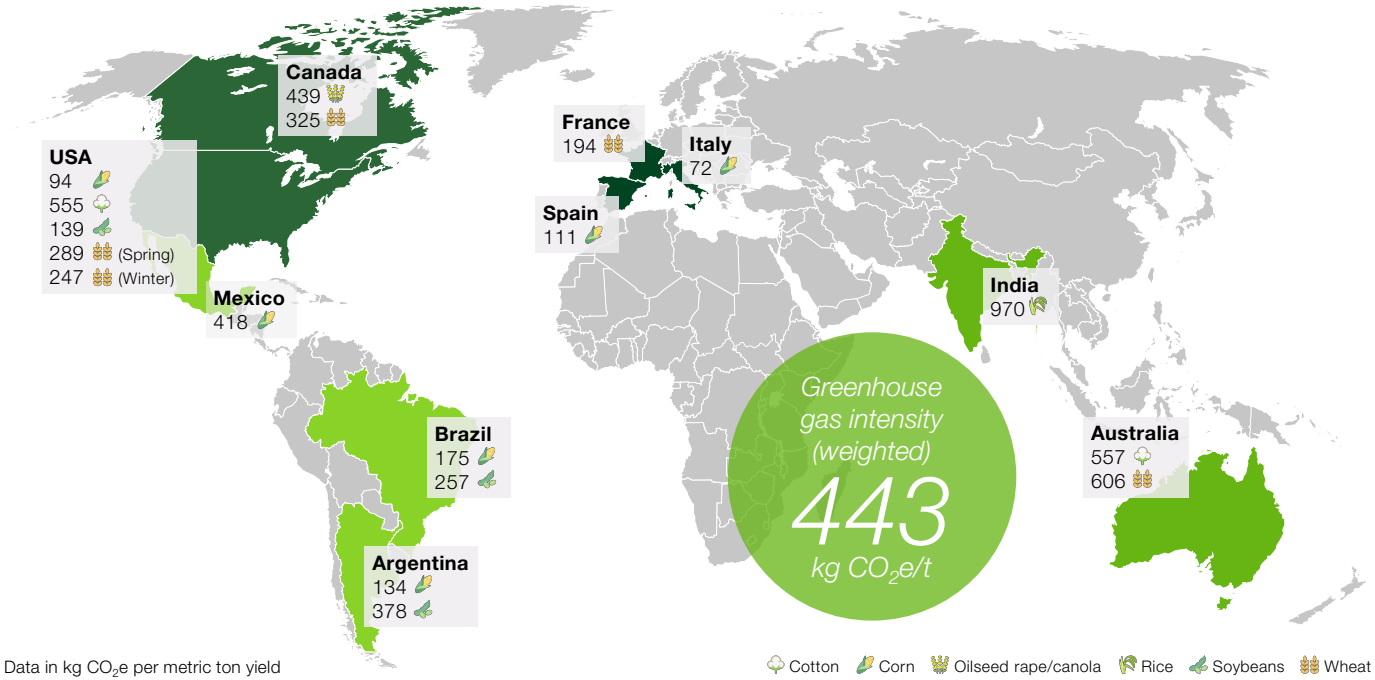
Methodology and baseline calculation

The scope of our efforts is focused on emissions of major greenhouse gases from field operations: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). The sources of greenhouse gas emissions include cultivation, decomposition of applied fertilizers and organic matter, and irrigation.

To measure progress against our target, we will use representative samples of field-level data from a third-party market research data provider (Kynetec UK Ltd.) obtained in interviews with randomly selected farmers.

We calculated a global baseline based on our customers' greenhouse gas intensity in our major markets and for our most important crop-country combinations with data for 2020 and supplemented it with data for 2021 from additional regions. We define our customers as farmers whose share-of-wallet for our products at least equals our market share in a particular market, farmers using our seed varieties or our digital platform Climate FieldView™ or farmers participating in our Bayer Carbon Initiative.

Greenhouse Gas Intensity for Our Most Important Crops (Crop-Country Combinations)



Data in kg CO_2e per metric ton yield

The calculated greenhouse gas intensities per crop and country are presented on the map. To calculate an overall baseline, individual baselines were weighted according to Bayer's footprint in these crops and regions estimated using the total production volume of a particular crop in a particular market from the database of the Food and Agriculture Organization (FAO), our market share in this market and carbon intensity of this crop-country combination. Using this methodology, our overall customers' greenhouse gas intensity across all crop-country combinations in the scope of our commitment was 443 kilograms CO_2e per metric ton of crop harvested (baseline of our commitment).

We described our methodology in detail in a report which is currently undergoing the review process by an external panel of experts to ensure that the baselining and performance tracking methodology is adequate.

Measures

To achieve our target, we foster the adoption of climate-smart practices and technologies by our farming customers. These include high-yielding crop genetics, crop protection products, precision irrigation systems, soil management tactics through no-till and cover crops, crop rotation, root health, fertilization management, microorganisms and inoculants, a switch to direct seeded rice, and digital and precision farming tools. Combining different levers can lead to customized profitable tailored solutions for our farming customers.

Currently, we are integrating environmental metrics, including a greenhouse gas footprint, into our development field trials to develop innovative, profitable and tailored solutions that combine higher yield with co-benefits, such as a reduced environmental footprint.

In addition, Bayer is driving the implementation of carbon farming initiatives in every region we serve. The goal is to learn how to scale the adoption of climate-smart practices and solutions in order to create new value streams for our farming customers. This leads to new business opportunities for ourselves that benefit the environment at the same time.

North America

In the United States, the Bayer Carbon Program rewards farmers for adopting climate-smart practices, such as planting cover crops and practicing no-till or strip till in their fields, with the ambition of generating high-quality certified carbon assets in the future. Farmers can receive guaranteed payments based on the adoption of these practices and the number of acres enrolled per year.

ForGround was launched by Bayer in 2022. This farmer-first digital platform offers growers tools and resources, as well as the potential to earn revenue through the Bayer Carbon Program, for adopting sustainable practices such as cover cropping and reduced tillage. Beyond the capture of carbon in the soil (carbon sequestration as part of the Bayer Carbon Program), ForGround is expanding and evolving to explore other approaches and collaborations that can enable farmers to make a positive impact in their operations and on the environment.

Latin America

As part of the Bayer Carbon Program, farmers in Brazil who fulfill the requirements, such as social and environmental compliance, and adopt climate-smart practices (e.g. no-till, cover crops), are eligible for soil collection and analyses with our partner, Embrapa. The program was launched in 2021 with approximately 1,800 farmers from 16 different states (over 200,000 acres).

Europe

In Europe, Bayer launched its decarbonization program for agriculture in 2021. We are engaged in open discussions with key regional, local and global food chain partners to support them in the decarbonization of their value chains.

At the same time, we are working with various partners on a network of 28 farms across eight European countries to identify the best interventions and technologies to support farmers in reducing their environmental footprint in a sustainable way. These projects are partly supported by the Bayer ForwardFarming network.

Asia/Pacific

Flooded paddy rice has been identified as a significant contributor to emissions of methane, a potent greenhouse gas. As part of the India Sustainable Rice project started in 2021, Bayer is evaluating greenhouse gas emissions reduction as well as water-saving potential in the cultivation of rice.

Bayer launched an initiative to train farmers in sustainable practices related to greenhouse gas emissions reduction, water efficiency and integrated weed management to improve the environmental footprint and productivity.

Partnerships

In our partnerships and scientific coalitions, we support the science of soil management, decarbonizing food systems and technical, digital and financial solutions that help farmers to implement climate-smart practices.

// Global Soil Health Programme (University of Glasgow)
// World Economic Forum Lighthouse Project – Decarbonization of the EU Food System – European Carbon+ Farming Coalition
// Inter-American Institute for Cooperation on Agriculture (IICA), Living Soils of the Americas Initiative
// Coalition of Action 4 Soil Health (CA4SH)

Crop Protection Environmental Impact Reduction (CP EIR)

Agricultural activities always have an impact on the environment. Each tool that a farmer applies has benefits and can often also have drawbacks, and this is generally true for crop protection. Farmers must strike a balance between the need for tools like crop protection – which enables them to keep meeting the need of the growing world population for food while using less land and fewer resources – and potential trade-offs posed by increasing the use of such tools.

The prerequisite for placing crop protection products on the market is clear proof of efficacy, while ensuring no effects on human health and only a minimal, acceptable impact on the environment. Crop protection products are therefore highly regulated by governmental authorities. Bayer consistently seeks to develop and offer crop protection products that have the same or better benefits for farmers, while having less impact on the environment.

To this end, Bayer adopted a methodology for crop protection environmental impact reduction (CP EIR) and made a commitment to reduce the environmental impact of our crop protection products. Specifically, we will reduce Bayer's global treated area weighted crop protection environmental impact per hectare by 30% by 2030 against a 2014 – 2018 average baseline. For more information, please see the Bayer Crop Science Sustainability Progress Report.

Scientific models used

The methodology we adopted relies on two leading, externally developed scientific consensus models to enable a quantifiable environmental impact assessment of crop protection.

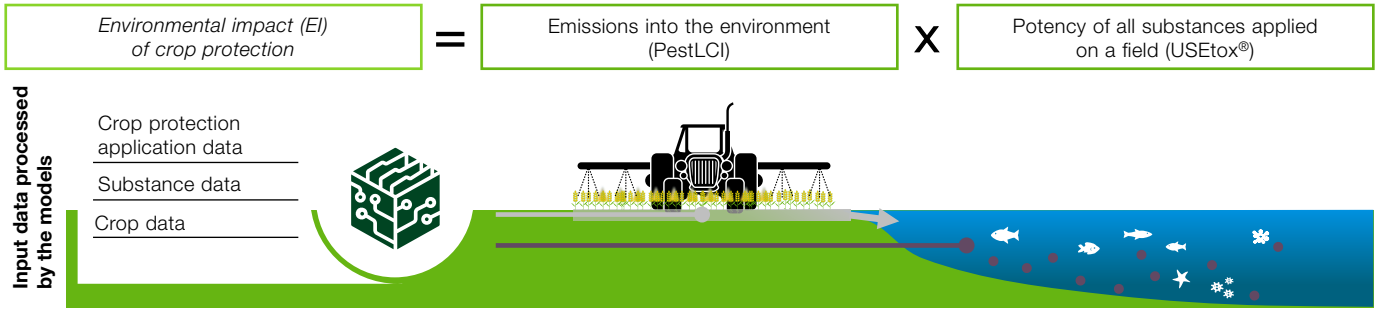
// PestLCI has been developed and established by the Technical University of Denmark (DTU) in cooperation with other institutes and organizations since 2006. PestLCI estimates the quantity of an active ingredient emitted into the surrounding environment with the application of a crop protection product in the field, taking into account all contributing processes.

// USEtox® has been developed under the auspices of UNEP-SETAC in cooperation with various universities and institutions since 2008. USEtox® determines concentrations in the surrounding environment and the potential impact the crop protection products could have on the aquatic ecosystems. USEtox® is also recommended by the European Commission as a model for the analysis of products' life cycles and environmental footprint.

Bayer provided an extensive inventory of detailed historic market data on crop protection applications globally to the DTU. The DTU combined the crop protection inventory data with PestLCI and USEtox® to calculate a global crop protection impact assessment. An external panel of experts is independently performing an assessment of how Bayer and the DTU apply the models to assess its crop protection environmental impact, and how Bayer measures performance against its commitment and other methodological considerations.

Bayer's CP EIR assessment compares the impact of crop protection products. The calculation results in a numerical Environmental Impact Score per application scenario. The score depends mainly on the environmental profile of the active ingredient applied on the field, the amount applied and other factors influencing the emissions into the environment such as application method and timing.

Crop Protection Environmental Impact Reduction



CP EIR Assessment in an Application Scenario

The CP EIR assessment does not account for the environmental effects of other tools applied within farming and integrated crop management, such as plowing, seed bed preparation, fertilizers or harvesting.

As the science of impact assessment is evolving, we are working with the scientific consortium developing these models as well as with other experts in the field to expand the capabilities of the current models. Currently, we are focusing on the potential impact on aquatic ecosystems, and we plan to expand the model to soil organisms and pollinators once these enhancements have been published by the scientific consortium. These models and the underlying methodology are publicly available. We invite the scientific community to check our progress and verify where we stand on our commitments.

Scope of the sustainability target

All Bayer crop protection product applications in the field globally, as reported in the AgroWin system, are in the scope of our commitment to reduce the environmental impact of crop protection. The baseline for our commitment is built on an average of all Bayer crop protection products applied in the field globally between 2014 and 2018 and their respective environmental impact. Using an average as the baseline accounts for the specifics of agriculture such as seasonality or dependence on climatic conditions. To ensure the transparency and credibility of the baseline, performance tracking and calculation of CP EIR, all required data is third-party data – including crop protection application data or substance characteristic data.

Outcomes

Applying CP EIR allows Bayer to identify hotspots of environmental impact and develop improvement levers.

Based on the analysis of the environmental impact of crop protection products, we will be able to recommend a range of tools to help farmers protect their crops and lessen their environmental impact. This can help to produce higher-yielding crops with less impact in and around the field.

In terms of levers to achieve the commitment, they can be categorized as follows:

- Optimization of crop protection volumes required per hectare through tools such as:
  - Precision application: data-driven tools that ensure the right amount of crop protection product is applied by farmers in the right place and at the right time
  - Seed treatment: seed-applied crop protection tools that can significantly reduce the volume of chemicals used and therefore the potential exposure to wildlife and the environment
  - Seeds and traits: crops bred and designed to better fight pests and diseases that attack them, ensuring that less chemical crop protection is needed
  - Biologics: complementing chemical crop protection with biologics to enhance integrated management practices and reduce pest resistance

- Reduction of the environmental impact of the crop protection product itself:
  - Better environmental profile of an active ingredient (lower effect on nontarget plants and species) compared to other products

- Reduction of the emissions into the environment
  - Mitigation measures such as drift reduction and buffer strips
  - Digitally enabled precision application

In 2021, an initial assessment was performed on the environmental impact of Bayer's crop protection products as well as all other globally applied crop protection products on the market in 2018. One of the conclusions of the analysis was that the impact of Bayer's crop protection products represents around 2% of the global environmental impact of all crop protection products, despite Bayer's market share in terms of sales being significantly higher (around 18% of the global crop protection market). For more information, please see our website.

Progress

Based on the data for the period 2017 to 2021, Bayer has reduced its global crop protection environmental impact by 14% against the 2014 – 2018 baseline. The reduction was mainly the result of changes in our crop protection product portfolio in recent years. At the same time, crop protection sales had risen by around 15% in 2021 (the last year in terms of the current reporting period) compared to 2018 (the previous year of baseline reporting).

3. Product Stewardship

Assuming responsibility for our products, from medicines to complex solutions for agriculture, is always at the core of what we do. These 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 or the environment. For this reason, we conform strictly to regulations and laws all over the world.

3.1 Management Approach

For us, product stewardship means that our products meet the highest quality standards and are safe for people and the environment when used properly. Not only do the desired properties of substances and products need to be taken into consideration but so too do 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 Public Affairs, Science, Sustainability & HSE 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 registration 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. As a condition of their approval, the prescribed efficacy and safety of the individual products must always be demonstrated as proven. An approval therefore 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 approval 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 to ensure that their safety has been adequately verified. For more information, please see Chapter 3.6 Crop Science.

Chemical regulations

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 Registration of New Chemical Substances (MEP Order No. 12) of the Ministry of Ecology and Environment (MEE) in China. To fulfill these requirements, we have formulated Group-wide and division-specific regulations.

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.

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 (Substances of Very High Concern, SVHCs). Already registered substances are also regularly evaluated by the authorities. For 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 use of SVHCs, including and particularly in research and development at Bayer, is bindingly regulated by the Group Regulation on Assessment of Chemical Substances.

Under certain conditions, existing dossiers have to be updated under REACH. In 2019, as part of the voluntary action plan of the European Chemical Industry Council (CEFIC), we also committed to reviewing and updating all REACH registration dossiers by 2026 to comply with the latest requirements. We had reviewed and updated 57 dossiers by the end of 2022.

The requirements of MEP Order No. 12 in China are similar to those of REACH in the European Union, although MEP No. 12 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 the information required pursuant to the standard Hazard Communication (29 CFR 1910.1200) of the US Occupational Safety and Health Administration.

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.

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 2022, we had already assessed 97.3% (2021: 95.3%) 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, applying 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 on a balanced benefit–risk evaluation.

All active ingredients 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 Animal Welfare. 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 on 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 order 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 corresponding Group regulation.

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 also encompasses genetically modified seeds. 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 development of genetically modified crops from early development onward. The results of these are incorporated into the approval/authorization procedures. Our Group regulations on the responsible use of genetic engineering and on biosafety, together with processes stipulated at Crop Science in the Group Regulation on Product Stewardship Commitment, Principles and Key Requirements, 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 (please see Chapter 3.8 Pharmaceuticals and Consumer Health) and about the (crop protection) products of the Crop Science Division in Chapter 3.6 Crop Science.

Information on substances and products

Bayer compiles safety data sheets for all chemical substances used, regardless of whether 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 using it safely. 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 for raw materials, 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 participate in the further development of scientific risk assessment and are involved in several associations – such as the European (CEFIC), US (ACC) and international (ICCA) chemical industry associations and the OECD – and in initiatives such as the European Centre for Ecotoxicology and Toxicology of Chemicals (ECETOC).

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. To ensure that this is the case, clear processes and rules are defined at Bayer. In addition, Bayer applies its own principles on animal welfare and animal studies, which are specified in a Group regulation. Our principles also explicitly apply to the research institutes (clinical research organizations, CROs) we commission and to our suppliers, whose compliance with our animal welfare requirements we regularly monitor. The Bayer Global Animal Welfare Committee monitors compliance with these principles within the Bayer Group and in external studies.

More than 90% of the animal studies performed by Bayer and the clinical research organizations (CROs) we commission are in compliance with European standards (Directive 2010/63/EU). These EU standards are considered to be among the strictest animal welfare regulations in the world and ensure extensive protection for animals. We view it as particularly important that the sizes of cages housing our study animals meet the legally prescribed standards, or even exceed them. Additionally, for those research institutes (CROs) we commission to perform animal studies outside of Europe, we place great value on accreditation to AAALAC (Association for Assessment and Accreditation of Laboratory Animal Care).

The Bayer Global Animal Welfare Committee has worked with the procurement and product quality functions to develop detailed audit procedures for the CROs that carry out animal studies on our behalf. In this way, we ensure that both new and longstanding research partners are regularly audited to ensure their compliance with our animal welfare requirements.

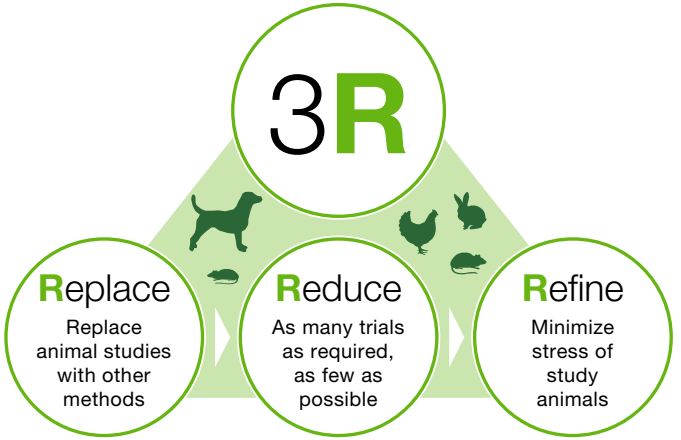
Commitment to reducing animal studies

In early active ingredient 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 are our activities in connection with organ-on-a-chip, a biochip method used to investigate the behavior of complete organs in vitro. Bayer has now established several organ systems and platforms.

In 2022, too, we actively participated in internationally renowned consortia, projects and validation programs geared toward achieving replacement methods, one example being the IMI-eTRANSAFE project. One aspect is examining the extent to which control animals in toxicological studies can be replaced through the simulation of virtual control groups using existing data sets. The concept is already being discussed with the US Food and Drug Administration (FDA), which is responsible for the pharmaceutical marketing authorization process in the United States. This could reduce the number of animal studies by up to 25% in the medium term.

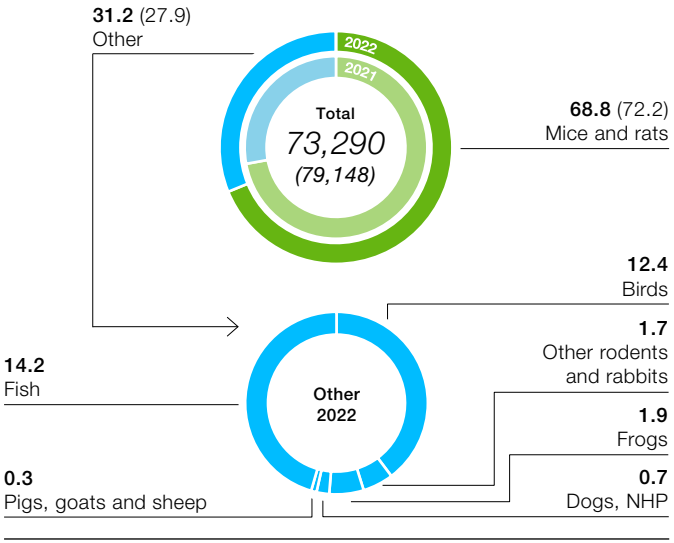
Applying performance indicators, we analyze the development of animal numbers, the distribution according to species and the impact on our test animals each year, while evaluating studies and discussing possible steps in accordance with the 3Rs principle (replace, reduce, refine).

3Rs Principle



The total number of study animals used in 2022 (including animals in Bayer studies performed by contract research organizations) was 73,290, compared with 79,148 in 2021.

Study Animals by Species 2022 (2021)
%



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 our customers have access to our safe and effective original products, to protect our innovations and intellectual property rights, to reduce potential financial damages for Bayer and to 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 Group regulation.

Product counterfeiting can only be addressed internationally through a joint approach by industry, associations, government agencies and nongovernmental organizations. We advocate the resolute application and, where necessary, the tightening 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 development that are designed to also enable our customers to distinguish original products from counterfeits.

Crop Science

The production, transport, sale and distribution of counterfeit crop protection products and illegal seeds are steered by globally organized criminal networks. Online retail is becoming increasingly important for the distribution of these products. Illegal or counterfeit crop protection products are estimated to account for up to 15% of products sold, while illegal seeds make up as much as 10% of products sold.

The use of counterfeit crop protection products poses a high risk for human health and the environment (including biodiversity) because their contents do not correspond with those of products formulated by Bayer and approved by the regulatory authorities, and even prohibited active ingredients are often used.

Counterfeit seeds do not possess the traits chosen by farmers upon purchase. The use of counterfeit seeds results in lower harvest yields and inferior produce quality. Illegal seeds increase the risk that insect pests and diseases will develop resistances. The use of counterfeit crop protection products and illegal seeds therefore can also jeopardize the safe and reliable production of food.

Innovative packaging technology: SafetySeal and Seal Scan app

It is becoming increasingly difficult for users of crop protection and seed products to distinguish between an original and a counterfeit product. Against this background, Bayer is the first producer of crop protection and seed products to enable farmers to clearly identify original products through SafetySeal technology. The seal has optical security features and a QR code that users can scan with the interactive Seal Scan smartphone app to obtain a reliable statement about the product's authenticity. The SafetySeal is found on the packaging of all Bayer crop protection products that are filled in containers and sold in the Europe/Middle East/Africa and Latin America regions, as well as parts of Asia/Pacific. The SafetySeal was introduced in the solids packaging of selected crop protection products for the Egyptian and Turkish markets.

In 2022, we expanded the technology to seed packaging and introduced the SafetySeal for corn and oilseed rape/canola seed packaging in the European market. Projects were also initiated to introduce the SafetySeal in corn seed packaging in Latin America and Africa as well as in vegetable seed packaging worldwide.

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 focused on cooperation with the Chinese authorities to identify counterfeit products in the counterfeiter's production facilities already and confiscate them prior to their export from China. In 2022, we identified patent and trademark infringements in China, India and Brazil, and successfully asserted our rights.

We are confronted worldwide with an increasing incidence of illegal or counterfeit seeds. We therefore further expanded our internal and external action network and our globally coordinated activities to combat illegal practices in the seeds business in 2022. In close cooperation with local authorities, we seized significant amounts of illegal seeds, in Brazil for example, and asserted our rights against the counterfeiters.

Counterfeit products, and especially counterfeit crop protection products, are transported on a large scale by ocean freight. That's why Bayer has been cooperating for a number of years with leading shipping companies to jointly identify counterfeit and illegal products, prevent their transport and notify the responsible authorities for further prosecution. In addition, we participate in a cross-industry alliance with companies from various sectors.

In cooperation with the United Nations Office on Drugs and Crime (UNODC) and its Container Control Program (CCP), and also with the World Customs Organization (WCO), we offer training measures for customs authorities in the world's biggest seaports. These activities are aimed at enabling customs officers to reliably distinguish genuine Bayer products from counterfeit products based on packaging features, and thus to detect and confiscate counterfeits more easily. Bayer supports the work of the Task Force – Countering Illicit Trade (TF-CIT) of the OECD as regards the issue of misuse of containerized shipments for illicit trade.

We conduct our own inspections in the market worldwide and keep a record of all signs of suspicious and potentially counterfeit or illegal products.

The use of tested and approved inputs such as seeds, crop protection products and fertilizer is an essential condition for sustainable agriculture. Bayer therefore offers training events for farmers around the world – including smallholder farmers in low- and middle-income countries (LMICs) – on the issue of product counterfeiting. The training measures convey to farmers what dangers are harbored by counterfeit seeds and crop protection products, how to distinguish between genuine Bayer products and counterfeits, and what general measures protect against the unintended use of counterfeit products. These training courses are combined with our stewardship training measures within the scope of sustainable use (please see Chapter 3.6 Crop Science).

We also provide our customers with extensive information on counterfeit and illegal crop protection products and seeds on our Counterfeits in Agriculture website, including on how to identify counterfeit products, what risks they are associated with and how farmers can protect themselves against unintentional use of counterfeits.

Pharmaceuticals and Consumer Health

Counterfeit products that imitate the medicines of our Pharmaceuticals and Consumer Health divisions harbor considerable risks for patients and consumers. For this reason, Bayer has established binding regulations in its uniform Group-wide quality management system for reporting, registering, investigating and escalating potential pharmaceutical counterfeiting. Together with the responsible pharmaceutical regulatory authorities, we initiate the necessary measures based on investigation results and the severity of each case. These measures range from notifying business partners and medical specialist groups to recalling products impacted by counterfeiting at the appropriate recall level.

In addition to the process established in the quality management system, we have introduced a data management tool for the corporate security and legal functions. This enables assessments and reports to be compiled on activities by law enforcement authorities relating to pharmaceutical counterfeiting that were triggered by information and analyses we submitted.

Through the Beware of Counterfeits campaign, Bayer is actively addressing the problem of counterfeit pharmaceuticals. The website of the same name contains information on the risks of counterfeit pharmaceuticals and offers tips on how patients can protect themselves against counterfeiting. Maintained in coordination and close cooperation with the responsible pharmaceutical regulatory authorities in Germany and abroad, the website also provides information on actual pharmaceutical counterfeiting incidents and explains how patients can distinguish the counterfeit items from our original products.

Safety features for medicinal products

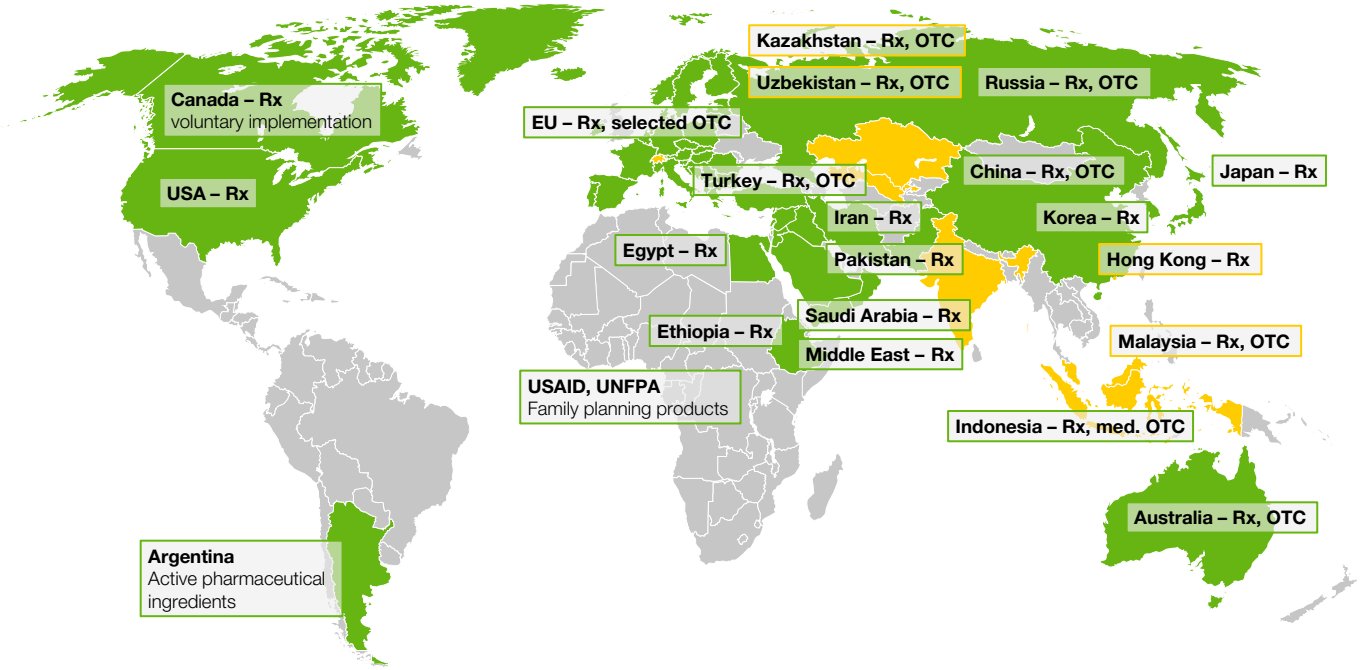
Bayer protects medicinal products worldwide in accordance with the regulatory and statutory requirements of each country, including those defined by the European Falsified Medicines Directive. This EU directive specifies requirements and measures for the inspection and verification of original pharmaceuticals. These include mandatory safety features on outer packaging, which Bayer has used for its prescription products since 2019.

Safety features in the EU comprise two elements – an individual 2D data matrix code and a tamper-evident closure. Featuring individual serial numbers, the data matrix codes are stored for coding in country-specific databases across the EU. Wholesalers and pharmacies can verify the products' authenticity by simply scanning the code. Together with the other stakeholders, we are working with the European Medicine Verification Organisation (EMVO) to create a European Alert Management System (EAMS). The EAMS will enable direct communication between all participants and is intended to simplify and accelerate the analysis of alerts generated in the system that concern possible cases of counterfeiting, thus allowing the very low number of actually confirmed pharmaceutical counterfeiting incidents to be more quickly identified in order to protect patients. It will be possible to link existing national alert management systems with EAMS, thus enabling complete pan-European integration.

Safety features such as codes with individual serial numbers are also used in many other countries. The graphic "Serialization and Coding Requirements Worldwide" gives an overview of this. In other countries, such as the United States, these safety features are implemented for pharmaceutical manufacturers, and their mandatory use is being successively expanded to include additional market participants in the distribution chain. A complete track and trace system is planned to be implemented in the United States by November 2023.

Bayer supports and monitors these measures worldwide with the goal of ensuring standardized protection of patients against pharmaceutical counterfeiting in as many countries as possible. To facilitate maximally uniform global standards against product counterfeiting, we substantially contributed our experiences to the IFPMA position paper "Identification & Traceability of Medicinal Products – A tool towards strengthening health systems" and the ICMRA (International Coalition of Medicine Regulatory Affairs) document "Recommendations on common technical denominators for traceability systems for medicines to allow interoperability," of which the EMA is also an advocate.

Serialization and Coding Requirements Worldwide



■ = implemented / deployment started; ■ = upcoming
Rx = prescription medicines; OTC = nonprescription (over-the-counter) medicines

In conjunction with regulatory and statutory requirements, we have voluntarily employed tamper-evident closures for nearly all our prescription medicines and also many of our nonprescription products for years now to prevent packaging manipulation.

In addition, we deploy a combination of overt and hidden authentication features that to some extent offer the same level of security as the features used in bank notes and identification documents. In this connection, further suppliers of packaging materials into which the security features are integrated were additionally and specifically qualified in 2022, including in Algeria. This also involves an authorization by the licensor of the high-security feature deployed.

Supply chain activities

Within the PharmaLedger – Blockchain Enabled Healthcare project of the Innovative Medicines Initiative (IMI), we advocate for the implementation of a blockchain platform in the European Union. This project aims to simplify the exchange of data beyond the pharmaceutical value chain and irrespective of the different systems applied. The goal of this initiative is to improve the products' full traceability and thus combat pharmaceutical counterfeiting. Bayer has assumed the leadership role in this project in terms of its practical application in the supply chain. We are also involved in the development of another application case – by scanning a 2D data matrix code that is mandatory in the EU to protect against prescription pharmaceuticals counterfeiting, users will be able to receive information that enables them to authenticate pharmaceutical packaging. The definition and design of this "detecting falsified medicine" use case are such that all market participants (including patients) can identify original pharmaceuticals across platforms and technologies. To demonstrate the possibilities of this technology, a fully functional smartphone app was developed for demonstration purposes in 2022. We actively supported the establishment of the PharmaLedger Association as the successor organization for the funded project after its expiration to ensure a seamless transition to practice and the continuity of the attained results. The plan is to provide access to an electronic version of patient information as the first application case before the detecting falsified medicine use case is further developed to market maturity.

Defense against illegal products on the internet

To ensure the safety of patients and customers and protect our products, we work together with other companies in the fight against illegal pharmaceutical product offerings on the internet, such as on marketplaces and social media channels. Through a joint project of the Pharmaceutical Security Institute, in 2022 we succeeded in shutting down about 250 illegal websites and identifying more than 1,100 impermissible offers worldwide on marketplaces such as Shopee, Tokopedia, IndiaMart and Lazada and on social media platforms such as Twitter, Facebook or Pinterest. The success rate in terminating illegal offers was 67% in 2022.

Together with other members of the European Federation of Pharmaceutical Industries and Associations (EFPIA) and through the European Alliance for Access to Safe Medicines (EAASM), we advocate for a comprehensive change in the legal foundations of and obligations on internet players. Of outstanding importance was the amendment of the Digital Service Act (DSA), which was adopted by the European Parliament in July 2022. We contributed our experiences to the public consultations in this connection through the associations, especially to the Know Your Business Customer (KYBC) principle. We also support the "Memorandum of Understanding (MoU) on the sale of counterfeit goods on the Internet" initiated by the European Commission.

For many years now, we have served on the Executive Board of the EAASM so as to educate patients about the dangers of purchasing drug products on the internet. We provide information on the associated risks and consequences through information campaigns, research projects and publications.

We are also actively involved in the Pharmaceutical Security Institute, an alliance in which pharmaceutical companies provide mutual support in detecting and countering product-counterfeiting-related crimes. Through a joint COVID-19 initiative, we combated illegal offers and counterfeiting of Bayer products such as chloroquine.

In 2022, Bayer became a member of TAPA EMEA, the European branch of the Transported Asset Protection Association (TAPA), to further increase the resilience of our distribution chain as regards additional risks posed by theft and misappropriation. This gives us access to specific analyses of identified dangers and risks in the distribution chain and during transport, enabling us to examine the potential of possible defense mechanisms for implementation and their usability in our distribution chain.

3.6 Crop Science

Before crop protection products and technologies can be introduced to the market, it must be demonstrated that their label-compliant use is without harm for humans and does not expose people or the environment to an unjustifiable risk. 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.

Stewardship Measures

Management approach

Responsibility for product stewardship in Bayer's Crop Science Division lies with the divisional function of Strategy and Sustainability, which reports directly to Bayer's Crop Science Executive Leadership Team (ELT), the highest decision-making body within the division. The ELT is led by the head of Bayer's Crop Science Division, whose position makes him a member of the Board of Management of Bayer AG.

Bayer works continuously to improve its products and develop solutions for sustainable agricultural practices. The focus is on optimizing product benefits, including safety for people and the environment, and applying the findings from product monitoring. For us, product stewardship is a life cycle approach that begins at the research and development stage of a new product, continues through its production, marketing and safe use, and ends with the final disposal of any waste.

We have specified our principles of responsible product management in our Group Regulation on Product Stewardship Commitment, Principles and Key Requirements. This is based on established and internationally recognized standards such as the International Code of Conduct on Pesticide Management issued by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), the guidelines of the crop protection association CropLife International, and the guidelines of the industry initiative Excellence Through Stewardship (ETS) for seeds and plant traits. This initiative promotes, for example, the introduction of product stewardship programs and quality management systems for seeds throughout the entire 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 Canada were recertified for the product stewardship programs in 2022.

For more information on our commitment to smallholder farmers in low- and middle-income countries (LMICs), please see the Sustainability Strategy chapter.

Online transparency platform

Transparency is very important to Bayer, especially with respect to the safety of our products. Through transparency, we aim to strengthen our customers' and stakeholders' confidence in our products. Bayer was the first company in the agriculture industry to make safety-relevant data on crop protection products and genetically modified crops publicly available. Summaries of scientific studies assessed by the European Food Safety Authority (EFSA) in connection with the registration procedures for 32 of our crop protection active ingredients are available on our online transparency platform, including toxicological and ecotoxicological studies and investigations into degradability. There, we have also published summaries of scientific studies for 16 biotechnology traits within our seeds business that were previously evaluated by the responsible regulatory authorities in the United States. Comprehensive reports on the registration studies for the approval of our crop protection products and

genetically modified crops are available on specific request. The platform is continuously updated to provide the most recent status of safety-relevant information on crop protection products and genetically modified crops as well as information on plant breeding.

In addition, we facilitate access to information – including official documents and data – on the procedure for granting emergency authorizations for crop protection products, including why this process is so important for European agriculture.

We present our principles for responsibly handling our products throughout their life cycle based on our Group Regulation on Product Stewardship Commitment, Principles and Key Requirements in the sections below.

Research and development (R&D)

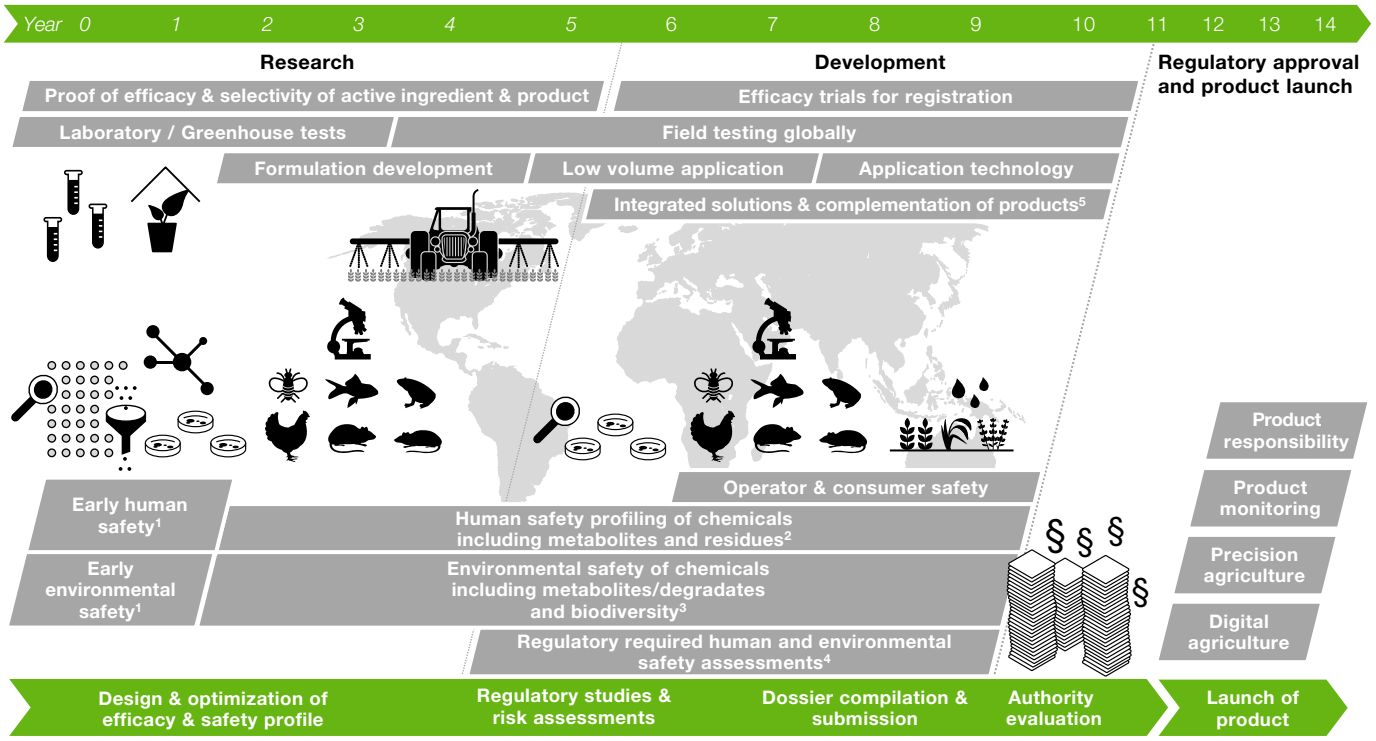
We use the latest knowledge and technologies to develop products and services so that we can continuously optimize their efficacy, productivity and safety for people and the environment.

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 we only continue to develop those products with the best safety profile.

Development and in-licensing projects for crop protection products classified as World Health Organization (WHO) class 1a or 1b, or that do not meet the OECD (Organisation for Economic Cooperation and Development) Guidance for Pesticide Registration, will not be pursued. In all other cases further activities and refined risk assessments are performed.

This enables selection and implementation of the right projects in a sustainable manner and makes the best use of available resources in research and development.

Research & Development Process for Crop Protection Products



[1] Including in-vitro screening and in-silico approaches (including on nonbioaccumulation)
[2] Including in-vitro and in-vivo studies (mammals) on acute, subchronic, chronic toxicity; mutagenicity, carcinogenicity, teratogenicity, reproduction; endocrine disruption, residues (e.g. plants, animals); dietary and nondietary risk assessments
[3] Including risk assessments and research on biodiversity & ecosystems, as well as acute and long-term effect investigations on nontarget organisms, e.g. on algae, daphnia, fish, birds, bees, soil organisms, plants; environmental behavior in soil, water and air; endocrine disruption; drinking water
[4] Including data from previous research and in addition the regulatory-required safety studies & assessments, e.g. in/on nontarget organisms, environmental behavior & corresponding environmental exposure, metabolism and degradation in plants & animals, residues, acute, subchronic, chronic toxicity in mammals, endocrine disruption
[5] Integrated solutions; complementation with nonchemical and biological solutions

Each R&D project must undergo a thorough safety assessment as defined by the respective regulatory environments following a risk-based approach that often exceeds these requirements – particularly in low- and middle-income countries (LMICs). This risk-based approach takes account of local agronomic use conditions in LMICs, especially common local application techniques that are not widespread in Europe or the United States (e.g. manual application of crop protection products in dense crop scenarios). For these scenarios, we have developed globally relevant exposure models that consider these actual use conditions. They are consistently applied before triggering development work for new products. R&D projects that we do not consider safe under the current use conditions will not be pursued further. The development of genetically modified seeds is also subject to extensive international guidelines and stringent national laws and regulations. We have specified internal processes in a Group regulation to ensure a responsible approach to biotech-based manufactured products throughout their life cycle. For more information on plant breeding and genetically modified seeds, please see the Focus on: Agriculture chapter.

Internal standards

We apply the evaluation criteria of our Bayer Crop Protection Safety Standards as well as stewardship measures to ensure that our crop protection products are safe when label instructions are followed.

Since 2021, we have shared our crop protection safety standards on our website. Our voluntary standards reflect the guidelines and standards of international organizations such as the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO) and the Organisation of Economic Cooperation and Development (OECD), as well as those of reference regulatory authorities around the world. These safety standards use information on the toxicological profile of the active ingredients and crop protection products, their behavior during and after use, and potential exposure of humans or the environment. They evolve continuously based on the latest scientific knowledge and we invite internationally respected researchers from academia and other expert groups to review them.

As part of our commitment to ensure globally consistent safety standards for our crop protection products, we also published our Bayer Safety Standard for Operator Safety, which we apply in the risk assessment of our crop protection products. The operator safety standards and the associated data acquisition exceed local regulations in many countries that have less regulation in place for crop protection products. We hereby particularly consider specific use and application scenarios that are mostly relevant in LMICs. In 2021, an expert review panel was held with external scientists.

Studies and regulatory approval

Our Group Regulation on Bayer Societal Engagement (BASE) Principles sets out the principles of Good Scientific Practice, especially in relation to transparency of studies conducted including publication and collaboration.

Before a crop protection product is approved for use on the market, safety studies must be conducted in accordance with scientific principles and quality standards mandated by regulatory agencies to safeguard the health of people, animals and the environment. Usually, more than 150 different studies are required to evaluate and demonstrate the safety of a crop protection product.

These studies are conducted using the services of renowned and accredited service providers that work according to Good Laboratory Practices (GLP) and follow internationally approved guidelines. GLP are principles outlining how safety studies are planned, performed, monitored, recorded, reported and archived to maintain the quality and integrity of study data that support regulated products.

Sponsorship is disclosed on the cover page of the study reports that are part of the regulatory dossier submitted to authorities. Regulatory authorities such as the US Environmental Protection Agency (EPA) conduct independent audits on companies' processes, test facilities and studies to confirm compliance with GLP standards.

OpenLabs

Through the OpenLabs program initiated in 2020, we have offered the public the opportunity to visit our site in Monheim, Germany, during a two-day event and observe our scientists as they carry out a safety registration study. Due to the COVID-19 pandemic, we replaced the Monheim onsite visitor program with a new virtual visitor platform, Bayer OpenLabs 360°, which allows visitors to observe how we collect data on the safety of our crop protection products by complying with guidelines such as Good Laboratory Practice (GLP), at any time, from anywhere in the world. Since 2022, the Bayer OpenLabs 360° platform has also enabled our scientists to engage with visitors online in live events.

Approved products
In general, operator safety, consumer safety and environmental safety studies have to be submitted if crop protection products are subject to reapproval or reregistration across the globe. These risk assessments, however, are not part of national regulations in every country.

Our portfolio contains more than 300,000 uses of crop protection products. We are committed to screening these uses over time for operator safety and started a systematic check in 2020. In a stepwise approach, we started with substances that have lower toxicological thresholds and high sales volumes. This screening includes checks on operator safety of use under actual, local working and agronomic conditions. We also check the label instructions for safe use of the crop protection products to ensure compliance with our safety standards.

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 the sites where crop protection products or seeds are produced. A health, safety and environmental protection (HSE) management system with uniform standards applies Group-wide. Product manufacture at our sites is performed according to the quality management standard ISO 9001. For more information, please see Chapter 8. Environmental Protection and Safety. As with our suppliers, we expect our third-party producers 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.

Labeling and packaging
To ensure safe use, crop protection products must be labeled. The FAO Guidance on Good Labelling Practices for Pesticides (FAO Guidance) and the underlying Globally Harmonized System (GHS) for classification and labeling of chemicals are the relevant and acknowledged international standards.

At Bayer, overarching and uniform requirements regarding labeling and packaging of crop protection products are included in our Group Regulation on Product Stewardship Commitment, Principles and Key Requirements, among others. Our product labels follow the FAO Guidance and the GHS and also comply with local regulatory requirements for classification and labeling. In countries where there are no specific requirements for labeling, our crop protection products are labeled in accordance with the FAO Guidance and the GHS. When local regulations deviate from the FAO Guidance and the GHS, we use this reference to advocate for label improvements whenever possible.

Packaging materials used for crop protection products are certified according to UN Transport of Dangerous Goods Model Regulations. This refers to mechanical stability of the packaging as well as compatibility of the packaging material with the contained chemicals. Packaging is registered in the countries of sale according to the locally required regulations.

We also ensure that our products are stored and transported according to the applicable legal and regulatory requirements. For more information, please see Chapter 8.9 Transportation and Storage Safety.

Marketing, sale and distribution

Our Corporate Compliance Policy sets out the principles that apply to all Bayer employees throughout the Group worldwide. Moreover, our Group Regulation on Bayer Societal Engagement (BASE) Principles establishes how we interact worldwide with various stakeholders.

Marketing and sales
We are committed to ethical marketing and sales practices that meet the standards set by external regulations and codes of practices, in particular the laws and regulations dealing with advertising and marketing practices, the applicable global, regional and local industry codes relevant for our business as well as data protection and privacy of customer or consumer information.

The Group Regulation on Integrity & Responsibility in Communications and Marketing holds our employees, contractors and agencies accountable for ensuring that communications and marketing activities and materials are compliant, appropriate, honest, fair and respectful.

In line with our binding Group Regulation on Product Stewardship Commitment, Principles and Key Requirements, which is based on the International Code of Conduct on Pesticide Management issued by the Food and Agriculture

Organization of the United Nations (FAO) and the World Health Organization (WHO), we adhere to ethical marketing and sales practices that meet applicable regulations. Our Group Regulation on Stewardship and Compliance Incident Management ensures the management and investigation of external complaints.

Distribution
In its distribution of crop protection products and technologies, Bayer follows the International Code of Conduct on Pesticide Management of the Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO). Our principles are defined in our Group Regulation on Product Stewardship Commitment, Principles and Key Requirements.

Self-commitment
Our crop protection products are classified according to their WHO acute toxicity class and this classification is maintained in our internal database. Internal processes ensure that no new product with a WHO class 1a or 1b category can be marketed. In addition, since 2012, we have no longer sold WHO Class 1a or 1b agricultural crop protection products despite continued formal authorization to do so. We also withdrew registrations on WHO Class 1a or 1b agricultural crop protection products.

Not all our crop protection products are registered in Europe. There are various reasons for this, e.g. different customer needs and agricultural practices outside Europe. These crop protection products are registered in accordance with national regulations outside Europe. Bayer complies with international regulations, e.g. the UN Rotterdam Convention concerning the export of such products that could be produced in Europe but are not registered in Europe, being registered instead in the importing country. In this context, Bayer committed itself to only selling crop protection products according to our OECD commitment.

We regularly review the products we offer in emerging markets and developing countries with respect to the applicable specifications for ensuring the safety of our products and reducing the risks associated with their use. We voluntarily withdraw such products from the market if identified risks cannot be limited sufficiently. For more information on the safety of crop protection products, please see our website.

To ensure the safe use of our crop protection products based on adequate research, we made an important voluntary commitment in 2016 – we will market only those crop protection products whose active ingredients are registered in at least one OECD country or, in the case of new active ingredients, for which an OECD data package has been compiled. OECD data packages require the preparation of complete dossiers for crop protection products and their active ingredients in support of regulatory decisions in OECD countries. They include the findings of all test and study reports and other relevant information submitted by the company and other interested parties. The data needs to be made available to facilitate checking by regulatory authorities as a basis for decision-making with respect to the approval of individual active ingredients, the registration of crop protection products, the establishment of a maximum residue limit, or the determination of an import tolerance, as appropriate. The guidance contained in the OECD package can be used by regulatory authorities, where the evaluation of extensive data submissions is necessary. As part of our internal processes established to comply with this voluntary commitment, quarterly checks on all our crop protection products are conducted.

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

Counterfeit products
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.

Integrated crop management for pest and resistance management

Bayer offers farmers sustainable integrated weed management (IWM) programs to help guide them through science-based, best practices for crop protection and herbicide stewardship. These customized solutions show farmers the benefits of a holistic approach to weed management, including, for example, using crop rotation, planting cover crops or utilizing multiple modes of action or other cultivation practices.

IWM is a systematic approach for long-term weed management and is particularly useful for managing and minimizing herbicide resistance. Thus, incorporating a combination of weed management measures helps to sustain weed control systems over time and maintain farms' ability to provide productive harvests while protecting the soil by helping to reduce soil erosion and increasing soil organic matter levels.

As our global reference center, our Weed Resistance Competence Center (WRCC) drives research and innovation in the field of weed resistance. It develops proactive programs that, when implemented locally, promote the sustainability of weed control. The WRCC cooperates globally with leading institutions and weed scientists to jointly solve different weed management issues. The WRCC has started developing digital solutions, including recommendation models, the prediction of resistance and IWM advisory mobile apps.

Bayer ForwardFarming initiative

Bayer 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. through the Bayer ForwardFarming initiative. ForwardFarming promotes the implementation of sustainable agriculture in practice across a global network of independent agricultural operations.

On ForwardFarms, we show how sustainable agriculture involving end-to-end stewardship solutions including integrated crop management and resistance management can be put into practice. In these representative operations, farmers demonstrate modern cultivation techniques, the sustainable and safe use of seeds and crop protection products, and the action they take to handle resources responsibly. The ForwardFarms promote dialogue with users and enable the worldwide exchange of ideas and findings among various stakeholder groups.

There are currently 25 Bayer ForwardFarms spread across Europe (18), Latin America (4) and Asia (3). During the COVID-19 pandemic, in-person visits have been limited, but outreach has continued via virtual events and, besides that, the ForwardFarm in Belgium offers a 360° tour for a virtual visit.

Responsible use of crop protection products

Bayer's consistent safety standard aims to ensure that our crop protection products are safe for humans (from operators to consumers) and cause no undue harm to the environment if used according to label instructions. Aside from our high safety standards for the crop protection products we sell, we apply a wide range of product stewardship instruments in compliance with the International Code of Conduct on Pesticide Management issued by the Food and Agriculture Organization of the United Nations (FAO).

Training

Through targeted training courses, we show farmers, seed treatment professionals, distributors and other users how to use our products both effectively and safely to maintain healthy plants and thereby increase the yield and quality of their harvested goods. Our objective is to continuously increase the outreach of our training activities through more widespread use of digital media.

The training courses cover aspects such as the safe handling of our products during use, transport, storage and disposal, the correct use of protective clothing and equipment, and first aid measures in the event of emergencies. The training topics can be adapted for specific target groups, a particular crop plant being used in cultivation or a particular product according to local requirements. Our training materials are available in various formats – from on-site presentations to brochures, videos, posters, manuals and live chats. In addition to special training measures for farmers and those who use crop protection products, we also combine training activities with events such as product launches or field days to reach a large number of farmers and distributors. Our training videos on the safe handling of crop protection products are also available online.

In 2022, we continued to offer virtual training activities that we widely used during the COVID-19 pandemic, but also resumed on-site training wherever possible. The flexible approach and use of digital tools enabled us to reach more than 3.4 million external contacts worldwide (i.e. farmers, field workers, distributors, retailers and other stakeholders in the agriculture industry), including around 2.7 million smallholder farmers. We focused our training activities on countries where there are no statutory certification requirements for farmers concerning the safe handling of crop protection products. Most of the people we trained were in Asia, followed by Africa and Latin America. Our partnerships allow us to increase the reach of the activities and conduct joint events, for example with universities, information centers or local, regional and international associations.

Bayer also trains farmers in various technical areas in the correct use of individual products. This includes training as mandated by the US Environmental Protection Agency (EPA) as a condition of registration for products containing the herbicide dicamba for use in dicamba-tolerant soybean and cotton crops. This training course was developed in cooperation with other dicamba herbicide registrants and governmental certification authorities. Successful completion of the training enables farmers to purchase and apply any dicamba products registered for use in dicamba-tolerant soybean and cotton crops. More than 41,000 users in the United States completed this certification in 2022, 45% of whom were trained by Bayer.

Bayer Safe Use Ambassadors

Besides training farmers, we are also engaged in training agricultural students and as physicians in LMICs through our Bayer Safe Use Ambassador initiative, a multi-stakeholder platform launched in 2017. In collaboration with agricultural universities, we offer students annual training in the safe use of crop protection products, with a focus on safety for users and the environment. This also includes consumer safety aspects in the use of crop protection products. The students share their new knowledge with farmers during internships on farms. So far, we have engaged with 53 agricultural universities in 13 countries.

In 2022, we expanded the Bayer Safe Use Ambassador initiative to physicians. We train physicians in rural areas on how to prevent unintended exposure to crop protection products, and on how to treat chemical poisoning in general, snake bites and heat strokes. In doing so, we are aiming to support health provision for farmers. As part of the training, we also encourage physicians to report to us any incidents related to the use of our crop protection products, in particular for countries where there are no national institutions that monitor incidents. In 2022, we trained more than 1,000 physicians in Kenya, India and Thailand through a webinar series.

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, glyphosate-based herbicides are most frequently used according to the label to control weeds in various field crops. According to the label, applications also include weed control 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.

Combining glyphosate with crops that could withstand applications of this herbicide transformed agriculture. Farmers who cultivate glyphosate-tolerant crops tend to adopt conservation tillage, which brings its own benefits in terms of reduced soil erosion, improved water quality and lower carbon dioxide (CO_2) emissions. In agricultural systems where glyphosate-tolerant crops are not available, glyphosate provides benefits for farmers and the environment by simplifying weed management and reducing the need for mechanical tillage and enabling the adoption of cover crops. Outside of agriculture, glyphosate delivers benefits for noxious or invasive weed control.

Glyphosate has a proven track record of more than 40 years of safe use when used according to label directions. This is confirmed by science-based evaluations conducted by European regulatory bodies such as the European Food Safety Authority (EFSA), the European Chemicals Agency (ECHA) and the German Federal Institute for Risk Assessment (BfR) and other leading regulatory authorities such as the US Environmental Protection Agency (EPA) and the Canadian governmental authority for pest control belonging to the Department of Health (Health Canada Pest Management Regulatory Agency [PMRA]). The most extensive agricultural 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 the use of glyphosate-based herbicides and the occurrence of non-Hodgkin lymphoma. The study followed more than 50,000 licensed applicators of crop protection products for more than 20 years.

Glyphosate's favorable environmental safety profile underlies its ability to be used in many diverse settings. Detailed reviews by the EFSA, PMRA and other regulatory authorities have concluded that approved uses of glyphosate-based herbicides are unlikely to cause adverse effects on the environment. In the United States, EPA scientists reached the same conclusion following their primary environmental review and have initiated a final step in the re-registration process to ensure current uses account for potential effects on endangered species.

This is a standard review for all crop protection products in the United States and can take several years to complete. Bayer scientists reviewed the draft report on endangered species and engaged in the public comment period.

Extensive information on the public discussion 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 2022 Annual Report.

It is of central importance for Bayer to offer farmers a broad 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 current decade to research additional weed control methods and thus provide farmers with more options in the future.

Glyphosate is currently going through the routine renewal process in the European Union. The designated Member States for the current glyphosate renewal process – known as the Assessment Group on Glyphosate (AGG) – are France, Hungary, the Netherlands and Sweden.

On June 15, 2021, the AGG published the main conclusions of their draft Renewal Assessment Report (dRAR) for glyphosate, concluding that glyphosate does meet the approval criteria for renewal. The AGG proposed that classification of glyphosate with regard to carcinogenicity, as for genotoxicity or toxicity for reproduction, is not justified. Furthermore, the AGG concluded that no chronic or acute consumer risk is expected from treatment of crops with glyphosate according to the representative uses for the current renewal process.

On September 23, 2021, the public consultation process on the draft Renewal Assessment Report opened. Sixty-day public consultations are well-established processes through which the European institutions increase the transparency of the evaluation for pesticides. Anyone could go to the EFSA and ECHA websites that hosted the public consultations to download either the full assessment report or only the sections of interest. This process ensured that all interested parties could actively participate in the science-based re-evaluation of glyphosate in the European Union.

A significant number of European Member State regulatory bodies, representatives of academia and scientists, along with farmers around the world and interested private persons and NGOs, submitted comments to the EFSA and the ECHA. All comments are made publicly available on the EFSA and ECHA websites for maximum transparency.

On December 10, 2021, the Glyphosate Renewal Group (GRG), of which we are a member, submitted its response to the comments for consideration and reply to the EFSA. The AGG itself then responded to the comments and our input and afterward forwarded all the information to the EFSA for evaluation. At the so-called "stop the clock" phase, the GRG submitted the applicants' replies to EFSA, in response to EFSA's request for additional information. The next regulatory milestone is the issuing of the final EFSA Conclusion by July 2023.

A proactive dialogue with a wide range of stakeholders took place throughout 2022. This dialogue and information exchange was on behalf of the GRG, national organizations such as the German Glyphosate Working Group (GLAR) as well as on behalf of Bayer or other GRG member companies. The broad offer included a wide range of activities, for example a bi-monthly GRG newsletter, press releases posted on the GRG website, along with dialogue formats such as informative sessions with stakeholders and regulators.

Product monitoring
We provide our customers with comprehensive, transparent and reliable information about our products and services in accordance with our Group Regulation on Integrity & Responsibility in Communications and Marketing. Users of our products can contact us through a range of communication channels should they have inquiries or complaints or if they wish to report any incidents. These channels include both direct contact with our sales staff and hotline numbers printed on our product packaging.

We follow up every incident relating to our crop protection and seed products reported anywhere in the world and manage the incidents with the aid of a dedicated incident management system. Reported incidents are classified based on severity and risk. Our Group Regulation on External Adverse Incident Management for Crop Protection Products provides clear guidance on handling incidents.

Our incident management system and continuous product use screenings form the key reference points when it comes to monitoring the safety of our products and to identifying necessary improvements. In general, steps to mitigate risks can vary from increased training efforts, change of formulation, revised application recommendations and use limitations to product withdrawal. This is fully in line with the FAO/WHO International Code of Conduct on Pesticide Management and the FAO Guidelines on Highly Hazardous Pesticides (HHPs).

Our incident management system also analyzes data from national poison control centers, where available. We work with hospitals and poison control centers to further improve their report and data quality, also with the support of CropLife International. Since 2022, we have also engaged with medical professionals through our Bayer Safe Use Ambassador Initiative where we encourage physicians in LMICs that do not have national incident monitoring institutions to report any incidents related to the use of our crop protection products directly to us.

Use of digital technologies
For Bayer, digital technologies are key enablers for creating a better balance between productivity and environmental conservation. The goal of digital farming is to use resources such as water, fertilizer and crop protection products more efficiently and to sustainably increase productivity.

Utilizing these new technologies makes it possible to reduce the resources needed for crop production and also promotes the safe and responsible use of crop protection products. For example, the use of satellite and drone data means that that even slight differences in the field can be taken into account and crop protection products can be individually and precisely applied in the required amount only where they are needed (zone/spot spraying plus Variable Rate Application).

In 2022, Bayer continued its strategic partnership with major drone-producing companies, for example for the targeted treatment of crops with crop protection products. Through these partnerships, we strive to provide farmers with reliable and high-quality spray applications. At the same time, we are collaborating with local professional drone spray service providers, who are also interesting for areas with large numbers of smallholder farmers as they can boost productivity and increase operator and farmer safety at the same time. Through our Leaps by Bayer unit, we are also investing in two companies with their own drone application development programs.

We emphasize quality and safety throughout the trials we perform with drones. The existing guidelines on the safe use of drones have been further refined. We worked together with regional CropLife organizations, such as CropLife Asia and CropLife America, to frame guidance documents for the application of crop protection products through unmanned aerial systems (UAS). In various countries, we carry out corresponding training courses for our employees and those of our research partners, often virtually. To further refine guidelines and enrich the data set needed for risk assessments, Bayer is engaged in various groups, such as the OECD Working Party on Pesticides Drone Subgroup and the Unmanned Aerial Pesticide Application System Task Force (UAPASTF).

Sensors on the latest tractors and harvesters can supply important information on plant health and yield data. Along with other data, this is incorporated into the digital applications developed by the digital farming unit of Bayer – Climate LLC (formerly The Climate Corporation) – to help farmers achieve more efficient and sustainable agricultural operations.

Our digital farming platform Climate FieldView™ enables farmers to use data to optimize their agricultural inputs (costs) used on the field and to improve their output (yields). This takes place through the sensor-based collection and storage of large volumes of machine-generated agronomic data directly on the farmers' accounts. The application of this data not only enables farm management to be economically sustainable by providing higher return on investment, but also creates substantial advantages for the environment. Thanks to precision agricultural machinery and digital tools, inputs such as seeds, water, fertilizer and crop protection products are only used when and where they are necessary. FieldView™ is currently available in North America, South America, Europe, Turkey, South Africa and Australia.

We launched ForGround in 2022. This farmer-first digital platform offers growers tools and resources, as well as the potential to earn revenue through the Bayer Carbon Program, for the adoption of more sustainable practices such as cover cropping and reduced tillage. ForGround is expanding and evolving beyond carbon sequestration (part of the Bayer Carbon Program) to explore other approaches and collaborations that can enable farmers to make a positive impact in their operations and on the environment.

Water protection

Avoiding discharges of crop protection products into water bodies is an important aspect of sustainable agriculture. Alongside point source discharges into water bodies that can occur during the filling and cleaning of spraying devices, diffuse substance discharges from treated fields can also play a significant role. That is why many of our training measures for farmers also focus on protecting water bodies in the context of the correct use of our products.

To avoid point source discharges, Bayer recommends the use of biological remediation systems such as Phytobac™, which we have developed in collaboration with Beutech. Phytobac™ is designed to prevent water contamination with residues of crop protection active ingredients generated during the filling and cleaning of spraying devices or the disposal of residual liquids. The system is already used in many EU countries and offered commercially by various third-party manufacturers. More than 5,000 Phytobac™ systems are currently in operation in Europe. Demonstration farms have also been implemented in Australia, Canada, China, Thailand, Argentina, Brazil and Colombia.

We also drive digital innovation to address water runoff from agricultural fields. Field runoff can cause soil erosion and input losses, such as of fertilizer and crop protection products. Water from rainfall is also lost that cannot then be taken up from the soil or by plants. This is highly relevant in many regions in times of progressing climate change. In collaboration with external partners, we have developed a digital geoinformation system for agriculture in order to reduce runoff and its negative effects in the field and protect neighboring water bodies from diffuse substance discharges. Site-specific runoff risks are visualized by means of high-resolution maps supplemented with a toolbox of risk mitigation proposals. With this solution, we are offering our agricultural customers a digital tool that can help to avoid input losses and facilitates sustainable farming practices. At the same time, the tool helps farmers in sustaining rain-fed cropping systems without artificial irrigation under the intensifying pressures of climate change. So far, the following countries have been mapped: Germany, the Netherlands and Belgium.

Further, we support the implementation of closed transfer systems such as the jointly developed “easyFlow” system from agrotop GmbH. Closed transfer systems help prevent spills of crop protection products and hence help to further increase convenience, operational safety and environmental protection.

In a move consistent with the CropLife Europe commitment to making closed transfer systems universally available to European farmers and operators by 2030, Bayer has joined the cross-industry group developing the “easyconnect” closed transfer system. The system aims to provide a solution that is fast, safe and convenient for farmers and operators across Europe.

Protecting pollinators and other beneficial insects

Bees and other pollinators are hugely important for sustainable food production, and we also depend on healthy pollinators in our seeds business. Bayer shares the concerns about currently declining insect populations and has published a position on this issue. As the causes of this decline have not yet been fully clarified, we believe further scientific studies of the causes and the development of corresponding countermeasures are urgently needed. We have therefore established a dedicated working group to address the issue and are involved in researching the factors leading to this decline and developing measures to counter the trend.

Our research supports 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. In cooperation projects worldwide, we are looking into some of the major stress factors for pollinators and into new approaches for protecting them and for fostering the pollination of crops. At the same time, we are engaged in the development and implementation of approaches to protect insect biodiversity in the agricultural landscape where the current state of knowledge already allows for the definition of effective measures.

To minimize potential risks posed to pollinators by our crop protection products, initial tests – particularly to measure bee toxicity – are already carried out at an early development stage to ensure that only products with an environmental profile that allows pollinator-safe use are further developed. Crop protection products are stringently regulated and undergo thorough testing to make sure they can be used safely. We perform extensive safety testing and risk assessments, enabling us to recommend specific bee safety measures to farmers.

Furthermore, we have contributed to the creation of a new label pictogram (see icon) designed by CropLife International and published by the Food and Agriculture Organization of the United Nations (FAO) to be used as a precautionary icon on labels for crop protection products to protect pollinators. The new label pictogram serves on the one hand to optimize global consistency in pollinator safety labeling, and on the other hand puts emphasis on the protection of wild pollinators beyond honeybees, and on pollinator habitats. We have started to adopt this label pictogram for Bayer's crop protection products.

Meta-studies on plants featuring Bt technology (genetically modified plants that contain genes of the soil bacterium Bacillus thuringiensis (Bt)) have not identified any biologically relevant effects on honeybees. For more information, please see the Focus on: Agriculture chapter.

Bayer is one of the founding members of Growing Matters, an initiative that is committed to open and scientific discourse on stewardship, benefits and alternatives to neonicotinoid insecticides in North America. Together with its partners, Growing Matters launched the BeSure! campaign, designed to strengthen awareness and adoption of stewardship practices to protect bees and other pollinators during the handling, planting and disposal of neonicotinoid-treated seeds and other neonicotinoid applications used during the growing season.

Neonicotinoids

The introduction of the neonicotinoid class of insecticides in the 1990s brought new features to improve sustainability and to reduce the environmental impact of insecticides in agriculture. Neonicotinoids replaced older, frequently much more toxic insecticides, reinforced the concept of seed treatment minimizing environmental exposure to agrochemicals, and brought a broad spectrum of efficacy and new mode of action to assist integrated resistance and pest management on many crops.

Some years after introduction, there were a few reports of incidents where the use of neonicotinoid products was associated with negative effects on nontarget insects, such as bees. The most severe example was when dust from treated seeds was accidentally released during planting in Germany in 2008, which resulted in significant intoxication of bees nearby.

At Bayer, the incidents triggered a period of internal review/research into suitable risk mitigation measures or product replacements. It also changed the risk assessment and profiling of existing and new products in Research & Development (e.g. systematically considering pollinators in the early compound candidate selection process already). Several initiatives and processes were introduced to minimize further risk through the exposure of bees to neonicotinoid insecticides.

Since 2021, we have published details on the measures we have taken in recent years in a separate report that is updated on a yearly basis. We have also published detailed information as appendices to the report.

Mitigating measures taken include:

// Bayer has continued to make updates to product labels to improve pollinator safety. All labels for clothianidin- and/or imidacloprid-containing products (foliar and seed treatment) have improved explanations of use regarding pollinator safety. These labels include a pollinator safety icon developed by CropLife International, which has recently been approved by the Food and Agriculture Organization of the United Nations (FAO).
// Various tests in Research & Development to characterize the toxicity of novel development compounds to bees at an earlier stage of the screening process in order to further optimize the establishment of pollinator-safe use patterns as an integral part of product development
// Innovation in seed coatings to improve adhesion: seed coatings protect operators and the environment from dust, with emissions reduced by up to 95%

// Bayer's invention of the Seed Treatment End Point (STEP) technology, which enhances the quality of the treated seeds by avoiding abrasion

In other countries outside of the EU, neonicotinoids are regularly reviewed by competent authorities to assess the risks to humans and the environment. Regulatory authorities in India and Brazil recently published their evaluation conclusions regarding imidacloprid. The active ingredient was considered safe and will stay on the market with some additional label restrictions regarding pollinator safety.

We believe that continuing to manufacture and market neonicotinoids under the conditions authorized by regulatory authorities around the world is responsible, beneficial and consistent with the UN Global Compact environmental principles.

Monarch butterfly

Populations of the migratory monarch butterfly, which is common in North America, have declined in recent decades due to the loss of milkweed in the United States, habitat loss in the Mexican forests, weather and climate changes, natural enemies, and disease pathogens and parasites. To enhance the habitat for the monarch butterfly and other pollinators, Bayer is collaborating with conservation groups, academic experts, farmers and government agencies to find meaningful and proactive ways to help these important pollinators thrive. We are working to ensure that the growth of the wild plants (milkweed/Asclepias) that constitute the monarch butterfly's main source of food is supported along its migration routes outside of cultivated areas. This benefits not only monarchs but also many other insects, birds and mammals.

Through an app called HabiTally, which we developed together with Iowa State University in 2019, farmers and landowners can document the habitats they have created for monarch butterflies and track the gains made in milkweed (Asclepias) stems/acres across the United States. The app allows for better estimates of how much current habitat exists and where, while also better facilitating further habitat planning and development. The United States Fish and Wildlife Service uses the data to better assess and monitor the population dynamics of the monarch butterfly. For more information, please see our website.

Disposal of containers and old inventories, discontinuation policy

Processes are in place at Bayer to ensure the safe sell-off of products, including the disposal of obsolete inventories or waste.

The crop protection 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 also 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.

Empty crop protection product containers must be safely disposed of to ensure that any remaining product residues are not released into the environment and that empty containers are not improperly reused. As the proper disposal of crop protection product containers is handled differently in many countries, the crop protection industry works together with authorities, distributors and farmers to establish or maintain suitable disposal systems.

Bayer supports programs worldwide to ensure the safe recycling and disposal of empty packaging and containers. Users can learn about how to safely dispose of our products through information on their labels.

We support the safe disposal of empty crop protection product containers in many countries together with our CropLife International industry association. As a result, one million metric tons of plastic have been collected since 2005. This partnership has also facilitated the development of environmentally friendly packaging design programs, the implementation of training courses for distributors and farmers in the proper handling of crop protection product containers, and the testing of plastic recycling options. Particularly successful disposal programs have been established in Brazil, Canada, France, Germany and Australia. In Brazil, more than 540,000 metric tons of empty crop protection product containers have been disposed of since 2002 through the inpEV (National Institute for Processing Empty Packages) program.

In Germany, the crop protection industry partnered with agricultural wholesalers to develop the voluntary PAMIRA system for disposing of agrochemical packaging materials. Crop protection product manufacturers cover the costs for collection, logistics and utilization of packaging, while wholesalers provide the collection points. In 2021, around 3,000 metric tons of crop protection product and liquid fertilizer packaging in Germany were returned free of charge to the almost 400 collection points and disposed in an environmentally friendly manner through the PAMIRA system.

3.7 Biodiversity

According to the latest report of the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES), more than one million species of animals and plants face extinction, driven by human activity. The number one threat to biodiversity is the loss, deterioration and fragmentation of habitats contributing to the extinction of species. This is why attention is centered on raw material production in the primary sector, and particularly agriculture.

Biodiversity is an interdisciplinary topic that affects several areas of Bayer as well as our entire value chain. Activities at Bayer therefore focus on the responsible use of natural resources to conserve and protect ecosystems, species and genetic biodiversity. The drug discovery process and discovery of crop protection active ingredients can benefit from biodiversity, while biodiversity is vital for the development of new seed varieties. We have spelled out this stance in our Position on Conservation and Restoration of Biodiversity in Agriculture and Forestry.

Bayer is committed to the objectives of the United Nations' Convention on Biological Diversity (CBD), including the fair and equitable sharing of benefits arising from the utilization of genetic resources, as well as the goals of the FAO's International Treaty on Plant Genetic Resources for Food and Agriculture, which prescribes the balanced and fair division of use of plant genetic resources. Our Group Regulation on Access & Use of Genetic Resources defines the principles of how to manage access to and the use and transfer of genetic resources and/or traditional knowledge throughout the company.

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. Using the international Integrated Biodiversity Assessment Tool (IBAT), we conducted a comparison of the geographical coordinates of our 553 production sites, plant breeding stations and research sites in 2020 with those of internationally recognized protected areas (such as ASEAN Heritage Parks, Wetlands of International Importance according to the Ramsar Convention, Specially Protected Areas of Mediterranean Importance according to the Barcelona Convention, UNESCO-MAB Biosphere Reserves and World Heritage Sites). The comparison showed that 30 of our sites are located within six kilometers of such protected areas.

Since 1993, Bayer has partnered with the Wildlife Habitat Council (WHC) to promote sustainability, wildlife preservation, biodiversity and environmental education at the company's WHC-certified sites. There are currently 51 Bayer programs in total registered with the Wildlife Habitat Council. Some 39 of our sites are certified, three of which achieved Gold Certification and five Silver Certification. Sites seeking certification from WHC must demonstrate a high standard of achievement through observations, documentation and participation in protecting habitats. Programs at the certified sites include habitats such as grassland and forest, along with species such as pollinators and birds, and also focus on promoting awareness and community engagement.

Forest habitats are of central importance for biodiversity and forests play a key role in protecting the climate. With our Position on Deforestation and Forest Degradation, we aim to address the causes of these within our sphere of influence, as well as in cooperation with our customers in the agriculture and forestry sector and within our supply chains. In our current Report to CDP Forest, we have included a detailed statement on this.

Agriculture

Agriculture depends on biodiversity. Many species create and maintain important ecosystem services such as pollination or natural pest control and are thus essential for food, feed and textile fiber production. In agriculture, the most important drivers for the loss of biodiversity are land use change (including fragmentation and degradation), climate change and pollution. It is crucial that these problems be overcome, as maintaining a diverse range of species allows agricultural systems to be more resilient to stresses, including those caused by climate change. At the same time, the very purpose of agriculture is to provide a safe and secure food supply for humans, which entails the sensible use of measures to protect crops from organisms that could compromise the harvest. Obtaining the optimal balance is our goal.

We acknowledge that farming, like many other activities, has an impact on biodiversity. To meet the social, environmental and economic needs of a population that is growing in numbers and wealth, we need to further optimize agricultural production systems. We therefore promote the concept of

regenerative agriculture. The wider use of regenerative agriculture can potentially improve the balance between agricultural yields and environmental protection, while at the same time supporting the needs of society and farmers. We offer a special training module on regenerative agriculture within our BayGAP platform. In 2022, furthermore, we became a member of the regenerative agriculture program of the Sustainable Agriculture Initiative (SAI) and the Agribusiness Taskforce of the Sustainable Market Initiative. Since 2016, we have been part of the Midwest Row Crop Collaborative, which advocates the broad introduction of regenerative agriculture particularly in the Midwestern United States – where some 80% of US corn and soybeans is harvested.

Acknowledging the global diversity of cropping systems, regulatory requirements and societal expectations, we collaborate with local experts and associations to develop tailored tools that can address the challenges of each field. One example is our field trials in Latin America, in which we test various crop rotation systems (including cover cropping) to determine their yields and financial profitability. We also test the crop rotation systems for various impacts on sustainability factors such as soil health and resource efficiency.

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, soil and crop protection products efficiently and sustainably. This also indirectly helps protect biodiversity. For more information, please see Chapter 3.6 Crop Science.

Helping farmers to implement measures

The IPBES report names land use change as the number one root cause of biodiversity decline. In a collaboration with the International Food Policy Research Institute (IFPRI) and ETH Zurich (ETH), we worked with farmers in Brazil, Germany, France and the United States. The collaboration leveraged a scientific and farmer network and taped into comprehensive research, insights and experiences in the field of biodiversity and agriculture. The final report is available online.

In the first phase, we surveyed farmers and performed comprehensive literature searches (meta-analysis) to identify measures and management options that benefit local/regional biodiversity and also create added value for farmers.

The farmer interviews revealed that reduced chemical crop protection and mineral fertilization, cover crop cultivation, crop rotation, reduced or no tillage and the preservation or restoration of (semi-)natural habitats such as forests, permanent grassland, flower or buffer strips are currently the most widely implemented measures. Farmers recognized that these measures and practices can have beneficial effects on input costs, soil health, the avoidance of soil erosion, water quality and beneficial insects such as pollinators.

This was also confirmed by the scientific meta-analysis that looked at the effects of measures such as cover cropping or crop diversification. Unfortunately, not all studies could confirm a positive correlation between measures such as cover cropping and yield. Therefore, farmers need more information and support to be able to decide whether it makes sense to implement a certain measure or not.

The main limitations for a wider adoption of biodiversity-enhancing measures – particularly those related to habitat retention and restoration – are financial risks due to possible negative effects on crop yield and the extra costs and efforts associated with implementation and maintenance. In addition, policies that are supposed to increase adoption rates of biodiversity measures are very often considered too strict and inflexible – particularly in France and Germany – and mostly do not cover the varying opportunity costs farmers face when adopting those measures. Also, current market conditions do not yet support a more widespread adoption of measures and practices, but carbon markets and food-chain company commitments around regenerative agriculture can have a positive impact here.

Overall, farmers' willingness to adopt biodiversity-enhancing practices could be increased by providing support that makes the practices more financially appealing and by shifting from action-based payment systems to result-based systems that provide farmers with more flexibility. However, the scalable, scientifically sound and affordable quantification of biodiversity outcomes at field- or farm-scale, which is a pre-condition for result-based payments, remains a huge challenge.

This is why we became a member of the EU Horizon Project BioMonitor4CAP, which was approved by the European Commission in 2022. This four-year project, involving more than 20 organizations, aims to design advanced agricultural biomonitoring systems to support the implementation of future EU policies.

Reduced impact from crop protection products

We understand that crop protection products are often perceived as one of the root causes of biodiversity decline. Potential impacts of crop protection products on the environment are diligently assessed in the development process and additionally for approval by authorities. Moreover, our researchers work successfully on the discovery of new molecules aimed at minimizing such unintended and detrimental environmental effects. For detailed information on our stewardship activities in the development of new crop protection products and our training measures for farmers using our products, please see Chapter 3.6 Crop Science.

We also support and encourage the development of integrated pest management (IPM) and pollinator management methods that conserve the abundance and diversity of beneficial insects, protect pollinators and reduce the use of crop protection products or replace compounds with less favorable environmental safety profiles with modern, more environmentally friendly solutions. We are therefore conducting comprehensive field trials under agronomic conditions in various crops around the globe with the objective of deriving recommendations regarding the best positioning of our products within an IPM system to protect pollinators and beneficial insects.

We are continuing our efforts to further reduce the environmental impact of our crop protection portfolio. Therefore, we have targeted a reduction in the environmental impact of our crop protection products of 30% by 2030. For more information, please see the Focus on: Agriculture chapter.

Risk mitigation for pollinators and other insects
Insects play a key role in all terrestrial ecosystems, representing a significant part of worldwide biodiversity. One of the ecosystem services provided by insects is pollination, which plays an important role in global crop production and in safeguarding nutrition. To minimize the risks posed to nontarget insects, including pollinators, by our crop protection products, we perform extensive safety testing and risk assessments and implement product stewardship measures.

We continuously invest in research activities to better understand the root causes of pollinator and insect decline and support measures to counter this. A dedicated working group at Bayer is evaluating the factors behind insect decline and potential countermeasures. Moreover, we support activities to counteract insect decline – such as our engagements focusing on milkweed habitat creation for monarch butterflies in North America, and our activities with German farmers and conservation institutes to implement ecological enhancement measures in intensive agricultural areas.

For more information on protecting pollinators and on the effects of our products, please see Chapter 3.6 Crop Science. For more information on measures we have taken with regard to neonicotinoids, please see our separate report.

Commitment
We support the conservation and sustainable use of genetic resources as well as food security and ecological sustainability – not just through financial contributions and donations, but also through material donations to establish new collections aimed at conserving the genetic diversity of crops. We engage in various projects worldwide in this respect, including especially the building up of capacities in farming communities in particular, and also participate in numerous public–private partnerships. For more information, please see our website.

Contribution to the targets of COP15

Bayer provides a number of direct and indirect contributions with its products and solutions, initiatives and workflows that can support the recently adopted 23 targets of the Convention on Biological Diversity (COP15) for 2030.

Target 7
We work
// Toward reducing the overall environmental impact from our crop protection portfolio (Crop Protection Environmental Impact Reduction, CP EIR)
// On improved solutions for integrated pest management
// Toward further improving the safety profile of our products in the future

Target 10
We work on substantially increasing the application of biodiversity friendly agricultural practices and have launched several initiatives, such as
// Promoting sustainable agriculture including sustainable intensification, taking into account environmental indicators
// Digital weather and irrigation monitoring
// A science-based approach to understanding and counteracting insect decline
// Development of a shorter type of corn that provides more stability and results in fewer crops wasted in the field
// Promoting (precision) drip irrigation systems, integrated weed management and our Bayer Carbon Program – all with a specific focus on soil health and the related ecosystem functions and services such as erosion control and increasing soil organic carbon

The basic requirements to do so are, however, dependent on a regulatory environment with predictable and effective science- and risk-based safety assessments. Simultaneously, Bayer is working on improving food security and livelihoods, especially as part of our commitment to empower smallholder farmers in LMICs.

Target 15
We are also working on regularly monitoring, assessing, and transparently disclosing our activities relating to sustainability, including biodiversity, in sustainability progress reports.

For more details of the measures taken, please see the Focus on: Agriculture chapter and Chapter 3.6 Crop Science.

3.8 Pharmaceuticals and Consumer Health

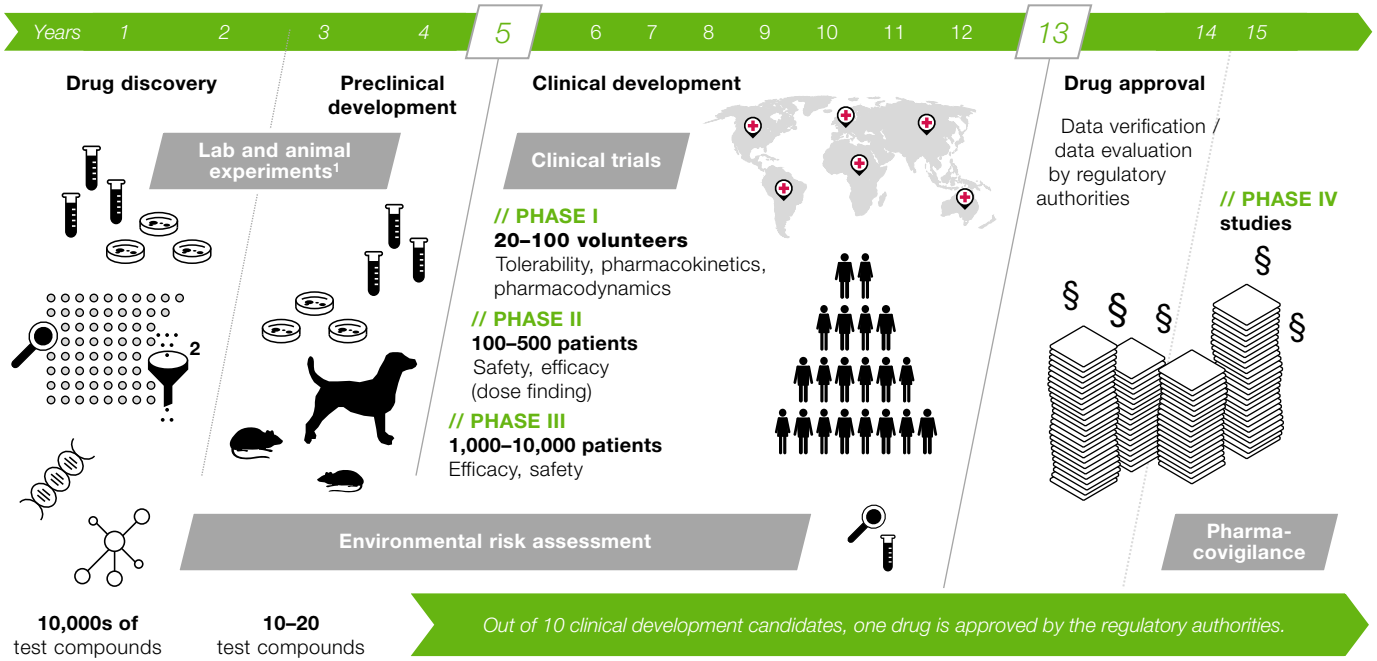
Quality and safety of pharmaceuticals and medical devices

Extremely stringent safety standards for patients and medical professionals apply to pharmaceuticals and medical devices. That's why both the development and the manufacture of pharmaceuticals and medical devices are subject to very strict quality requirements.

The quality management system of the Pharmaceuticals and Consumer Health divisions is based on internationally recognized standards and applicable legal, regulatory and ethical requirements for all stages of the provision of a pharmaceutical or a medical device – from development to registration, production and distribution. These standards particularly include the rules for good working practice (GxP) in the development and manufacture of pharmaceuticals – such as Good Manufacturing Practice (GMP), Good Distribution Practice (GDP), Good Clinical Practice (GCP), Good Pharmacovigilance Practice (GVP), ISO certifications such as those for the manufacture of medical devices (e.g. ISO 17025 and 13485), and the guidelines of the ICH (International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use).

Internal experts and external assessors regularly conduct risk-based audits to verify compliance with the statutory requirements and relevant standards in development and production as well as for registered product specifications. Such audits also cover institutes subcontracted by Bayer, service providers, our suppliers and contract manufacturers. Observations made during these audits are systematically evaluated and compliance with corrective measures verified at regular intervals. The quality requirements derived from regulatory requirements, permits and authorizations, and

Drug Development Process



[1] Required by law
[2] Compound screening (millions of chemical structures)

from relevant standards, are regularly reviewed and integrated into our quality management system.

In addition to the internal quality assurance mechanisms, all our sites are regularly inspected by the health authorities of the respective countries to verify compliance with the various national and international requirements, and certified according to the respective product category (e.g. through GMP certificates or in the form of an official producer permit). All our sites received the targeted certifications in 2022.

The quality, safety and efficacy of pharmaceuticals and medical devices are always assessed relative to the possible risks associated with their 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. The first step in developing a pharmaceutical is to find substances that can serve as the starting material for a new active ingredient. The next step is to test the new active ingredient – for example by using computational simulation processes, conducting tests in cell or tissue cultures or with the help of bacteria or animal studies. These tests are prescribed by law and subject to strict guidelines and governmental controls. For more information, please see Chapter 3.4 Animal Welfare.

The active ingredient is then used to produce a safe and easy-to-dose pharmaceutical. The requirements of the active ingredient and the product's acceptance by patients both play a role when developing a suitable delivery form (such as a tablet or ointment). It must also be ensured that patients can safely dose the product and handle it easily.

Before the pharmaceutical can then be submitted for approval, 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. However, clinical trials are also necessary to examine already approved products for new indications or to confirm their safety profile.

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. This commitment is stipulated in our Human Rights Policy and also applies to all research institutes (clinical research organizations, CROs) tasked with conducting clinical trials on our behalf.

Additional statutory regulations, directives and ethical codes supplementing the Declaration of Helsinki have been further developed and introduced worldwide to ensure that the health and safety of participants of clinical trials are the top priority. We follow the Harmonized Guideline on Good Clinical Practice (International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use – Good Clinical Practice, ICH-GCP). This international ethical and scientific standard for planning, implementing, documenting and reporting clinical trials in human subjects ensures the rights, safety and well-being of trial participants in accordance with the Declaration of Helsinki. Its requirements include the deployment of an independent ethics committee for each clinical trial involving human subjects. Such ethics committees are based at university hospitals, for example, and composed of medical experts from various disciplines. A clinical trial on behalf of Bayer cannot begin without a positive vote from such an ethics committee. The commitment to complying with the ICH-GCP is also included in the agreements with the clinical research organizations (CROs) we commission to conduct clinical trials.

Clinical trial phases

Stringent scientific and ethical principles apply to all clinical trials involving humans. A trial protocol lays out what is to be investigated, how the trial is to be conducted and why it is necessary. It is approved by the pharmaceutical regulatory authorities and an independent ethics committee. The voluntary trial participants are comprehensively informed in advance about the planned trial and the possible risks. Their participation is subject to written consent that can be retracted at any time, without the retraction having any impact on standard medical care.

In Phase I, physicians investigate an active ingredient with respect to its safety, tolerability and behavior in the body of healthy trial participants. Blood values and additional parameters are monitored, and it is determined how the ingredient is taken up, distributed, metabolized and excreted by the human body. In further studies, the physicians investigate interactions with other pharmaceuticals or food. If an active ingredient proves to be tolerated well in this phase, it is subsequently tested in trial participants. Active ingredients with possible serious side effects, such as for the treatment of cancer and other serious diseases (e.g. Parkinson's), are tested in patients from Phase I.

In Phases II and III, physicians examine how effective the ingredient under investigation is, if at all, what dose is ideal for treatment and how frequently side effects occur. Phase II involves the participation of between 100 and 500 patients, while the drug product is tested in as many as several thousand patients in Phase III. To rule out distorted measurement results as far as possible, the scientists compare the new active ingredient with an established therapy form or a placebo that does not contain any active ingredient. The patients do not know which group they belong to. In what are known as double-blind, placebo-controlled studies, the attending study team at the trial center doesn't know which patient belongs to which group either. Participants in a clinical trial conducted by Bayer can contact the responsible investigator and/or the contact person at the trial center who is listed in the patient information at any time.

Physicians participating in a clinical trial keep records of the treatments, measurement values and findings, and forward the data to the drug producer in pseudonymized form. Finally, the data is interpreted to determine whether the results are medically relevant and the prospects for seeking regulatory approval of the active ingredient in the form of a drug product are promising. The trials last for eight years on average. Additional clinical studies (Phase IV, post-authorization safety studies) take place following registration to further assess the benefit–risk profile in the determination of the therapeutic value of the product under practical conditions.

Bayer only conducts clinical trials in countries in which there are plans to launch the respective drug product onto the market. Once a clinical trial has concluded, patients can be provided with the trial medication until the date of approval and availability within the scope of so-called compassionate use programs or extension studies.

Wherever in the world we conduct clinical trials, they comply with these strict international directives and high standards of quality, as well as the respective applicable national laws and standards. We review whether they comply with these by means of risk-based audits, which also cover those trials performed by the institutes we commission (clinical research organizations, CROs). Bayer publishes information on clinical trials in compliance with the respective local laws. Bayer publishes information on its own clinical trials both in the publicly accessible registers and on its own Clinical Trials Explorer website.

Summarized results of Phase II, III and IV clinical trials are accessible online through the Clinical Trials Explorer – irrespective of whether the results of a study for one of our products were positive or negative. Upon request, scientists can receive access to anonymized data from clinical trials at the patient level via Vivli, the website of the Center for Global Clinical Research Data, provided the studies in question are listed in the portal. Through this, Bayer observes the principles of the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the Pharmaceutical Research and Manufacturers of America (PhRMA) on the responsible communication of clinical trial data, which were defined in a joint position paper. Since September 2022, Bayer has been a member of Vivli, together with other pharmaceutical companies and universities around the world. In January 2022, Vivli was awarded funding by the National Institute of Health (NIH) in the United States to promote the sharing of clinical trial data.

For further information about our globally uniform standards, the monitoring of clinical studies and the role of the ethics committees, please see our website.

In line with our Group Regulation on Bayer Societal Engagement (BASE) principles we communicate transparently about our research and development activities. This needs to be done objectively, precisely and on a timely basis, and must conform with current internal and external legal and ethical standards, including those of Good Publication Practice (GPP). We disclose our participation in scientific studies and publications of third parties and the participation of third parties in the development of our publications. As a result, we act transparently and grant access to scientific findings.

Easy-to-understand summaries

Since 2020, we have published clinical trial results on our Clinical Trials Explorer website in language that is easily understandable.

The results of Phases II through IV interventional trials and of Phase I patient trials are generally published within 12 months of the completion of the trial or within 12 months of the conclusion of the trial or development project. We publish the summarized results using clearly comprehensible formulations in English and eight globally important languages, along with the languages in which the trial was carried out. Bayer thus goes well beyond the requirements of the EU regulation on clinical trials on human pharmaceuticals that entered into force on January 31, 2022.

In 2021, Reuters Events awarded Bayer the prize for the Most Valuable Awareness Initiative for our commitment to making scientific research available to patients in a comprehensible form. This recognizes Bayer's dedication to providing patients and all affected parties with clear and easily understandable concepts, including in scientific publications.

Approval process

The respective documentation submitted to the regulatory authorities contains the research results from the Phase I to III clinical trials and the data generated for a pharmaceutical during its development. 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. A new pharmaceutical must comply with all regulatory safety requirements to secure marketing authorization. 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 benefit–risk ratio has been assessed as positive.

As each country has its own strict regulations for drug development, product approval and market launch, 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 other countries often take the assessments of the EMA and/or the FDA into consideration in their own evaluations.

The most important regulatory authorities for Bayer are:

// The US Food and Drug Administration (FDA)
// The European Medicines Agency (EMA)
// The Pharmaceuticals and Medical Devices Agency (PMDA) in Japan
// The National Medical Products Administration (NMPA) in China

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 to be 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 scientific and 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 reported side effects are 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 in collaboration 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 the aforementioned Phase IV studies (post-authorization safety studies) to record rare or very rare side effects, for example. As a pharmaceutical manufacturer, we receive reports on side effects either directly or through the health authorities, as well as through stakeholders such as physicians, pharmacists or patients themselves. Suggestions derived from these reports regarding possible supplementary safety-relevant information for the package inserts are passed on to the regulatory authorities by us.

Such suggestions usually come to the authorities from the respective pharmaceutical manufacturers. The relevant health authorities decide on the steps resulting from the reports and suggestions in close cooperation with us as the producer.

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 professionals to direct communication with medical experts (Direct Healthcare Professional Communication, DHPC) and even product withdrawals. Implementation of risk mitigation activities is coordinated by our local safety management teams (SMTs) in the country organizations.

All of these processes are documented, regularly updated and integrated into the quality management system. To maintain the high quality of Bayer's pharmacovigilance system, our medical and scientific experts undergo regular training. Furthermore, in line with our Group Regulation on Product Safety and Quality: Reporting Obligations of Employees, all Bayer employees are required to undergo training as regards their obligation to immediately report safety- and quality-relevant information to the Pharmacovigilance department. We regularly test whether the pharmacovigilance system can cope with emergency situations such as pandemics.

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, meaning that risk mitigation measures can be implemented faster, which in turn helps to further improve patient safety.

Trace substances of active pharmaceutical ingredients in the environment

Our Pharmaceuticals and Consumer Health divisions carry out ecotoxicological investigations on active pharmaceutical ingredients. These investigations serve as the basis for the environmental risk assessments required in connection with the approval process for human pharmaceuticals in Europe and the United States. In line with legal requirements, we thus evaluate possible environmental risks that could result from the proper use of human pharmaceuticals. The results of these environmental risk assessments are outlined in the specialized information for physicians in general terms. This information includes details on how to properly dispose of expired or unused pharmaceuticals so that users are able to avoid unnecessary environmental emissions. These details are also included in the packaging inserts.

We take additional action in our production facilities to minimize discharges of pharmaceuticals into the environment based on risk-oriented assessment parameters. For more information, please see Chapter 8.3 Water and Wastewater.

In some cases, measurements can detect active pharmaceutical ingredients in environmental media as trace substances, in other words in low concentrations. According to an OECD publication from 2021, discharge into the environment in these cases occurs primarily through patients' excreta, as well as partially through the improper disposal of unused and expired medicines, and from hospitals. According to this report, discharges into the environment via pharmaceutical production facilities are minor on the other hand. The main path of entry into the environment for these trace substances is through wastewater discharged into surface waters such as rivers or the sea, as current treatment plants are not always able to sufficiently eliminate trace substances.

In some areas, surface water is used as a source of drinking water. However, current knowledge indicates that the trace substance concentrations of active pharmaceutical ingredients measured in drinking water are harmless to human health. This assumption is based partly on the findings of the WHO's Drinking Water Parameter Cooperation Project report of 2017. Among the aspects studied in this report were the concentrations of active pharmaceutical ingredients measured in environmental media and mixtures of such substances measured in drinking water. The report found that there were no immediate health risks and consequently no need to act in the short term. This has been confirmed by more recent studies. Against the backdrop of a potential increase in the use of pharmaceuticals and to further guarantee the safety of drinking water resources, the WHO recommends that the discharge of trace substances be observed comprehensively over a longer period of time.

In addition to human health, there is now a focus on the environmental impact of pharmaceutical trace substances. Such trace substances are the subject of scientific publications and a matter of public interest. The European Commission also looks into the issue of trace substances, including those of medicinal products in the environment. Strategic approaches to managing pharmaceuticals in the environment have been published in connection with the Pharmaceuticals Strategy initiated in 2020.

For many years, the pharmaceutical industry has also been addressing the issue of trace substances of medicinal products in the environment and the environmental risk assessment of active ingredients. Between 2015 and 2019, for example, an initiative of the manufacturers' associations EFPIA (European Federation of Pharmaceutical Industries and Associations), AESGP (Association Européenne des Spécialités Pharmaceutiques Grand Public) and Medicines for Europe put together key points of a strategic approach to dealing with pharmaceuticals in the environment and developed possible solutions for this problem. This initiative focused partly on expanding the current legally required risk assessment for active pharmaceutical ingredients within the scope of the pharmaceutical marketing authorization process. At the end of 2022, the three pharmaceutical associations published a position paper which contained specific improvements under the designation of "extended Environmental Risk Assessment" (eERA). Another focus was the development of a concept for analyzing and managing wastewater from pharmaceutical production facilities. This is currently being implemented at Bayer (please see Chapter 8.3 Water and Wastewater).

The pharmaceutical industry initiative also comprised various large-scale projects. Within this initiative, Bayer served from 2015 until 2018 as coordinator of the iPiE (Intelligent Assessment of Pharmaceuticals in the Environment) subproject. A total of 25 partners from Europe and the United States participated in iPiE, including 13 major pharmaceutical companies and nine universities and research organizations. The project was established by the Innovative Medicines Initiative (IMI), a public–private partnership of the European Commission and the EFPIA aimed at developing new models and assessment strategies for predicting the environmental impact of active pharmaceutical ingredients.

For the first time, a database of environmental information for active pharmaceutical ingredients was created in the EU within the scope of iPiE that enabled a comprehensive, transparent and comprehensible overview of more than 2,000 studies on the environmental behavior of active pharmaceutical ingredients already on the market. Scientific evaluations of the database have found that only a few of the registered active ingredients pose a potential environmental risk. These primarily include hormones or antibiotics, which impact the environment even at very low concentrations and are also marketed by companies such as Bayer.

Bayer is also active in the iPiE follow-up project PREMIER (Prioritisation and Risk Evaluation of Medicines in the Environment). A total of 25 public- and private-sector partners currently participate in PREMIER, including public authorities, universities and EFPIA companies. This IMI project, scheduled to run from 2020 until 2026, is geared toward continuing and expanding the publicly accessible iPiE database. The objectives of PREMIER include making more details on the studies publicly accessible and providing for modeling and evaluation tools. Furthermore, it aims to develop strategies and processes that enable the prioritization of active ingredients for which little or no environmental data is currently available (there has only been a legal obligation in the EU to conduct an environmental risk assessment since 2006). The goal is to identify the active ingredients that can lead to heightened risks in the environment. The intention is to generate of new environmental data for these prioritized active ingredients and enable risk assessments to be performed on them. This in turn will obviate the need for unnecessary studies – such as those involving vertebrates (fish) – for active ingredients classified as unproblematic. PREMIER also aims to research and promote options for more environmentally friendly active ingredient design.

Bayer also remains 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. In roundtable formats that bring together stakeholders from water management, environmental authorities and associations, health services providers and industry, measures are developed that aim to reduce the discharge of relevant trace substances. The objective is to develop a strategy for preventing the water-impacting effects of selected chemicals, including active pharmaceutical ingredients. Bayer participates in the roundtable on iodinated X-ray contrast agents, as these are among the products commercialized by us. Bayer has continuously and actively contributed to the discussions surrounding the assessment and investigation of the potential risk to the environment and helped shape their successful implementation. Reduction measures were recently evaluated through a design study, and the final report was published.

In addition, through a returns program, we enable doctors' offices and hospitals to send remaining stock or unused supplies of the iodinated X-ray contrast agent Ultravist™ back to us. This in turn makes it possible to avoid unnecessary environmental discharges and properly reuse the iodine in an industrial cycle.

Focus on: Access to Healthcare

Millions of people in many parts of the world do not have access to basic medical care. According to the World Health Organization (WHO), there are various reasons for this – a lack of medicines, poverty, a lack of or inadequately trained medical personnel, a lack of political will and insufficient access to medical data.

As a leading pharmaceutical company, we believe we have a responsibility to improve access to healthcare for all. For this reason, we are focusing on areas in which we can have the biggest impact by leveraging our scientific know-how, products, partnerships and global network.

In accordance with our strategy, we want to fulfill the need of 100 million women in low- and middle-income countries (LMICs) for modern contraception by 2030. We also want to support 100 million people in economically or medically underserved communities with self-care by interventions from Bayer. For more information, please see the Sustainability Strategy chapter. Responsibility for implementing the access to healthcare strategy lies with the heads of the Pharmaceuticals and Consumer Health divisions, both of whom are members of the Board of Management of Bayer AG due to their positions. The Supervisory Board of Bayer AG monitors the attainment of the established goals.

It is also our ambition to improve access to our prescription products for people in LMICs through improved availability and modified drug pricing, as well as through our patient access programs.

We have implemented strategies for improving access to healthcare throughout the value chain.

Access to Medicine Index

Since 2008, the Access to Medicine Foundation has published a ranking of the 20 biggest pharmaceutical companies. The Access to Medicine (ATM) Index evaluates the companies' measures to make medicines and diagnosis more easily accessible to people in LMICs. Bayer was ranked 9th in 2022, an improvement of four places compared with the assessment conducted in 2021. This is partly due to the fact that sustainability issues are now managed systematically and better, including the research and development of medicines for people in LMICs and our endeavors to achieve a secure supply chain in LMICs.

The Access to Medicine Foundation also highlighted best practice examples from Bayer in its report. Our broad approach for improving access to contraceptives in LMICs and our efforts to combat tropical diseases such as Chagas disease and sleeping sickness were also acknowledged. We are working to achieve further improvements for future rankings.

Family Planning

The ability of girls and young women to complete their education and thus improve their opportunities in life is highly dependent on family planning options. For this to happen, they must be able to make their own well-founded decisions about whether to have children, and, if so, how many and when. Knowledge about their own sexuality and access to modern family planning are crucial to helping young people make important life decisions. Furthermore, both education and conversations about family planning strengthen gender equality and the role of women worldwide. That's why access to voluntary family planning has been an established human right for more than 50 years.

According to the United Nations, more than 200 million women in LMICs would like to prevent pregnancy but do not use safe and effective family planning methods. And according to the United States Agency for International Development (USAID) and the studies of the Copenhagen Consensus Center, investment in family planning is a "best buy" for development that can support the attainment of various Sustainable Development Goals (SDGs) – family planning provides the foundation for more equality, education and affluence, and plays a crucial role in reducing poverty (SDG 1) and hunger (SDG 2), improving health (SDG 3) and increasing participation in high-quality education. It also strengthens gender equality (SDG 5), which in turn is a crucial factor in future economic and social development.

Collaborations

Bayer works together with international partners to improve education on sexual rights and contraceptive options. Back in 2007, in close cooperation with 15 international partners, we launched the Your Life information campaign, which is directed toward young people around the world. The associated social media activities provide facts and figures on current contraception options and address concerns about contraceptives.

For many women, a lack of social acceptance for contraception – along with incomplete information or limited choices as regards the methods of contraception – is the biggest obstacle when it comes to deciding how to go about their own reproductive life planning. For this reason, it is important to not only strengthen young people's knowledge but also to increase awareness among politicians and physicians about the sexual rights of women in LMICs. Against this background, we have supported the International Dialogue on Population and Sustainable Development – an annual conference with participants from civil society, politics and the private sector – for many years.

Access to family planning products is not adequately guaranteed in many regions of the world. As a global leader in women's health, Bayer is a longstanding partner of international family planning programs. Bayer's contraceptive products are made available at preferential prices.

Irrespective of whether its own products are used, Bayer has been providing financial support to The Challenge Initiative (TCI) – a family-planning program based at Johns Hopkins University and implemented by the Bill & Melinda Gates Institute for Population and Reproductive Health – since July 2020. TCI aims to quickly and sustainably establish various family planning options on a broad scale. The program is currently being implemented in more than 100 Asian and African cities. In 2022, Pakistan became the next country to be included in the program. In total, some 1.6 million women received access to voluntary family planning with the help of TCI in 2022.

Bayer is an anchor partner of the Bill & Melinda Gates Foundation in preclinical research pertaining to nonhormonal contraception. We undertake to make such a product available in LMICs at an affordable price as soon as it has been approved by the health authorities following the development phase.

Since 2007, Bayer has been a member of the Reproductive Health Supplies Coalition (RHSC), a global partnership of public, private and nongovernmental organizations. The RHSC endeavors to ensure that people in LMICs are able to access affordable and high-quality contraceptives.

In addition, Bayer works together with the United Nations Population Fund (UNFPA), USAID and international NGOs to make hormonal contraceptives such as birth control pills, three-month injections, implants and coils available. As a strategic partner, we also provide support with expertise in the areas of supply, logistics and product registration.

In accordance with the Sustainable Development Goals (SDGs) of the United Nations (particularly SDG 3.7 and 5.6), the UNFPA and Bayer have a common vision: to measurably increase the number of women who are able to meet their need for modern contraceptives. The intention is to reach this goal through interventions supported by the joint collaboration, with the objective of strengthening the autonomy and resilience of local health systems by focusing on four specific areas: measures to sustainably develop their structure and expertise (capacity building); supply chain management; innovation; and gender equality and inclusion and diversity at the workplace.

We therefore concluded further cooperation agreements with the UNFPA in 2022, and Bayer became the first company to join the UNFPA Equalizer Accelerator Fund.

Current status

We currently provide contraceptives to 44 million women in LMICs. More than a third of these women are reached through commercial distribution channels – particularly in higher middle-income markets. The rest – mainly women in low- and lower-middle-income countries – receive access through the international development network, such as through UNFPA or participating national family planning programs. Shipments provided through such programs are usually free of charge for the women. To address the challenges associated with facilitating access to contraceptives over the next decade, and reach our target of enabling 100 million women to access modern contraceptives, we are continuously expanding our partnerships and increasing our production capacities. For more information on our Group target, please see the Sustainability Strategy chapter or our website.

Expansion of production capacities

In 2021, we approved capital expenditures of more than €400 million to expand the contraceptive production facility at our site in Finland and build a new plant in Costa Rica. The planning and construction measures were continued in 2022 as envisaged. This investment is aimed at meeting the growing need for long-acting reversible contraceptives (LARCs) and expanding our offering of long-acting products that are in especially high demand in international development projects, such as the Jadelle™ implant and the Mirena™ hormonal intrauterine system.

Access to Self-Care

More than half the world's population does not have access to basic, vital medical services because they do not have sufficient income, live in medically underserved regions or cannot access hospitals, pharmacies or other treatment options for various reasons. This means that billions of people rely on self-care to prevent diseases, maintain their health or treat illnesses.

Our goal is to give 100 million people in economically or medically underserved communities access to self-care by 2030. As a leading supplier of medical self-care products, we are present in many countries and regions in which people depend on self-care and already reached 70 million people in 2022 including our strategic investments in India. For more information, please see the Sustainability Strategy chapter.

Neglected Tropical Diseases

Together with other pharmaceutical companies, Bayer plays an important role in fighting neglected tropical diseases (NTDs). Bayer supports the WHO NTD road map 2021–2030, which aims to permanently eliminate 20 NTDs by 2030. For nearly 20 years, we have provided the WHO with two essential drugs to treat African sleeping sickness and Chagas disease in Latin America free of charge. We also provide funding for logistics and the distribution of these drugs in the affected countries, as well as for other activities. Bayer reaffirmed its commitment in 2022 by signing the Kigali Declaration on Neglected Tropical Diseases.

African sleeping sickness

Fewer than 800 patients worldwide required treatment for African sleeping sickness in 2021. The disease has thus been eliminated as a global public health problem after decades-long efforts.

Chagas disease

Currently, between six and seven million people are infected with the Chagas disease pathogen. Less than 1% of those infected have access to adequate diagnosis and treatment of the disease. Newborn babies and children are at particular risk because infected, and in some cases asymptomatic, mothers can pass on the pathogen to their unborn children. Our preclinical and clinical research has resulted in the development of a formulation of our Lampit™ product that is suitable for children and this was approved by the United States Food & Drug Administration (FDA) in August 2020. Approval was granted in Bolivia in 2021, making it the first Latin American country in which this formulation is available. The formulation enables the drug to be precisely dosed for children based on body weight. It also has better solubility and is easier to administer, which means it can be given to infants aged zero to two years. That makes this formulation of Lampit™ the first Chagas treatment approved for this age group.

Pork tapeworm

Bayer also supports the WHO in the fight against infection with the pork tapeworm (Taenia solium), which is transmitted through the consumption of raw or insufficiently cooked pork. When people and pigs live closely together in unhygienic conditions, infection can also occur when the tapeworm's eggs are excreted with feces. The disease is asymptomatic but can also attack the brain in the late stages if left untreated (neurocysticercosis). Infection with the pork tapeworm at this stage has led to epilepsy in about 13 million people, accounting for about one-third of all epilepsy cases in the affected countries. Bayer provides two essential drugs to treat pork tapeworm infection, and financially supports the logistics and distribution of the medicines within the scope of national programs to eliminate the illness.

Onchocerciasis

Since 2014, Bayer has worked together with the Drugs for Neglected Diseases initiative (DNDi) to develop an active ingredient for the treatment of onchocerciasis. The first clinical trials in humans (Phase II) began in mid-2020. Transmitted by threadworms, this tropical disease leads to incurable so-called river blindness in about 10% of chronically ill patients. Some 30 million people around the world are infected with these threadworms, of whom more than 99% live in Africa.

Further initiatives

In 2022, we also supported programs to control the vectors of diseases such as malaria and dengue fever, or of the Zika virus.

Furthermore, Bayer is a member of the European ESCUlab project (European Screening Centre; Unique Library for Attractive Biology) of the Innovative Medicines Initiative (IMI), which seeks drugs that will treat neglected tropical diseases and malaria effectively, among other objectives.

Malaria

In 2022, we supported various initiatives and organizations in the fight against malaria. As a member of the Zero by 40 initiative, we aimed, together with other agriculture companies and the Bill & Melinda Gates Foundation, to eliminate the malaria pathogen by 2040, through the use of innovative vector control, various treatment forms and preventive measures.

Further Engagement

In addition to infectious diseases, noncommunicable diseases are a major challenge, particularly in LMICs. More than three-quarters of deaths from cardiovascular disease occur in LMICs. Between 1990 and 2013, sub-Saharan Africa was the only geographic region in the world to register an increase in deaths due to cardiovascular disease. The number of cardiovascular patients is expected to double by 2030. For this reason, Bayer is working in partnership with

the German Society for International Cooperation (GIZ) and local health authorities in Ghana to develop a model project to establish an integrated diagnosis, treatment and continuing education concept for cardiovascular disease. The Ghana Heart Initiative, which Bayer supports, aims to facilitate more specific drug access programs by strengthening the healthcare system. The intention is for this model project to serve as a foundation and a catalyst for subsequent initiatives to develop capacities that can help treat noncommunicable diseases. The first phase involved the development of corresponding guidelines. Upon recognition by the Ghanaian health authorities, medical personnel underwent suitable training. We concluded an agreement with the GIZ to continue and expand the program through the end of 2023. Heidelberg University will independently evaluate the program. For more information, please see our website.

Bayer and the Bayer foundations are similarly committed to numerous projects and local partnerships to strengthen health systems and build up capacities. Social commitment, access programs and innovative, inclusive business models jointly contribute to the implementation of our “Health for all, hunger for none” vision. For more information, please see Chapter 9. Giving and Foundations.

Antimicrobial resistance

Antimicrobial resistance (AMR) is an increasing problem in healthcare, and suitable antibiotics are urgently needed. Therefore, together with other pharmaceutical companies, we support the AMR Action Fund, which aims to bring two to four additional antibiotics to market maturity by 2030 to address AMR. The development of these antibiotics would otherwise be jeopardized by funding problems.

Equitable Drug Pricing

The cost of medicines can present a major obstacle for patients, especially when they have to pay for these products themselves. That is particularly true in LMICs, most of which do not have central systems for reimbursing the costs of medicines. We are therefore working on various options, including in collaboration with charitable organizations and governmental authorities, to provide solutions that give more patients improved access to much-needed medicines. For some of our most important products (Adempas™, Eylea™, Kerendia™, Kyleena™, Mirena™, Nexavar™, Stivarga™, Verquvo™ and Xarelto™), including specific new launches, we have established the framework conditions for adjusted, equitable pricing, which also account for per capita gross national income and thus make it possible to set selling prices that reflect local conditions in the respective countries.

Patient Access Programs

Our patient access programs help patients in LMICs to better overcome financial obstacles to reliable drug access. We cooperate with insurance providers, charitable organizations and other partners to advance these options. Our patient access programs are developed according to the framework conditions in each country, and take account of patient needs, which are supported in various ways, e.g.:

// Individual assessment of patients’ financial solvency and derivation of a corresponding financing and treatment plan
// Reduction of the financial burden on patients, for example through the combined provision of free and payment-based medicines or the granting of discounts on the original selling price

For more information, please see our website.

Patents in low-income countries

In low-income countries (LICs), Bayer does not register or enforce patents for human pharmaceuticals. This applies as long as a country retains the status of an LIC according to the World Bank classification and the country’s government does not take any measures that would justify a change in that status.

We have also joined the Patent Information Initiative for Medicines (Pat-INFORMED), which provides basic patent information on our registered products, making it available to the public so as to facilitate the procurement of medicines, particularly in LICs.

The WHO Model List of Essential Medicines that should be available in functioning healthcare systems has been published by the WHO since 1977 and includes various medicines produced and sold by Bayer. We generated some €11 billion through sales of these products in 2022 (equivalent to about 22% of total Bayer sales).

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 observe these principles, too, and we support them in doing so. Through this approach, we help to improve sustainability in 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. Economic, ethical, social and ecological principles are all therefore anchored in our Procurement Policy, which is binding for all employees worldwide.

Procurement acts on behalf of all divisions and enabling functions, leveraging synergies by bundling know-how and procurement spend. The head of Procurement reports directly to the Chief Financial Officer.

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 in this. They serve to minimize procurement-specific risks such as supply bottlenecks or significant price fluctuations, while also safeguarding the company's competitiveness and ensuring smooth production processes.

Our main direct procurement materials include active ingredients, raw materials, intermediates, finished products and seeds. Technical goods and services, research and development (R&D) supplies, marketing services and information technologies are important components of our indirect procurement portfolio. We procure various petroleum-based chemicals, but these account for 26% of our overall procurement volume at most.

Renewable raw materials for the manufacture of our products account for a minor proportion of our procurement volume. These materials are primarily used when it makes technical, economic and ecological sense to do so. For more information, please see our website.

The following table provides relevant data on our procurement activities.

Procurement Activities

	2021	2022
Procurement spend in € billion	18.9	23.3
Spend in OECD countries in € billion	14.9	17.7
USA	6.3	8.1
Germany	4.1	4.5
United Kingdom	0.6	0.7
Other	3.9	4.5
Spend in non-OECD countries in € billion	4.0	5.6
China	0.9	1.4
Brazil	1.0	1.6
India	0.8	0.9
Other	1.3	1.6

Procurement Activities

	2021	2022
Number of suppliers	93,844	91,149
of which from OECD countries	50,687	47,689
USA	14,034	12,606
Germany	7,794	7,131
United Kingdom	1,299	1,331
Other	27,560	26,623
of which from non-OECD countries	43,157	43,463
China	2,022	1,931
Brazil	7,588	7,449
India	10,351	10,014
Other	23,196	24,071
Number of countries	144	148

Bayer purchases locally wherever feasible in order to respond promptly to the requirements of our sites and simultaneously strengthen local economies. In 2022, this applied to 81% (2021: 79%) of our procurement spend at our significant locations of operation, and to 77% (2021: 77%) of procurement spend worldwide.

When selecting suppliers, we consider all types of suppliers and supplier diversity.

Supplier Diversity Program

With its comprehensive Supplier Diversity Program, Bayer promotes diversity within the global supply chain. In doing so, we give special consideration to underrepresented supplier groups such as companies

owned and operated by women, members of ethnic minorities, people with disability or members of the LGBTQ+ community. Together with chambers of commerce and external organizations, we help these suppliers to further develop themselves professionally and assist them in qualifying for tendering processes. Since 2022, supplier diversity has been included in our targets for procurement. In 2022, for the fifth consecutive year, Bayer's US operations received the highest rating in the Human Rights Campaign's Corporate Equality Index.

Strategic sustainability focus areas

Bayer works continuously to strategically evolve sustainability topics in procurement, particularly in relation to environmental and human rights issues and in connection with the Supplier Diversity Program. We developed indicators to monitor progress in various sustainability focus areas (e.g. Supplier Diversity) and define suitable targets. We also continued to ensure that all suppliers of strategic importance had to present an EcoVadis rating of at least 45 of 100 points ("green" assessment) or a comparable audit result. Furthermore, potential new suppliers with a high inherent sustainability risk and procurement spend of more than €250,000 are examined in advance with regard to sustainability aspects.

The focus in 2022 was on developing strategic and operational approaches for ensuring respect for human rights and the reduction of the carbon footprint in the supply chain.

Respecting human rights along the supply chain is firmly anchored in Bayer's sustainability strategy, and procurement plays a key role in implementing all necessary measures. In 2022, we concentrated on providing training to our procurement employees and our suppliers in respecting human rights in the supply chain and on enhancing procurement processes in order to comply with the requirements of the German Supply Chain Due Diligence Act (SCDDA). In the agriculture industry, seed producers are subject to particular risks, especially with regard to respecting human rights. We performed a deep dive into human rights risks along our seed supply chain and started to enhance our measures to prevent and mitigate such risks. In 2023, we plan to continue improving our procurement processes and take additional measures in relation to respecting human rights in our supply chain. For more information, please see Chapter 5. Human Rights.

Within the framework of Bayer's sustainability strategy, Procurement is also responsible for all measures aimed at reducing the carbon footprint of our value chain (Scope 3). We pushed ahead with existing activities and initiated new measures in 2022. For more information, please see Chapter 7. Climate Protection.

We cooperate with the World Business Council for Sustainable Development (WBCSD) and the CDP Supply Chain Initiative and head up a special GHG Scope 3 Emissions working group in the Together for Sustainability (TfS) initiative. As regards palm oil, we use credits in line with the book and claim procedure of the Roundtable on Sustainable Palm Oil (RSPO). Since 2022, we have transitioned to an RSPO Mass Balance Certified Sustainable Palm Oil supply chain.

4.2 Sustainability in the Supply Chain

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

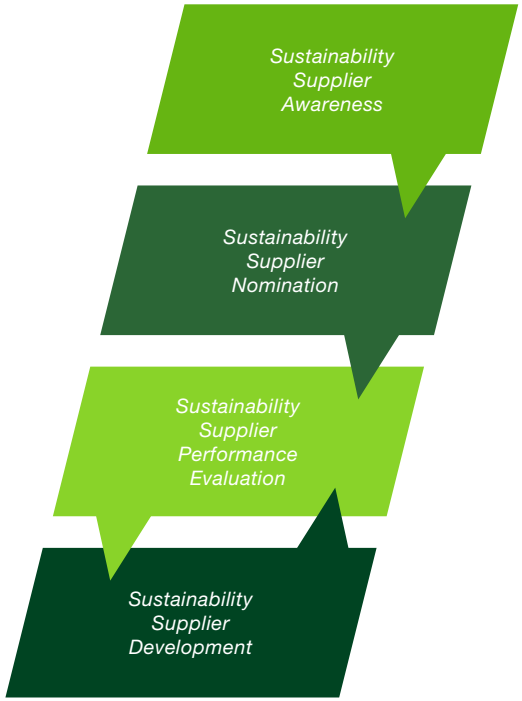
This process is centrally steered by the Sustainability unit in Procurement. It is implemented through cross-functional cooperation between the Procurement and Public Affairs, Science, Sustainability & HSE enabling functions.

We use dedicated training measures to instruct our procurement employees in our sustainability requirements. In 2022, we offered a comprehensive sustainability training package to our procurement employees covering the focus topics. We also conducted advanced or in-depth training courses on selected focus topics. Procurement employees can take part in EcoVadis webinars. All Bayer employees have free access to the TfS Academy and the Pharmaceutical Supply Chain Initiative (PSCI) Resource Library.

Step 1: Sustainability supplier awareness

The core principles of our sustainability requirements are established in Bayer's Supplier Code of Conduct (SCoC), which is based on our Bayer Human Rights Policy, the principles of the UN Global Compact and the core labor standards of the International Labour Organization (ILO). The code is available in 12 languages and covers the areas of ethics, relations with employees and other stakeholders (including human rights), health, safety, environmental protection and quality, and corporate governance and management systems. The Bayer Supplier Code of Conduct (SCoC) is frequently reviewed and updated. Following the enactment of the German Supply Chain Due Diligence Act (SCDDA) in January 2023, which sets out the legal requirements in the supply chain for various environmental and human rights topics, including occupational health and safety, we updated the Bayer Supplier Code of Conduct to include the new legal requirements. In our Supplier Code of Conduct, we state that complaints and (compliance) violations can be reported – anonymously if desired – via a central, globally available compliance hotline set up by Bayer (for more information, please see Chapter 2.6 Compliance). Additionally, we expect our suppliers to make an adequate complaint mechanism available to their stakeholders.

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



The Supplier Code of Conduct is applied in the selection and evaluation of our suppliers and is integrated into electronic ordering systems throughout the Bayer Group. Our Supplier Code of Conduct is supplemented by a global guidance document (Supplier Code of Conduct Guidance), which, like the Supplier Code of Conduct, is available on our website.

Furthermore, our standard supply contracts contain a clause that authorizes us to verify suppliers' compliance with our sustainability requirements. This clause is successively being integrated into our central contracting and purchase order systems and will be included in contracts that are up for renewal in 2023 and beyond.

Step 2: Sustainability supplier nomination

Each year, Bayer systematically selects suppliers who need to be reviewed through an online assessment or audit with respect to their observance of the SCoC requirements. The first step is to identify all suppliers of strategic relevance to Bayer who because of this must automatically undergo a sustainability evaluation. In the second step, Bayer gives a sustainability risk classification to any remaining suppliers representing a significant annual procurement spend of more than €0.5 million. The sustainability risk classification comprises the assessment of risks prevailing in the respective supplier's country (country risk) and resulting from the supplier's sector of activity (category risk). This process enables a more detailed view of the risks in the areas of environment (e.g. climate and energy), social standards (e.g. child labor) and corporate governance (e.g. data privacy). This more targeted analysis with individual risk criteria increases transparency in our supply chain. The risk categorization is based on internationally recognized classifications of country risks such as those applied by the World Bank and of category risks such as those employed by the United Nations.

The procurement organization examines the suppliers identified in these two steps and selects the final suppliers requiring evaluation. In 2022, this selection process yielded 181 strategically important suppliers, making up around 31% of the total procurement spend, and 333 suppliers with a high sustainability risk and a significant procurement spend (>€0.5 million p.a.) of nearly 8% of the total procurement spend.

Also included in the evaluation process are suppliers for which evaluations were performed through the Together for Sustainability (TfS) industry initiative and the Pharmaceutical Supply Chain Initiative (PSCI), in addition to those who proactively allow themselves to be evaluated. These initiatives provide the opportunity for further standardization of the sustainability requirements that suppliers in the chemical and pharmaceutical industries are expected to meet. The sharing and mutual recognition of assessment and audit results also create synergies within the respective initiatives.

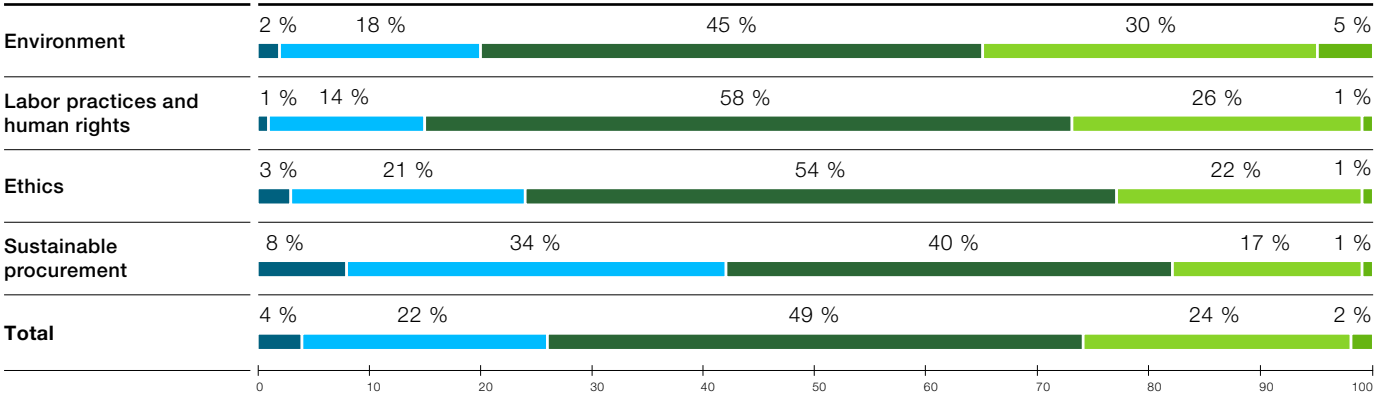
Step 3: Sustainability supplier performance evaluation

Bayer verifies the observance of the code requirements by the suppliers selected in Step 2 by means of EcoVadis online assessments and through audits conducted by both external and Bayer auditors.

The online assessment criteria of EcoVadis – broken down into the areas of environment, ethics, labor practices and human rights, and sustainable procurement – correspond to the requirements of our Supplier Code of Conduct and also take into account country- and industry-specific conditions and supplier size. In total, our service provider EcoVadis assessed 1,145 (2021: 802) suppliers on our behalf in 2022.

In 2022, 113 audits were conducted at our suppliers by external and Bayer auditors. The audit criteria included both the specifications of our SCoC and the industry-specific requirements of industry initiatives such as TfS and PSCI.

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: 1,145 (as of December 31, 2022)

Furthermore, internal and external auditors evaluate selected new and existing suppliers with a focus on HSE. These audits are performed at, for example, toll and contact manufacturers, active ingredient suppliers and warehouses with significant HSE risk potential (due to, for example, nature of materials, manufacturing processes or environmental impacts). In 2022, 233 (2021: 200) suppliers were evaluated by means of HSE audits.

Assessments and Audits of Bayer Suppliers[1]

	2021	2022
Sustainability assessments[2] via the EcoVadis platform	802	1,145
Sustainability audits[3] by external or internal auditors	77	113
HSE[4] audits by external or Bayer auditors	200	233

[1] The online assessments of our suppliers that form part of a group generally take place at the parent-company level.
[2] Initial and reassessments of suppliers
[3] Initial and follow-up audits of suppliers
[4] Health, safety and environmental protection

In addition, we have established verification processes 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 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 our Supplier Code of Conduct, we make it clear that our suppliers have to ensure that products they supply to Bayer do not contain metals derived from minerals or their derivatives that originate from conflict regions where they help – directly or indirectly – to finance or support armed groups and cause or foster human rights abuses. Suppliers who do not meet these requirements are immediately notified that these standards must be complied with and are requested to take corresponding action.

Step 4: Sustainability supplier development

The online assessments and audits are analyzed and documented so that specific improvement measures can be defined. In 2022, suppliers who had undergone online assessments by EcoVadis demonstrated the need for improvement in the categories of ethics and sustainable procurement in particular, while those who had been audited required improvement in health and safety.

A supplier receives a critical result if one or more serious violations or several major findings in the implementation of sustainability aspects are identified. In these cases, Bayer requests that the suppliers remedy the identified weaknesses within an appropriate timeframe based on specific action plans. In 2022, this applied to 26 suppliers (2% of assessed and audited suppliers; 2021: 3% (22)). We monitor the implementation of these activities by way of reassessments or follow-up audits. Bayer retains the right to terminate a supplier relationship if no improvement is observed during a re-evaluation. In 2022, we were not prompted to end any supplier relationship due solely to sustainability performance. However, we implemented measures to reduce business with suppliers who were not able to improve their sustainability performance.

Our monthly monitoring shows that 676 (2021: 508) of the 1,258 (2021: 879) Bayer suppliers evaluated in 2022 improved their sustainability performance.

A key factor in this collaboration is helping our suppliers to improve their sustainability performance. In this, we focus on both remedying deficiencies and collaborating on sustainability topics.

The industry initiative PSCI organized face-to-face and virtual training sessions and workshops for suppliers in India and China in 2022. These were attended by more than 2,000 supplier representatives. Additionally, a number of webinars were delivered online on various human rights and HSE topics. In 2022, PSCI offered new webinars on human rights legislation, process and plant safety, and environmental protection. Through the PSCI online resource library, our suppliers can download additional training materials, the scope of which is expanded each year. Since 2022, PSCI has also given suppliers the opportunity to network with each other via its Link platform and further develop a more responsible supply chain.

Together with the TfS initiative, we successfully launched a practically oriented learning environment for suppliers and purchasers in 2022 so as to further establish competencies as regards sustainability issues. The focus here, for example, is on ethical aspects, conflict minerals, waste management and anti-corruption measures. In 2022, we selected around 100 suppliers to participate in TfS training courses based on their sustainability performance and Bayer's assessment plan. The training courses dealt with labor and human rights guidelines, whistleblower procedures, environmental reporting and sustainable procurement guidelines.

5. Human Rights

Bayer is a founding member of the UN Global Compact and respects the Universal Declaration of Human Rights and the International Covenants on Civil and Political Rights and on Economic, Social and Cultural Rights of the United Nations. Our human rights due diligence is based on the human rights due diligence principles described in the UN Guiding Principles on Business and Human Rights (UNGPs) and the OECD Guidelines. The UNGPs are considered to be among the most important international standards for preventing and combating possible human rights violations in connection with business activities. We are committed to respecting these principles along the entire value chain and within our scope of influence worldwide. We also support the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy of the International Labour Organization (ILO), and the latter's core labor standards.

5.1 Management Approach

Human rights are among the responsibilities of the Chairman of the Bayer Board of Management. In his role as Chief Sustainability Officer, he is supported in the topic of human rights by the Public Affairs, Science, Sustainability & HSE Enabling Function. In October 2022, the Board of Management introduced the position of Human Rights Officer, who will oversee risk management in regard to human rights and inform the Board of Management about his or her work. The implementation of our human rights standards in business operations is regulated by Group regulations, processes and management and monitoring systems.

Bayer fully supports human rights and has documented its stance in a globally binding Bayer Human Rights Policy, which defines the human rights requirements within the company and obligates us to respect and foster human rights within our own business activities and in business relations. This applies to all Bayer employees worldwide and the entire value chain i.e. vis-à-vis suppliers, business partners, customers, consumers and local communities alike.

Guided by our LIFE values and supplementary to our Human Rights Policy, we substantiate specific standards and responsibilities for respecting human rights in existing rules and Group regulations. These include the Bayer Societal Engagement (BASE) Principles, along with regulations on data privacy, corporate compliance, fairness & respect at work, HSE management & HSE key requirements, and security and crisis management, and the Supplier Code of Conduct. The latter code specifies what we expect of our suppliers and obligates them to fully respect human rights. The Supplier Code of Conduct is based on the principles of the UN Global Compact and the core labor standards of the ILO. These principles and standards serve as the foundation for enforcing a strict prohibition on child and forced labor in our own business areas and within the activities of our suppliers, underpinned around the world by our Human Rights Policy.

We have put in place suitable directives and management systems to meet our product stewardship responsibility in regard to human rights, too. For us, product stewardship means both that our products meet the highest quality standards and that they are safe for people, animals and the environment when properly used. For more information, please see Chapter 3. Product Stewardship.

Human rights strategy

By 2030, we want to be industry-leading in our approach to human rights, based on our human rights strategy, which comprises three interlinking phases:

Phases of the Human Rights Strategy

1. **Definition of the framework:** derivation of the human rights strategy based on an analysis of the status and risks in accordance with the UNGPs and OECD Guidelines, our vision "Health for all, hunger for none" and the legal requirements such as those stemming from the German Supply Chain Due Diligence Act (SCDDA)
2. **Operationalization and full integration:** expansion of existing due diligence processes (please see Chapter 5.2 Implementation Measures) to address human rights risks
3. **Strategic positive contribution:** support for the protection of human rights in areas that concern our business

5.2 Implementation Measures

We implement measures to ensure respect for human rights both within our own company and along our entire value chain. Group regulations, processes, and management and monitoring systems regulate the implementation of human rights standards.

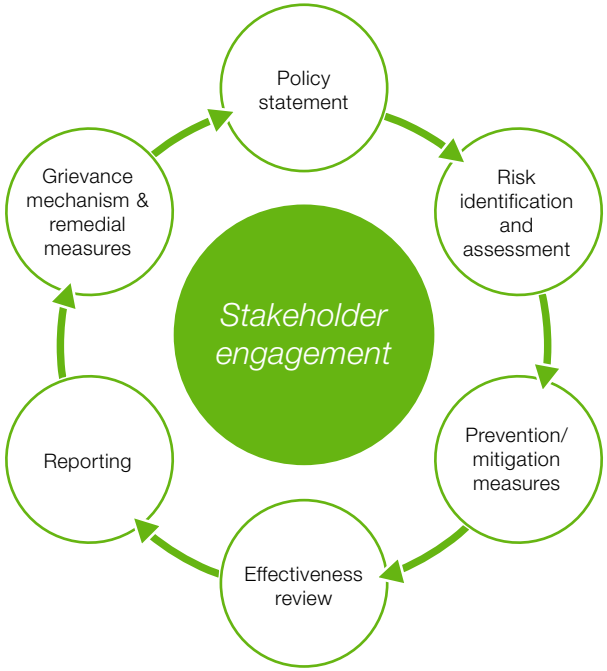
We are aware that the implementation of human rights due diligence is a continuous process that must be constantly adapted and improved. To ensure respect for human rights in the value chain in a targeted manner, Bayer operates according to a due diligence approach that is based on the UNGPs and OECD Guidelines for Multinational Enterprises.

This process comprises a declaration of principles, risk identification and assessment processes, prevention and mitigation measures, measures for determining effectiveness and reporting, along with access to grievance mechanisms and the implementation of remedial measures.

Policy statement

Our commitment to human rights is documented in a globally binding Human Rights Policy that was approved directly by the Board of Management and is publicly available on our website. This Group regulation is regularly reviewed. The current revision takes into account the results of the Group-wide risk analysis completed in 2022 for which civil society organizations and internal experts were consulted, along with the requirements of the German SCDDA. In addition, external business and human rights experts were involved in preparing the policy statement.

Human Rights Due Diligence in Accordance with UNGPs and OECD at Bayer



Risk identification and assessment

To determine potentially adverse effects of our operations on human rights, we use our Group-wide integrated risk management system. The Bayer Risk Portfolio is regularly reviewed and updated.

The Group-wide identification and assessment of our human rights risks was completed in 2022. The risk analysis was conducted together with external business and human rights experts. Alongside the involvement of internal experts, civil society organizations were also consulted by way of interviews.

Risks were identified and assessed in a two-step process.

// The first step was to identify potential human rights risks that we could encounter, either through our business activities, products and services, or in our value chain.
// The second step was to assess these rights separately in terms of their risks with regard to their degree of severity, materiality and likelihood of occurrence.

In assessing human rights-related risks, we distinguish between gross and net risks. Gross risk refers to a risk a company can expect due to its business operations, the type and scope of its products and services along with the value chain, excluding any governance measures (in other words prevention and mitigation measures). The net risk describes the gross risk, taking account of prevention/mitigation measures that have already been established.

First, we assessed the respective gross risk and then the net risk, taking into account established prevention and mitigation measures. This enabled us to identify and assess the human rights that could be negatively impacted most significantly through our activities and business relationships in the upstream and downstream value chains (salient human rights) or that are of particular importance for our company (material human rights).

We have identified six priority issues:

// Right to health
// Responsible use of natural resources
// Protection against child labor
// Right to freedom from slavery, servitude and forced labor
// Right to fair and favorable working conditions
// Right to freedom of association

Salience & materiality

Two dimensions must be accounted for when managing human rights risks:

// The first comprises salient human rights issues, which refer to those human rights that can be most severely impacted by our activities and business relationships.
// The other concerns material human rights, which are those that are of great importance for our internal and external stakeholders.

The results of this human rights risk analysis will be incorporated into the Bayer Risk Portfolio of our Group-wide, integrated risk management process. We conduct our human rights risk analysis on a regular basis, i.e. once a year, and on an ad hoc basis as required. For more information on our Group-wide, integrated risk management process, please see Chapter 2.8 Risk Management.

Prevention/mitigation measures to address risks and impacts

We verify the observance of human rights at our sites partly by means of Bayer audits. Bayer Internal Audit regularly conducts audits following the International Internal Audit Standards (IIA). The annual audit planning follows a risk-based approach. These audits include a verification of our human resources processes, particularly concerning labor contracts, compliance with hiring requirements (including a minimum age verification) of our permanent and temporary employees, and employees' working hours. Internal Audit also examines whether employees are paid a living wage. Our procurement processes are audited as well, for example the commissioning of contractors. A total of 89 audit reports were compiled in 2022, of which nine were preventive compliance program audits or incident-related investigations.

We offer numerous ongoing training programs to enhance employees' awareness of the importance of human rights in their day-to-day activities. This includes a basic training course entitled "Respecting Human Rights at Bayer" to further anchor awareness about and respect for human rights throughout the Bayer Group. The training course is available to employees in nine languages (English, Chinese, French, German, Italian, Japanese, Portuguese, Russian and Spanish).

In 2022, more than 85% of our employees received training on aspects of our Human Rights Policy in sessions totaling more than 165,000 hours. The topic of human rights is also an integral element of training measures for the management of our country organizations.

We report in detail on human rights due diligence for our workforce and the local communities in the relevant chapters 6. Employees, 8. Environmental Protection and Safety, 3. Product Stewardship and 5.3 Respect for Human Rights in the Supply Chain.

Effectiveness review

We are working on a concept for measuring the effectiveness of our human rights due diligence approach. In this connection, we draw on established measurement systems such as supply chain monitoring.

Reporting

We regularly inform the public about our strategy, approaches and results in connection with human rights due diligence. One example is this annually published Sustainability Report. Furthermore, we report explicitly on our measures to combat modern slavery in our yearly updated Modern Slavery Act Statement.

Grievance mechanisms and remedial measures

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 more than 300 languages. This can also be done anonymously if desired. Alternatively, employees can also report suspected violations to the respective compliance functions or to the Internal Audit unit, or submit information via an internal company email address or in the form of an incident request via a newly implemented platform (also anonymously).

This enables us to systematically register, track and sanction all possible types of human rights violations. 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 dealt with under the rules set forth in Bayer's Group Regulation on Management of Compliance Incidents. For more information, please see Chapter 2.6 Compliance.

5.3 Respect for Human Rights in the Supply Chain

In regard to the topic of human rights, we are focusing especially on our supply chain because this connects us with several million rights holders – in other words people who are directly or indirectly impacted by our activities. For this purpose, Procurement undertakes a classification of the sustainability risk of our suppliers. This risk classification encompasses all procurement countries and categories such as services and seed production, the latter also including seasonal workers. This enables us to identify and systematically address human rights risks by country and category. Aspects of human rights are also covered in the training offerings and the Bayer Supplier Code of Conduct guidance, which supplements our Supplier Code of Conduct and supports the suppliers in implementing the requirements of the code.

Furthermore, we verify the observance of human rights by our suppliers, partly by means of on-site audits that also include interviews with the suppliers' management and employees. In 2022, we actively worked together with the suppliers in whose operations we had identified critical findings with regard to human rights in the previous year. As required, the suppliers were either included in our Sustainability Supplier Development Program, or follow-up audits were either conducted in 2022 or further audits planned. In this way, we attempt to improve the situation for suppliers' employees not just in the short term, but also in the long term. In 2022, audits of suppliers uncovered a very small number of critical findings regarding applicable wages, other worker benefits, working hours, occupational health and safety as well as indicators of modern slavery in the form of withholding graduation certificates for a certain period of time and payment of recruitment fees. In each of these cases, we also actively cooperated with our suppliers by agreeing a time-bound corrective action plan to improve the situation for employees in a timely fashion. For more information, please see Chapter 4. Procurement.

Challenges in the seed supply chain

The risk of human rights violations poses a particular challenge for Bayer in the seed supply chain. In 2022, we dealt in detail with human rights risks along our global seed supply chain and began to improve our risk prevention and mitigation measures. One risk is child labor.

Combating child labor

Our position on child labor is quite clear – it is not tolerated at Bayer. We therefore obligate our suppliers to 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. The program is established in India, Bangladesh and the Philippines – the countries in which we identified the potential for child labor infractions through our risk assessment.

Through our Child Care Program, we raise awareness about this problem among our suppliers and clearly communicate our requirements. It involves systematic and repeated inspections of individual seed producers in their fields by local Bayer employees during the growing season. Following the divestment of our cotton business in 2021 and owing to the lower potential risk of child labor in rice, vegetable and corn crops, the supplementary sample quality control measures undertaken in the previous years by a special team in India, Bangladesh and the Philippines were discontinued. We observe the situation at local level and will introduce further measures wherever necessary.

In 2021/22, we did not identify any cases of child labor in India, Bangladesh or the Philippines.

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."

Child Labor Incidence in Relation to the Total Number of Laborers Monitored in Seed Production for Bayer Taking India as an Example[1]

	Child labor incidence	Total laborers monitored	Child labor incidence in relation to total laborers monitored	
	2021/22	2021/22	2020/21	2021/22
Rice[2]	0	84,124	0.0025%	0%
Vegetables[3]	0	36,009	0%	0%
Corn[3]	0	57,584	0%	0%

[1] The figures cover several growing cycles in the cultivation year 2021/22. In India, the growing year under review lasts from the middle of one year until the middle of the subsequent year. Cumulated depiction on the basis of control inspections performed (at least one per growing season for rice)

[2] Bayer Child Care Program

[3] Child Care Program of the acquired agricultural business. Harmonization with the Bayer Child Care Program began in 2021. This was advanced in 2022 in consideration of the requirements stemming from the German SCDDA.

We immediately put a stop to instances of child labor among our seed producers and closely track them through the measures related to our Child Care Program. We visit the parents of children we find working in the fields to specifically convince them of the advantages of school education. Graduated sanctions are also 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 bonuses such as incentive payments. 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.

Learning for Life initiative

The Learning for Life initiative is an integral part of our Child Care Program in India. With advanced training measures in farming, we help disadvantaged young people to gain the skills and knowledge needed for modern agricultural vocations and prepare themselves for advanced agricultural employment in villages or companies. The young people who have completed the training program serve as role models for other children to continue pursuing their school education. In combination with the Early Child Education Program implemented between 2005 and 2012/2013, we had reached 7,346 children and young people with our Learning for Life activities by the end of 2022. This number includes the 1,449 school students who successfully completed the career-oriented program between 2010 (the year of launch) and 2022. Through the Learning for Life initiative, we have made a valuable contribution over the past 15 years, always maintaining the flexibility to develop and implement suitable, needs-based programs together with the local population. After more than 15 years, we ended the Learning for Life initiative in 2022 and are now focusing on rural development programs and initiatives to provide preventive healthcare to smallholder farmers and women. Through courses offered to the trainers of the final active Learning for Life initiative program in 2022, we support the continuation of that program even without our active involvement.

Continuously raising awareness about child labor in the agriculture sector requires extensive measures and the involvement of various stakeholders. Against this background, Bayer joined with other seed companies back in 2019 to establish the Enabling Child and Human Rights with Seed Organizations (ECHO) initiative. ECHO is one of the biggest multi-stakeholder forums for the promotion of children's rights and decent work – which includes fair wages as well as healthy and safe working conditions. We implemented several events in this connection in 2022. In addition to multi-stakeholder events on issues such as fighting child labor and minimum wages in agriculture, ECHO organized a half-marathon on the World Day Against Child Labor with the goal of raising awareness about universal social protection to end child labor.

5.4 Stakeholder Engagement

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, for example in the relevant working groups of econsense, where we assumed sponsorship of the issue of business and human rights in 2022, the Business for Social Responsibility (BSR) initiative and, in the supply chain, via our industry initiatives Together for Sustainability (TfS) and the Pharmaceutical Supply Chain Initiative (PSCI). The member companies from various industries discuss best practices, challenges and experiences in implementing the UNGPs. In a specialist group established in 2022 under the auspices of the Chemie^3 initiative, furthermore, we participated in the development of an industry standard for sustainable value creation for the chemical and pharmaceutical sector that is designed to help companies implement human rights due diligence. At the Pre-Summit of the UN Food Systems Summit, we joined the Coalition of Action on Living Incomes and Decent Work, and are supporting this initiative.

Bayer is also an active participant in the current discussion on due diligence with respect to human rights at the EU level and on the implementation of the requirements stemming from the German SCDDA at the national level. We established a cross-divisional and cross-functional working group to implement the requirements stemming from the German SCDDA.

6. Employees

Bayer's success is essentially built on the knowledge and commitment of our employees. As an employer, we focus on our corporate values (LIFE values) and 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) at Bayer assumes leadership of the HR organization and is responsible for Group-wide regulations and standards for our employees. HR is headed directly by a member of the Board of Management, the Chief Transformation and Talent Officer, who also assumes the function of Labor Director. HR is responsible for the operational design, implementation and steering of the global HR processes with the goal of accelerating the development and impact of our talent.

Corporate culture

The company aims to create a culture that is based on fairness and respect. As established in the Bayer Human Rights Policy, we are committed to respecting the human rights of our employees and therefore to fair and equitable treatment as a basic principle of our work environment. This includes observing Group-wide standards of conduct and protecting employees from discrimination, harassment and retaliation. These standards are set out in our Group Regulation on Fairness and Respect at Work, which was signed by the Board of Management. Bayer employees around the world are provided with guidance on how to comply with these. Further binding Group regulations specify details on HR issues (see graphic).

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 in line with Bayer's vision "Health for all, hunger for none." The attributes define the practical importance of the individual values and the behaviors associated with them.

Numerous external awards and surveys bear witness to our excellent reputation as an employer. These include the awards we received in 2022 as one of the best employers in Germany, China, the United States and Brazil. More than half of the Bayer workforce is employed in these four countries.

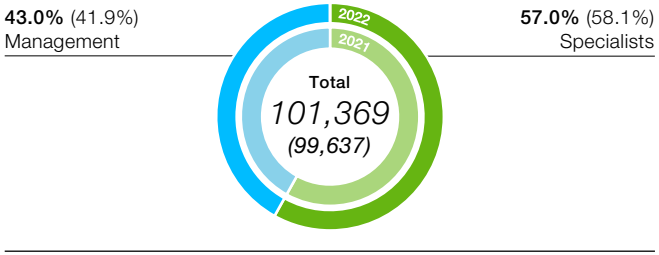
Digitalization

Digitalization represents a major opportunity for Bayer. Robotic process automation and artificial intelligence are deployed to simplify and increase the efficiency of a number of HR processes. They also help improve user experience and reduce costs and manual activities. The company provides special training in the area of digitalization.

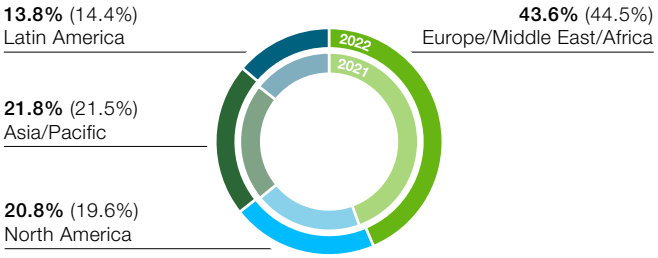
Binding Group Regulations

Employee Data[1]

Total Employees 2022 (2021)

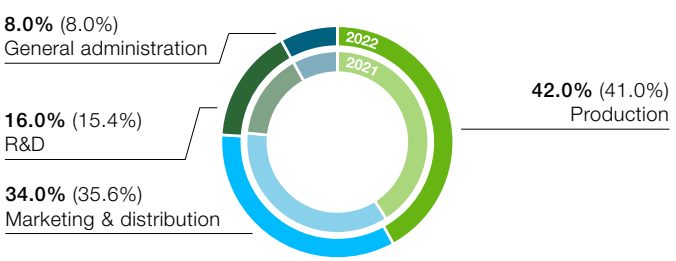


Employees by Region 2022 (2021)



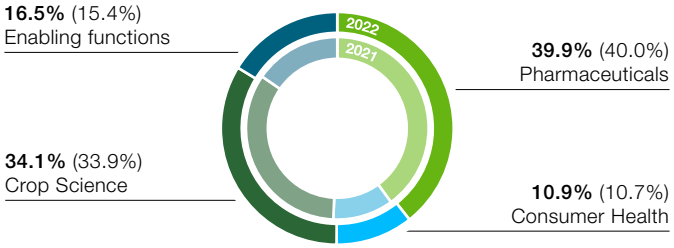
	2021	2022	Change (%)
Europe/Middle East/Africa	44,309	44,181	–0.3
North America	19,515	21,090	8.1
Asia/Pacific	21,448	22,094	3.0
Latin America	14,365	14,004	–2.5

Employees by Function 2022 (2021)



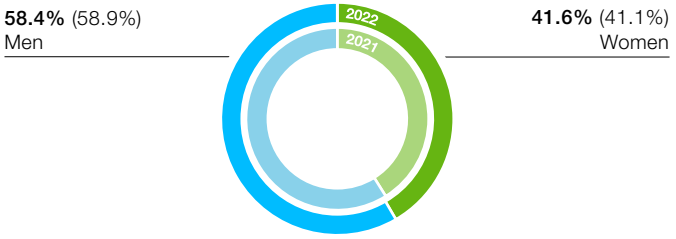
	2021	2022	Change (%)
Production	40,838	42,548	4.2
Marketing & distribution	35,496	34,477	–2.9
R&D	15,310	16,211	5.9
General administration	7,993	8,132	1.7

Employees by Division 2022 (2021)



	2021	2022	Change (%)
Crop Science	33,738	34,052	0.9
Pharmaceuticals	39,931	39,927	–0.1
Consumer Health	10,647	10,851	1.9
Enabling functions	15,321	16,539	7.9

Employees by Gender 2022 (2021)



	Women		Men	
	2021	2022	2021	2022
Europe/Middle East/Africa	19,530	19,464	24,779	24,717
North America	7,482	8,138	12,033	12,952
Asia/Pacific	8,447	9,047	13,001	13,047
Latin America	5,465	5,479	8,900	8,525
Total	40,924	42,128	58,713	59,241

[1] Number of employees in full-time equivalents (FTE)

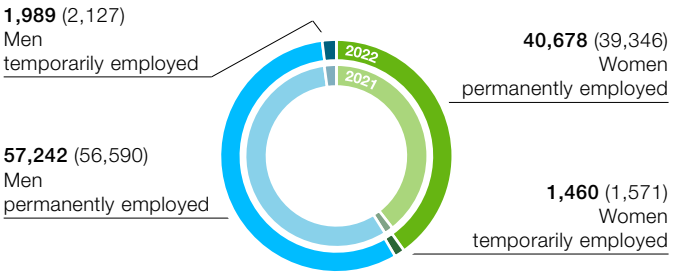
6.2 Employee Data

On December 31, 2022, Bayer employed 101,369 (2021: 99,637) people worldwide. In Germany, we had 22,569 (2021: 23,116) employees, which was 22.2% of the total Group workforce (2021: 23.2%). For further employee data, please see the 2022 Annual Report.

Employment status and new hires

Within Bayer's workforce, 3.4% of employees (1.4% women and 2.0% men) have temporary contracts. On the reporting date, our employees had worked for the Bayer Group for an average of 11 years (2021: 11.2 years; women: 10 years, men: 12 years).

Employees by Employment Status, Gender and Region 2022 (2021)

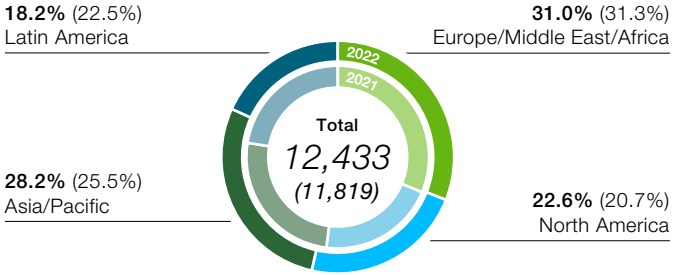


	Permanently employed		Temporarily employed	
	2021	2022	2021	2022
Europe/Middle East/Africa	42,445	42,477	1,863	1,703
North America	19,378	20,969	137	121
Asia/Pacific	20,691	21,336	756	757
Latin America	13,431	13,165	934	839

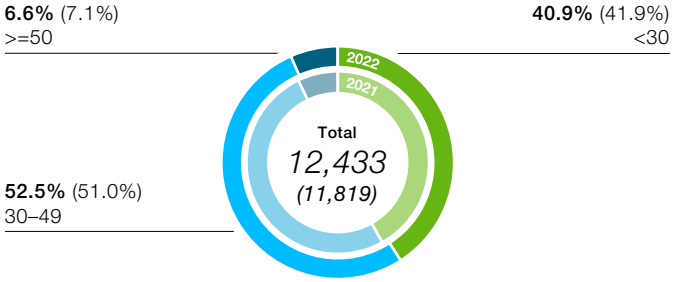
In total, the Bayer Group hired 12,433 new employees in 2022, accounting for 12.3% of the workforce.

New Hires 2022 (2021)

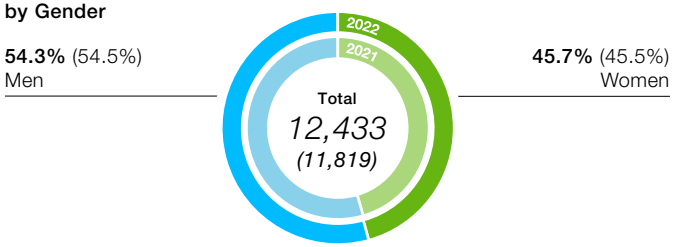
by Region



by Age Group

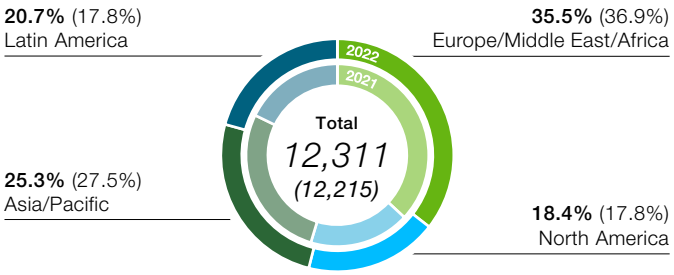


by Gender

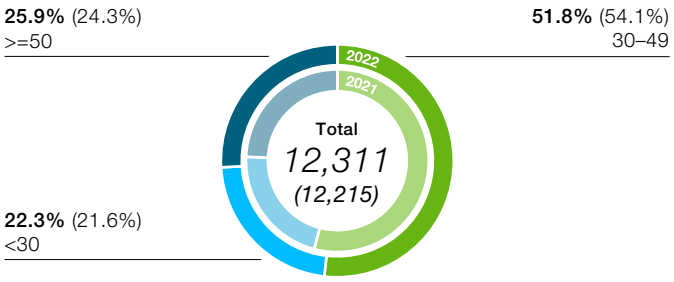


Fluctuation of Employees 2022 (2021)

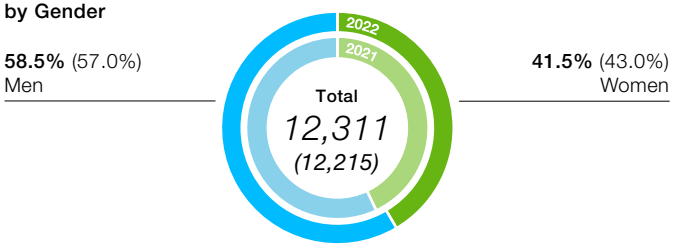
by Region



by Age Group



by Gender



The overall fluctuation rate was 12.2%, an increase of 0.1% compared with 2021. This figure includes all employer- and employee-driven terminations, termination agreements, retirements and deaths.

Fluctuation

	Voluntary		Total	
%	2021	2022	2021	2022
Women	6.7	6.2	12.6	12.1
Men	5.9	5.7	11.8	12.2
Total	**6.2**	**5.9**	**12.1**	**12.2**

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, 2022, some 3,850 temporary employees from staffing agencies were working for Bayer at our significant locations of operation. In Germany, the proportion of such temporary employees from staffing agencies compared with the total for the core workforce was 1%.

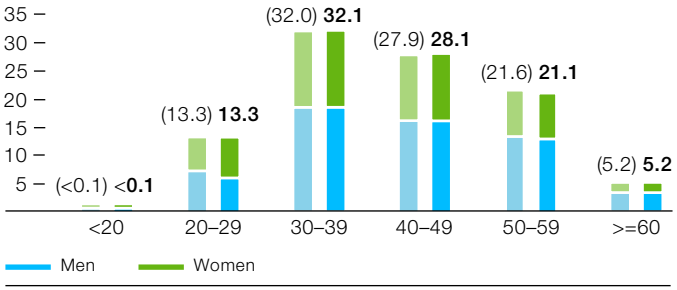
Demographics

We want to create an optimal environment for our employees in all life phases and thus safeguard the long-term availability of specialists and knowledge transfer. We take a range of steps to address the individual needs of our employees by offering age-appropriate jobs along with health and sports programs, flexible working arrangements and active knowledge management.

Through the Bayer Senior Experts Network (BaySEN) initiative, selected experts can continue to contribute their expertise even after retirement by temporarily working for Bayer on certain projects or for special tasks. In this way, BaySEN supports demographic diversity and helps different generations to work together and learn with and from one another.

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

Employees by Age Group 2022 (2021)



The demographic situation differs greatly from one region to another.

Employees by Gender, Region and Age Group 2022

	Europe/ Middle East/Africa	North America	Asia/Pacific	Latin America
Women	**19,464**	**8,138**	**9,047**	**5,479**
< 20	8	0	1	7
20–29	2,021	782	2,248	1,142
30–39	5,646	1,960	3,924	2,207
40–49	5,845	2,506	2,197	1,522
50–59	5,032	2,050	615	560
≥ 60	912	840	62	41
Men	**24,717**	**12,952**	**13,047**	**8,525**
< 20	18	8	1	9
20–29	2,572	1,297	2,181	1,230
30–39	6,823	3,415	5,406	3,103
40–49	6,742	3,706	3,347	2,683
50–59	6,732	3,250	1,907	1,289
≥ 60	1,831	1,276	204	211

In Germany, the General Works Agreements on lifetime 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. In 2022, 100% of those who were eligible took part in the program to reduce the workload of older employees. What's more, the BayZeit long-term account makes it possible for employees in Germany, already in the early years of their employment, to convert part of their gross salary into free time that they can take off later.

Restructuring measures

We act with social responsibility when changes and restructuring measures are necessary. In all countries, we aim to minimize the impact on employees and find mutually agreeable solutions in cases where job reductions are necessary. This is also the case in Germany, where agreements are in place with employee representatives that fundamentally rule out dismissals for operational reasons in the intercompany personnel network of Bayer AG in the country until the end of 2025.

We are at different stages of development with regard to the acceleration of our transformation announced in 2020. We anticipate that all of the major transformation measures will be implemented by the end of 2024. Flexible models with attractive conditions are offered to employees of various age groups.

6.3 Inclusion and Diversity

Mutual understanding and a company culture that leverages talented employees with a range of backgrounds and outlooks are important success factors for the Bayer Group and society since this enables us to increase the visibility of diversity in society and contribute to social stability and economic development. We endeavor to create a working environment in which all employees feel welcome and can perform to their best. We want to continue to recruit and promote employees who have critical skills and qualifications, while at the same time focusing on inclusion and diversity. We employ people from around 150 nations.

Our Inclusion and Diversity (I&D) strategy focuses on the integrative behavior and decision-making of all employees. We have established I&D committees at various management levels that work together with our I&D leads to embed inclusion, diversity and equity into four key areas, namely our company culture, the advancement and development of our employees, our business processes and our company brand.

Clear commitments

We have established clear commitments for gender balance throughout the Bayer Group. We want to demonstrate progress year-on-year to increase the proportion of women in top management to 33% by 2025. The average proportion of women at all management levels is to be increased to 50% by 2025. We then aim to increase the proportion of women in top management to 50% as well by 2030.

We have also defined additional commitments to further diversity dimensions for 2025 and 2030, covering age structure, nationality, career experience, LGBTQ+ and people with disability, among others. Further aspects such as ethnic background and skin color are integrated into our commitments for our regional organizations.

Measures

We established and further developed the following measures in 2022:

// We revised our Group Regulation on Fairness and Respect at Work.
// We have completed an assessment of gender pay equity for 86% of the Bayer workforce in 18 countries (please see Chapter 6.4 Fair Compensation).
// We have introduced support programs to develop our future top management, taking I&D into account.
// We included I&D concepts in our new leadership expectations and integrated specialist expertise and advanced training in the area of I&D into our learning management systems.
// We offer a variety of I&D training content. Through our “Understanding Bias Around the World” training course, for example, we want to make our employees more aware of everyday situations where bias can occur.
// We advanced talent development focused on I&D, for example through involvement in the development programs of the Healthcare Businesswomen’s Association, a global nonprofit organization that promotes the influence of women.
// To further mitigate any potential bias in our talent management processes, we measure diversity in our candidate slates and hiring panels. To continue to promote diversity in our workforce, we have launched analyses on the topic of employee retention and initiated the first measures.
// We make the promotion of I&D transparent through employee surveys on inclusion. This is reflected in our inclusion index and is part of our leader dashboard. We have also launched a #BreakTheBias campaign that shows the positive transformation of an integrative environment.
// We launched two additional global Business Resource Groups (BRGs): MERGE (Multigenerational Employee Resource Group Exchange for the promotion of multigenerational expertise within the company) and BayAfro for people of African descent.
// We introduced a new I&D operating model with a closer focus on communication and cooperation, for example through a monthly exchange between our I&D leadership from the divisions and countries. We want to further strengthen the joint decision-making process through this approach.
// We regularly communicate our progress and engage the BRGs in this process.

Progress

The proportion of women in management rose to 42.9% in 2022 (2021: 41.9%).

The proportion of women in top management rose slightly in 2022, amounting to 27.8% at year-end (2021: 26.8%).

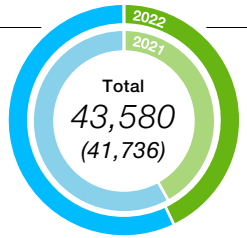
Currently, 37 nationalities are represented in Bayer’s top management, with around 67% of these employees working in their home countries.

There is one woman on the Board of Management. Three of the six members of the Board of Management have a nationality other than German.

Employee Structure of the Bayer Group 2022 (2021)

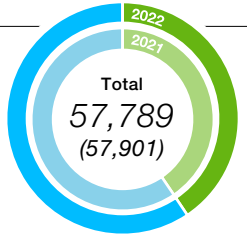
Management

57.1% (58.1%) Men — **42.9%** (41.9%) Women



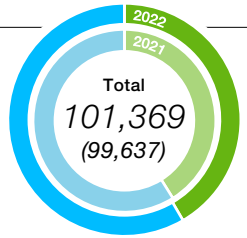
Specialists

59.4% (59.5%) Men — **40.6%** (40.5%) Women



Group

58.4% (58.9%) Men — **41.6%** (41.1%) Women



The proportion of either women or men on the company's Supervisory Board should not fall below 30%. The Supervisory Board meets this target and increased its proportion of women by 10% year-on-year to 45%. For more information on the Board of Management and Supervisory Board, please see the Declaration by Corporate Management in the 2022 Annual Report.

The voluntary self-declaration of ethnic origin and/or skin color is currently available in a limited number of countries. 20% of our employees in Brazil are Black and 3% are Asian. Our employees in South Africa are 34% Black, 7% Asian and 5% Colored (multi-ethnic). In the United States, 13% are Asian, 10% Hispanic or Latino, and 5% Black or African American.

People with disability are an integral part of our workforce. Based on voluntary statements by employees, we employ around 2,150 people with disability in 39 countries, 44% of whom are women and 56% men. That represents around 2.1% of our total workforce. Most employees with disability work for our companies in Germany, where they made up 4.3% of the workforce in 2022.

For information on the analysis initiated in 2020 on wage equality between genders, please see Chapter 6.4 Fair Compensation.

Business Resource Groups

The Inclusion and Diversity strategy also incorporates Business Resource Groups (BRGs), which help us to cultivate an inclusive and diverse company culture. BRGs currently exist at Bayer for women, LGBTQ+, employees with disability, families and other global and regional employee groups, including with respect to ethnic origin or skin color.

Three of our BRGs were each assigned a different sponsor from Bayer AG's Board of Management in 2021:

// BLEND (BRG for lesbian, gay, bisexual, transgender and queer [LGBTQ+] employees and their supporters at Bayer)
// ENABLE (BRG for the advancement of employees with disability)
// GROW (BRG for the advancement of women)

In 2022, we launched two new global BRGs to which global leadership sponsors were also assigned:

// BayAfro (BRG for people of African/Black descent and their supporters)
// MERGE (Multigenerational Employee Resource Group Exchange enhancing multigenerational competence within the organization)

The members of the Board of Management will continue to advise and support the BRGs as mentors. The experiences gained in this way will empower the members of the Board of Management to anchor inclusion and diversity more strongly in our company culture.

As a signatory to the Women's Empowerment Principles of the United Nations, we pursue an inclusive approach to ensure that gender equality is directly integrated into all relevant human resources processes and driven forward by the management. The seven Women's Empowerment Principles explain how to ensure that everyone can enjoy the same rights in the workplace, on the employment market and in society at large, irrespective of their gender.

We also support the Diversity Charter corporate initiative, have joined The Valuable 500 initiative and are a founding member of the German “Chefsache” network. Together with the other members, we develop practical strategies to achieve an equal balance of women and men in management positions in the respective organizations.

In 2022, we organized I&D events with and for our employees in several countries, such as Germany (Diversity Day) and Brazil (Diversity Month), that conveyed our appreciation for individual uniqueness.

6.4 Fair Compensation

Bayer applies 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 in similar roles with similar experience, and to informing our employees transparently about the overall structure of their compensation. Our Group Regulation on Total Rewards provides a binding framework specifying the global requirements.

Compensation structures at Bayer

Ensuring gender pay equity is one of the key pillars of our global inclusion and diversity (I&D) strategy. In the past few years, we have analyzed our employees’ compensation data to find out what we can do to ensure equity going forward.

In some countries, we have mechanisms in place to evaluate and address pay equity concerns. Local reporting is prescribed in some cases (e.g. the United Kingdom), which is why – in a global approach – we primarily analyzed data from countries in which such a targeted review has not yet taken place. In all, we screened around 86% of our workforce in 18 countries to identify gender pay gaps.

The results of our study confirm our initial analyses from 2021: the gender-specific differences are limited to fewer than 2% of the in-scope employees even through 15 additional countries were included in the analysis in 2022.

Further analyses with local resources are necessary to determine whether any identified pay differential is attributable to factors other than gender and to take corresponding measures in 2023. Ultimately, our goal is to learn from these analyses to close potential gaps before they arise.

Living wages

Bayer compensates employees on both permanent and temporary employment contracts in excess of the statutory minimum wage in the respective countries, paying at least a living wage that is annually reviewed and specified worldwide by the nonprofit organization Business for Social Responsibility (BSR). 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 HR to ensure that the requirements of the 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 and the global Sustainable Development Goals (SDGs) of the United Nations.

At Bayer, individual salaries are based on personal and professional abilities and the level of responsibility assigned. At the managerial level, this is based on a uniform evaluation approach for all positions throughout the Group using the internationally recognized Hay method. Differences in pay based on gender are ruled out in areas of the Bayer Group and jobs covered by a binding collective bargaining agreement. In the emerging markets and developing countries, we exceed local market conditions in regard to compensation levels and pay at least a living wage.

In the majority of cases, full- and part-time employees at our significant locations of operation receive the same rates of fixed and variable pay. Our compensation concept also includes variable one-time payments to recognize outstanding performance. In many countries, employee stock programs enable the purchase of Bayer shares at a discount. Depending on statutory requirements, employees on temporary contracts may not be entitled to long-term compensation components such as pension plans in some countries. The long-term variable compensation (LTI) of our LTI-entitled managerial employees takes into account progress toward the Group's sustainability targets. The calculation of target attainment corresponds with that for the Board of Management. For detailed information on the variable compensation of our Board of Management, please see the Compensation Report in the 2022 Annual Report.

Retirement benefits

In addition to providing attractive compensation for their work, Bayer contributes to the financial security of its current and former employees. Retirement benefit plans are available to 79% (2021: 75%) 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 individual years of service.

Availability of Retirement Benefit Plans[1]

%	2021	2022
Europe/Middle East/Africa	91	86
North America	100	99
Asia/Pacific	33	53
Latin America	65	69
Total	**75**	**79**

2021 figures restated

[1] In addition to state pension insurance

6.5 Learning and Training

Our employees need a broad spectrum of competencies, skills and knowledge to fulfill our mission "Science for a better life." Successful careers at Bayer are the result of lifelong learning. We view it as a central task to offer our employees a broad range of continuing education options for their development.

Global training process

Bayer has introduced a global, GxP-validated training process that offers all organizational units a framework for standardized training management throughout the company. It comprises five subprocesses and follows a learning life cycle:

Overview: Global Training Process

// "Determination of training needs" describes the process for analyzing, reviewing and planning strategic and business-critical training needs based on the available reports and evaluations.
// "Provision of training content" comprises the development and application of learning content depending on the business-related and individual training requirements.
// "Definition and classification of training" establishes which training measures are assigned to which target groups and in what form.
// "Administration of training" describes the daily workflows such as the creation of a training offering on the learning platforms, logistical administration through to registration processes and completion, and the assessment of skills.

// "Evaluation of training" describes all forms of evaluation options. It serves to evaluate existing training offerings with the goal of providing content for identifying training needs so as to initiate a new learning life cycle.

The global training process is supported by two complementary systems: our learning management system and the learning experience platform. The Learning Management System is used for compulsory and GxP-relevant training courses, formal and internal learning content, tracking course completion, and the provision and assignment of training offerings. The Learning Experience platform enables access to various content providers and wide-ranging offerings.

Individual learning

Through easily accessible learning opportunities, we enable our employees to learn according to their own needs and schedule. With the help of digital technologies, we offer the option of a personalized learning offering. As part of our learning environment, customized content can specifically be selected from internal and external sources via the learning experience platform. Furthermore, there is also scope to determine on an individual basis how often employees engage in learning and the amount of time they spend learning on mobile devices or at their workplace. We continuously update various learning materials such as videos, books, courses, podcasts and articles. We recently added new content from the areas of digitalization, inclusion, diversity, equity and leadership to our learning offering.

The top three skills our employees choose most often are leadership, project management and data analytics.

In addition, the Bayer Leadership Academy offers courses for the systematic development of our managerial staff. Functional academies such as the Innovation Academy, IT Academy and R&D Academy offer advanced training in various disciplines.

Full- and part-time employees and temporary employees from staffing agencies complete the necessary compliance and ongoing vocational training, both through classroom-based courses and computer-assisted education measures.

Learning and training time averaged around 26 hours per employee in 2022. The average cost of ongoing training per employee was €532.

Learning and Training Hours by Category and Gender 2022

	Women	Men	Total
Category			
Management*	21.5	20.4	**20.9**
Specialists	24.8	32.4	**29.2**
Overall average	**23.5**	**27.7**	**25.9**

* Incl. top management

Vocational training

To meet the need for skilled employees, Bayer offers well-grounded apprenticeships, primarily in Germany, in more than 29 different occupations. We employed 1,286 apprentices overall in 2022 (of whom 34% were women). Around the world, Bayer also offers trainee programs in various areas for those embarking on a career and internships for students.

6.6 Employee Development and Integration

Bayer promotes 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.

Bayer's virtual mentoring approach is available to all full-time and part-time employees globally, allowing participants to independently leverage professional development opportunities, either for their own benefit as a mentee or for others as a mentor. The program is supported by an algorithm based on artificial intelligence that brings together mentors and mentees from throughout the Bayer Group. Since the launch, more than 4,600 employees have registered; 48% of participants have been women and 52% are men.

Performance goals and development dialogues

Bayer pursues a globally standardized approach for performance evaluation and employee development, as defined in the Group Regulation on Performance and Development. The performance assessment procedure is available to 80% of our employees worldwide. Those excluded from this are primarily employees whose existing works agreements do not allow for individual performance assessments, for example in Germany.

Our employees and supervisors jointly set flexible annual goals. In consultation with their supervisors, employees can select goals of relevance for themselves and their work areas and can also make flexible adjustments to the goals during the evaluation phase. Both individual and team goals can be set. In 2022, flexible annual goals were agreed upon for 93% of eligible employees, 45% of them female and 55% male.

Some 80% of our employees (68% of our specialists and 99% of our managers) can participate in a year-end evaluation concerning the fulfillment of their targets. At the end of 2022, 98% of the eligible employees (44% female and 56% male) received such an evaluation. In addition, employees can regularly and openly discuss their performance, challenges, ideas and well-being with their supervisors during check-ins.

Managers throughout the Group have the option of presenting Top Performance Awards to incentivize outstanding individual and team successes. These involve a variable payment to reward particular achievements directly in a timely fashion. Additional recognition programs are in place in some countries. In many countries, employees are recognized with years of service awards.

In regular development dialogues, employees discuss perspectives for their further career development together with their supervisors. Such a development dialogue can identify a training need that can be thematically covered by the My Learning learning management system and the GoLearn learning experience platform – please see Chapter 6.5 Learning and Training.

More than 65,900 development dialogues were held and documented in 2022. In total, 63% of our employees participated in these dialogues (of whom 44% were women and 56% men; in total 54% of our specialists and 75% of our employees in management).

Thanks to our wide-ranging business activities, employees throughout the Bayer Group can access various opportunities for development. Vacancies throughout the Bayer Group, from nonmanagerial right up to upper management level, are advertised via a globally accessible platform.

Supporting scientists

To maintain an enthusiasm for Bayer among top researchers and scientists, we offer them special development opportunities that are tailored to their requirements. These include new scientific challenges, special advanced training offerings and a career path either as experts or as managers in various Bayer regions, functions or divisions. Through our Science Fellows Community, we talk to our scientific specialists about their own career development. Special mentoring programs are established to support employees' early development and their regular networking with experienced scientists and managers.

Promoting dialogue and exchange

Bayer offers employees numerous means of actively discussing company-specific topics and scope for optimization via various internal communication channels. We actively involve our employees in business processes by offering the opportunity for dialogue. Informing staff comprehensively and in good time about upcoming internal company 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. In addition, we conduct biannual employee surveys throughout the Group; the participation rate in the second half of 2022 was approximately 75%. Based on the employee surveys, the approval rate for employee engagement in the second half of the year was 76.4%. We transitioned this survey to digital (paperless) implementation in 2022.

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 European sites engage in discussion with the Board of Management and other company managers on topics of overarching relevance to the company.

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

Rewarding ideas

To promote a culture of innovation in the workplace, additional platforms for making work-related suggestions are available to employees in Germany, such as the Bayer Ideas Pool and the Ideas Forum. The suggestions made here by employees on improving processes, occupational safety and health protection are rewarded and utilized. Some 2,500 ideas were submitted in 2022, and 46% of the suggestions for improvement evaluated in 2022 were implemented. In the first year of implementation alone, those improvements that led to quantifiable benefits generated savings of some €2.5 million. In 2022, Bayer distributed bonuses of around €800,000 for the implemented proposals.

Volunteer work to support social projects

In various countries, our employees voluntarily support social projects, usually in the areas near our sites. In the United States, we support employees who personally volunteer their time in nonprofit organizations. Our employees can also participate in events and activities supported by Bayer that help to improve living conditions in the immediate vicinity of our sites.

Another example of employee engagement is the charitable donation program Helping Cents. Through this, our employees in Germany can donate the decimal digits of their monthly salary, which are then doubled by Bayer, for charitable projects. In 2022, just under 7,500 employees took part in this and donated more than €39,000. For more information on the donation program, please see Chapter 9.2 Our Giving in 2022.

Our employees launched the PROSI (PRO Social Initiatives) initiative in 2018. This voluntary program gives employees in numerous countries the opportunity to work together on local social projects. Our employees initiate and support more than 100 social projects with their personal commitment.

The next normal

In response to the COVID-19 pandemic, Bayer permanently expanded the flexibility it offers employees for shaping working hours and work locations and thus created a “next normal” in this regard for suitable responsibility profiles. This makes it easier for employees to meet both their individual work responsibilities and their private obligations. It also helps keep our employees safe and limit the spread of the pandemic.

The increased use of flexible working models is part of our next normal, in which our employees are given more flexibility and responsibility at all hierarchy levels (empowerment). In line with the requirements of (labor) law and taking into account cultural differences, we want to meet the needs of our employees and customers and thus strengthen our business operations.

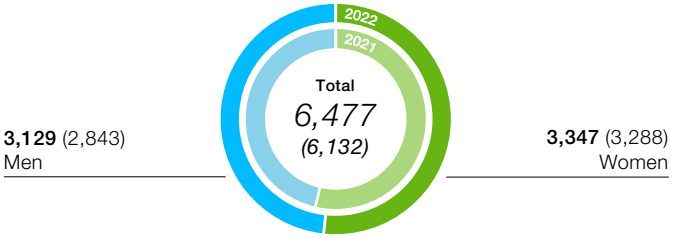
6.7 Work-Life Integration

We help our employees to balance their work and private lives. Taking their individual situation into account, we give them flexibility in shaping their working hours and work locations and offer them parental leave and support with childcare and caring for close relatives. In many countries, our commitment in this area goes beyond the statutory requirements. An overview of the selected benefits for employees in each country can be found in the Appendix to this report.

In 2022, part-time employees accounted for around 6.4% of the Bayer Group workforce (approximately 52% female and 48% male), primarily in Europe (96%). Some 3% of part-time employees were located in Asia and 1% in North America, with very few part-time employees in Latin America.

Bayer enables both men and women to take parental leave, although national parental leave regulations vary widely from country to country. Some 1,663 women and 1,513 men took parental leave in 2022. Over the course of the year, 2,835 employees returned to work from parental leave.

Part-Time Employees by Gender 2022 (2021)



The next table uses Germany as an example and shows the number of employees who have returned to work after opting for the standard statutory parental leave program of up to three years per child. By the end of 2022, 76% had returned to work. Some 66% of women and 96% of men who have taken parental leave since 2020 have returned to work.

Employees Returning from Parental Leave in Germany 2022

	Women		Men		Total	
	%	absolute	%	absolute	%	absolute
Employees on parental leave since 2020	51	1,133	49	1,110	100	2,243
of which still on parental leave/dormant contract	34	386	4	49	19	435
of which returned by 2022	66	747	96	1,061	76	1,808
of which with terminated contract[1]	5	53	4	47	5	100

[1] This includes employer- and employee-driven terminations, severance agreements and departures following the expiration of employment contracts.

Bayer in Germany has agreed to uniform conditions for mobile working in a General Works Agreement with the Works Council. Through this, employees have the freedom to work remotely on certain days after consulting with their supervisor. As a result of the COVID-19 pandemic, employees made use of mobile working whenever operationally possible. In addition, using 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 their work with their role as carers by utilizing adapted worktime models and taking temporary paid leave.

6.8 Health Provision

"Health for all" is a core element of our corporate vision, which is why the health of our employees is of the utmost importance for us. We have established health provision programs and support access to reliable and high-quality healthcare. For information on our occupational health and safety measures, please see Chapter 8.6 Occupational Health and Safety.

In 2022, we maintained our global framework concept BeWell@Bayer to promote our employees' health and quality of life. This expands the core aspect of health into a comprehensive approach, targets further health improvements in the daily work environment and is specifically designed to help employees balance their professional and private lives better.

In 2022, we continued to focus particularly on mental health as one of the most important pillars of our BeWell@Bayer framework. Through the global House of Health platform, we offer programs and materials to help promote a holistic approach to health and well-being at Bayer. For more information, please see Chapter 8.6 Occupational Health and Safety.

Our occupational health management activities include numerous additional preventive programs, ranging from ergonomic workplace and stress management initiatives to incentive systems to promote healthy behavior. Employees can access these programs through Bayer's intranet and through internal and external company benefits platforms. Our employee representatives are included in occupational health management and are actively involved in its further development. The Bayer European Forum – which brings together management and employee representatives – has signed the Luxembourg Declaration on Workplace Health Promotion in the EU and is committed to the principles contained therein regarding the implementation of workplace health promotion. Health check-ups are an integral part of our global health promotion initiatives.

We want to provide employees in all countries with access to reliable and high-quality healthcare. Almost 97% of our employees worldwide have either statutory or private health insurance or can obtain health insurance through the company.

Health Insurance Coverage[1]

%	2021	2022
Europe/Middle East/Africa	98	99
North America	90	92
Asia/Pacific	96	96
Latin America	100	100
Total	**97**	**97**

[1] Financially supported by the employer

For information on our occupational health and safety measures during the ongoing pandemic, please see Chapter 8.6 Occupational Health and Safety.

6.9 Employee Rights

Employees at all Bayer sites around the world have the right to elect their own representatives. In 2022, the working conditions for around 53% 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[1]

%	2021	2022
Europe/Middle East/Africa	80	80
North America	2	1
Asia/Pacific	49	47
Latin America	52	51
Total	**54**	**53**

[1] Percentage of employees covered by collective bargaining agreements or company agreements, especially with respect to wages and working conditions

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

7. Climate Protection

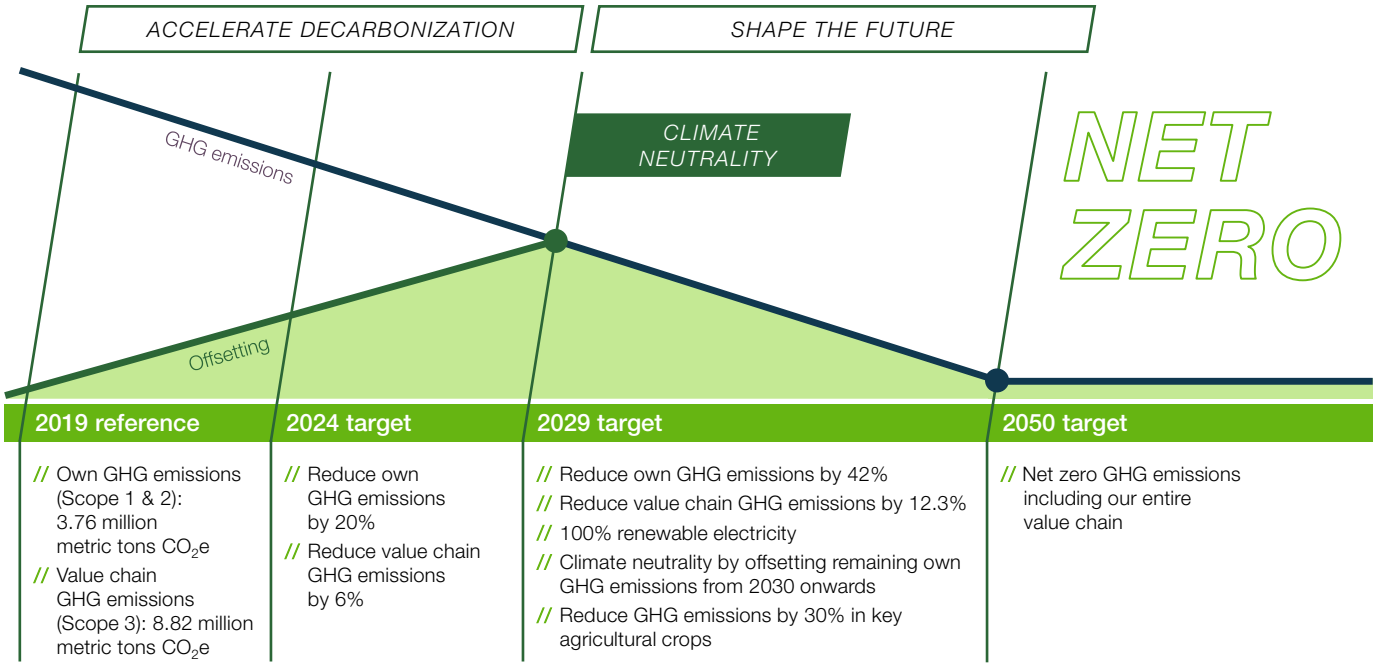
Climate change affects us all and is one of the greatest challenges that humankind will face in the future. Bayer considers climate protection and the related reduction of greenhouse gas emissions to be a top priority. We support the Paris Agreement and the objective of limiting global warming to 1.5 °C relative to the preindustrial level. The Science Based Targets initiative (SBTi) has validated our target and confirms our contribution to fulfilling the Paris Agreement. We anticipate that our business areas of healthcare and agriculture will on the one hand be impacted by climate change, but on the other will also be part of the solution.

7.1 Management Approach

The Chairman of the Board of Management holds direct responsibility for climate protection in his role as Chief Sustainability Officer. In keeping with their level of importance, climate-change-related topics and Bayer's climate strategy were discussed at a total of three meetings of the Board of Management, two meetings of the Supervisory Board and two meetings of the ESG Committee of the Supervisory Board in 2022. The attainment of our Group target of reducing greenhouse gases by 2030 is factored into the long-term compensation of the Board of Management and Bayer's LTI-entitled managerial employees. The compensation-relevant target is based on Bayer's necessary contribution to an SBTi-validated 1.5 °C scenario. Climate protection is also an integral element of annual variable compensation.

In addition, the Sustainability Council that was established in 2020 advises the Board of Management in all matters relating to sustainable development – including climate protection. In 2022, climate change and the related impacts and opportunities for Bayer were discussed at two meetings of the Sustainability Council.

Roadmap to Net Zero



GHG = greenhouse gas

The Chairman of the Board of Management is supported in this by the Public Affairs, Science, Sustainability & HSE Enabling Function and the sustainability departments within the divisions. The divisions handle the operational implementation of the climate protection measures at their sites with the support of the enabling functions. We have formed Group-wide working groups for the strategic and operational implementation of climate-change-related measures and a special working group to analyze various climate scenarios and their impacts on our business.

7.2 Climate Strategy

Net zero target

Bayer has undertaken to achieve a net zero target for greenhouse gas emissions throughout the entire value chain by 2050 or earlier. As an external expression of commitment to net zero greenhouse gas emissions, the company also signed the Business Ambition for 1.5 °C, a campaign of the SBTi in partnership with the UN Global Compact and the We Mean Business Coalition.

Medium-term climate targets by 2030

Bayer aims to achieve climate neutrality at all its own sites by 2030. To attain that target, we intend to reduce our own emissions – the so-called Scope 1 and Scope 2 emissions – by 42% relative to the reference year 2019 by the end of 2029. This target on the pathway to a 1.5 °C scenario was reviewed and acknowledged by the SBTi.

We have set a reduction target for Scope 3 emissions of 12.3% by 2029 (relative to 2019) for our value chain. This target was also reviewed and acknowledged by the SBTi.

Interim targets by 2024

By 2024, we aim to reduce our own (Scope 1 and Scope 2) emissions by 20% and our emissions in the value chain (Scope 3) by 6% (relative to 2019) in line with the reduction pathway of our Science Based Target (SBT).

Measures

We have developed a net zero roadmap to achieve our ambitious climate targets. This roadmap comprises various measures in the areas of energy and efficiency, governance and offsetting. To implement our long-term climate strategy, we focus on reducing the greenhouse gas emissions associated with our operations and on strengthening the resilience of our business areas.

Electricity from renewable energies

// By 2029, we intend 100% of the electricity we purchase to be derived from renewable sources.
// We have defined specific criteria for the procurement of renewable electricity and this information is published on our website. These criteria include the geographical proximity between power generation locations and Bayer's sites, the use of new production sources and a focus on wind and solar energy. The criteria are based on the next-generation green power guidelines of the WWF (World Wide Fund for Nature).
// In 2022, we pressed ahead with the conversion of our Group-wide electricity procurement, and renewable energies now account for 32.6% of our total purchased electricity volume.
// For example, in 2022 we concluded a long-term supply agreement for our sites in Spain with a producer of electricity generated from renewable energies. Similar supply agreements already exist for sites in Germany and Mexico. In Brazil, long-term supply agreements were concluded to ensure the supply of electricity from renewable energies based on energy attribute certificates (EACs) accredited according to the International Renewable Energy Certificate standard (I-REC). Part of the electricity requirement in the United States is covered by certificates (EACs/RECs), supplemented by supply agreements with local providers.

Investment in energy efficiency and renewable energies

// To achieve an absolute reduction in our remaining emissions, we intend to invest €500 million in renewable energies and in increasing the energy efficiency of our facilities and buildings by 2030.
// We are investing in process innovations, more efficient facilities and building technology, and in the implementation and optimization of energy management systems, particularly at our production sites.
// Capital expenditure projects are underway at various sites to advance the use of climate-neutral technologies such as geothermal energy or emissions-free steam production.
// One example is the planning of an adiabatic crystallizer at one of our energy-intensive production sites in the United States.
// Using improved data visualization, unusually high energy consumption was identified at a production site in Germany (through "bad actor analysis") and rectified through capital expenditures to enable steam consumption to be reduced at the site.
// In the vacuum generation process at a production site in India, a thermal exhaust vapor compressor was replaced with a mechanical exhaust vapor compressor, thus considerably reducing steam consumption at the site.
// At another production site, the repair of condensate drains has enabled a considerable reduction in steam consumption in recent years.

Vehicle fleet

// By 2030, we aim for our fleet of currently around 26,000 vehicles to consist entirely of electric vehicles wherever this is technically and economically feasible.
// Bayer joined the EV100 initiative of the Climate Group and has validated its activities according to the criteria of that initiative. In 2022, implementation began in 26 countries (including Germany) that account for around 67% of our vehicle fleet. Including vehicles that have already been ordered, the proportion of hybrid and electric vehicles in our fleet is approximately 18%.

Governance

// Capital investment and an internal CO_2 price: we are aligning our capital expenditures to our goal of achieving net zero greenhouse gas emissions by 2050. This is in line with the international goal of limiting global warming to 1.5 °C. To drive this transition, we have launched a pilot project and established an internal CO_2 price of €100 per metric ton of CO_2 for the calculation of our capital expenditure projects.

// Beginning in 2023, we also aim to develop an internal CO_2 price to manage our Scope 3 emissions.
// Investment decisions: we perform a voluntary ecological assessment for capital expenditure projects exceeding €10 million. Emissions reduction and efficiency measures are integral to these evaluations. For more information, please see Chapter 8. Environmental Protection and Safety.
// Certifications according to the international ISO 14001 (environmental management) and ISO 50001 (energy management) standards help to identify energy savings potential both in existing production processes and in the development of new production processes and the conversion of existing processes. These standards support us in managing and reducing energy consumption at our production sites. For more information, please see Chapter 8. Environmental Protection and Safety.
// Through transparency, we want to motivate our employees in a variety of different areas to consume energy and electricity efficiently. For example, in one office building in Germany, electricity consumption is displayed visually for employees to see. Best practices (sustainability moments) are shared in various areas.

Climate neutrality

// We will offset those of our emissions (Scope 1 and 2) that still remain following reduction through technological measures and cannot be avoided (such as greenhouse gas emissions generated by chemical processes or through business travel) by purchasing certificates from climate protection projects that meet recognized quality standards. By doing so, we aim to achieve climate neutrality for our own sites by 2030. These projects need to have a connection to our business. In this respect, too, we have established specific criteria for procuring certificates from climate protection projects. In this process, we focus on nature-based climate solutions, preferably concerning forestry and agriculture projects. We will also invest in innovative projects to promote the development of voluntary emissions trading. On our website, we report on our strategy and the projects we support.
// We offset more than 450,000 metric tons of our greenhouse gas emissions in 2022 by financing reforestation and forest conservation projects, for example in Brazil, Guatemala, Indonesia, Nicaragua, Peru, Zambia and Zimbabwe.
// In 2022, we joined the Brazilian Initiative for the Voluntary Carbon Market. This initiative brings together companies and institutions from several industries in Brazil with the goal of structuring key measures to develop voluntary CO_2 emissions trading in that country and to contribute to global CO_2 emissions trading with accredited certificates.

LEAF Coalition

The destruction of forests is a pressing global challenge, especially considering that forest conservation is one of the most important measures for protecting biodiversity and the climate.

Within the framework of its activities to protect forests, Bayer is a participant in the LEAF (Lowering Emissions by Accelerating Forest finance) Coalition. LEAF has mobilized more than US$1.5 billion since 2021 to initiate the biggest public-private effort to protect the rainforests.

We clearly advocate enforcement of the corresponding laws to protect the Amazon rainforest, which also involves driving forward the sustainable intensification of agriculture in Brazil to prevent further deforestation.

Certificates from activities undertaken in connection with LEAF are expected to be part of our offsetting portfolio beginning in 2023.

Value chain (Scope 3)

By 2029, we aim to reduce greenhouse gas emissions along the upstream and downstream value chain (Scope 3) by at least 12.3% (reference year 2019) through cooperation with suppliers and customers. This target was validated and acknowledged by the Science Based Targets initiative (SBTi). As the ability of one company on its own to reduce greenhouse gas emissions along the value chain is only limited, Bayer has joined together with other companies within various initiatives. Together, we aim to ascertain the level of greenhouse gas emissions and climate risks and develop reduction targets and strategies within the scope of programs such as the Together for Sustainability (TfS) initiative of the chemical industry.

Bayer heads up the working group on reducing greenhouse gas emissions in the supply chain. The goal is to standardize the calculation of a product-related carbon footprint (PCF) for the chemical industry. At the same time, an approach is being developed to pass on the PCF within the value chain. The plan is to share results from the TfS working group with the Partnership for Carbon Transparency (PACT) of the World Business Council for Sustainable Development (WBCSD). PACT develops climate approaches across industries. As a member of the WBCSD, we are working on suitable measures there as well.

Through the Supply Chain Initiative of CDP (formerly the Carbon Disclosure Project), we ask our strategically important suppliers and those who account for a significantly high proportion of our emissions in the value chain to provide us with more exact greenhouse gas emissions data. Using the methods of the Supply Chain Initiative, we aim to learn more about the greenhouse gas emissions of our suppliers and the share of these emissions attributable to products and services sourced by us. We also ascertain reduction targets and the use of renewable energies. The goal is to better integrate data collected by our suppliers into the calculation of our emissions for the value chain. By applying the Supply Chain Initiative methods, furthermore, we aim to identify potential for reducing greenhouse gas emissions among our suppliers and incorporate this potential into our supplier development efforts (please see also Chapter 4.2 Sustainability in the Supply Chain).

In 2021, we – like our biggest transport and logistics partners and various industrial companies – began to implement the IT solution EcoTransIT World for automatic calculation of transport-related greenhouse gas emissions. EcoTransIT World is geared toward continuously evolving and harmonizing the methods for determining emissions in the transport sector worldwide and thus creating a globally recognized methodology. Bayer is also a member of the EcoTransIT World Initiative.

Furthermore, we take advantage of the Pharmaceutical Supply Chain Initiative (PSCI) working group to engage in dialogue within the pharmaceutical industry about measures to reduce Scope 3 emissions.

For more information on our target of reducing greenhouse gas emissions in agriculture by 30%, please see also the Focus on: Agriculture chapter.

Climate policy engagement

Externally, we advocate for a climate position in line with our ambitious targets and demand that our partners also undertake decarbonization measures in accordance with the Paris Agreement. We have therefore published a detailed list of our climate policy lobbying activities.

In line with our goals, we critically scrutinize our memberships in relevant industry associations and their positions as regards climate policy measures. The analysis forms the basis for Bayer's further efforts to advocate for scientifically founded policies to combat climate change through its member associations. In developing this approach, we have worked together with Climate Action 100+, an investor initiative that cooperates with the world's biggest industrial companies on the issue of climate change.

To ensure maximum transparency in this process, Bayer has published the results in the Industry Association Climate Review since 2021. This report compares the climate policy positions of our industry associations with our own climate goals. As our industry associations represent us in the public debate, we disclose where we agree with these positions and where they diverge from ours. It is of paramount importance to us that we maintain a dialogue with our associations to achieve an amicable solution. Where differences exist, dialogue enables us to take measures to close these gaps. We disclose both our achievements and the challenges that still lie ahead of us in our current Industry Association Climate Review – Engagement Update 2022.

Climate reporting

We have committed to transparently communicating our climate targets and progress, as well as the impact that climate change has on Bayer.

Through our longstanding and continuous participation in CDP, we disclose our climate-related activities and progress with a high degree of detail.

Bayer supports the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) with respect to reporting on this topic. In our report, we implement the 11 recommendations of the TCFD in the four categories of Governance, Strategy, Risk Management and Metrics & Targets. For more information, please see our separate TCFD report.

On our website, we report on our strategy to offset greenhouse gas emissions and the projects we support.

7.3 Risk and Opportunity Analysis

In 2022, we looked at the risks and opportunities stemming from the effects of climate change from various perspectives to better evaluate them in relation to our company and integrate them into our strategy and measures. Climate-related risks are already accounted for in our Group-wide Enterprise Risk Management (ERM) system.

Climate scenarios

We analyze the possible effects of climate change across two different scenarios. We use these scenarios to understand the impact of this factor on our business and to identify measures for mitigating risks and leveraging opportunities. With a cross-functional, cross-divisional team, we have identified relevant opportunities and risks for our business in both scenarios.

Building on Assessment Report 6 of the Intergovernmental Panel on Climate Change (IPCC) and supplemented with further sources relevant to our business areas, we have drafted our scenario description. The basis comprises an optimistic scenario concerning climate change with warming of below 2 °C – the "Green Road" SSP1-2.6 (temperature increase of 1.8 °C by 2100 compared with the preindustrial age) – and one that is aligned to current global behavior – the "Rocky Road" SSP3-7.0 (temperature increase of 3.6 °C).

The Emissions Gap Report 2022 of the UN Environment Programme (UNEP) presumes that the current political reduction targets are far too low to reach the goal of the Paris Agreement. UNEP assumes that the current national reduction targets will result in an average global warming of 2.8 °C in 2100. At the same time, our optimistic scenario (Green Road) seems unrealistic in view of the current global developments and crises. Both scenarios (Green Road and Rocky Road) are important for assessing Bayer's climate-related risks, and we will therefore continue to analyze both scenarios in detail.

Green Road (SSP1-2.6)

// The Green Road scenario assumes a rise in average global temperature compared with the preindustrial age of 1.7 °C by between 2041 and 2060. Between 2081 and 2100, the temperature is likely to have risen by 1.8 °C compared with the preindustrial age.
// This scenario is marked by the rapid implementation of ambitious and globally coordinated climate-related laws and rules that in the short term can also include transformational requirements and new regulations for companies. The rapid reduction in greenhouse gas emissions leads to less severe weather- and climate-related effects.

Rocky Road (SSP3-7.0)

// The Rocky Road scenario assumes the rise in average global temperature compared with the preindustrial age to be around 2.1 °C by between 2041 and 2060, and probably 3.6 °C by between 2081 and 2100.
// In this scenario, we expect less ambitious laws and provisions that will vary widely from one region to another, leading to a slower pace of emissions reduction and thus more intensive weather- and climate-related changes in all regions of the world. The varying levels of ambition also lead to additional trade barriers that can be manifested in measures such as a Carbon Border Adjustment Mechanism (CBAM).

In our analysis of the effects of climate change, we go beyond the customary Enterprise Risk Management time horizons and instead apply the following time horizons:

// Short-term (2021–2025)
// Medium-term (2026–2035)
// Long-term (2036–2050)

In 2022, we developed our own agricultural climate model for the first time to analyze the impacts on agricultural productivity depending on the various scenarios.

Climate impact drivers

Based on the overarching description, we have identified nine climate impact drivers of materiality for Bayer so as to analyze the effects regulatory and physical changes will have on our business in more detail. The goal of the analysis is to identify the relevance and change potential in relation to Bayer and our fields of business and to derive suitable measures.

Separately, we assess the opportunities and risks associated with the nine climate impact drivers shown in the graphic – in each case based on the various time horizons and on the Green Road and Rocky Road scenarios.

Climate Impact Drivers		Short term (2021–2025)		Medium term (2026–2035)		Long term (2036–2050)	
		Risk	Opportunity	Risk	Opportunity	Risk	Opportunity
Transitional impact drivers							
Laws, regulations, policies							
Carbon taxation/pricing, carbon border adjustment & offsetting							
Commodity prices							
End customer/customer/market							
Food security							
Acute physical impact drivers							
Extreme weather events							
Chronic physical impact drivers							
Permanent water cycle							
Diseases							
Temperature							

The Green Road (SSP1-2.6) = The Rocky Road (SSP3-7.0) = Relevance = low high

Below we provide insight into the assessments of the individual climate impact drivers.

Transitional impact drivers

Based on the Paris Agreement, the most important countries and regions in which Bayer operates have committed to limiting global warming by reducing their greenhouse gas emissions.

// One example is the European Union's Green Deal, the goal of which is to accelerate the transition to an emissions-free future and achieve climate neutrality by 2050. Consequently, the EU is expected to further increase costs for the emission of greenhouse gases (e.g. through CO_2 regulations such as the EU emissions trading system (EU-ETS) or a carbon tax), adjust financing incentives (e.g. through the EU taxonomy) and drive forward technological changes (e.g. through the promotion of renewable energies and hydrogen technologies).
// China has committed to attaining net zero emissions by 2060 and is therefore expected to introduce further regulations in this connection.

Through our strategy for achieving climate neutrality and reducing greenhouse gas emissions on the pathway to a 1.5 °C scenario, we are reducing the risk of additional costs caused by the expected regulations.

We continuously analyze the further effects of regulatory changes on our business. National and international CO_2 reduction targets could lead to the abandonment of fossil fuels and impact the demand for fuels from biomass (biofuels), for example. Depending on the regulators' decision, this could lead to either increased or reduced demand for biofuels. This decision could impact our sales markets, as some of our customers grow corn for the production of biofuels.

As one of the world's biggest CO_2 emitters, the agriculture industry can also play a key part in protecting the climate and thus mitigating climate risks – for example through the capture of CO_2 in farmland. For more information on our target of reducing greenhouse gas emissions in agriculture by 30%, please see the Focus on: Agriculture chapter.

Physical impact drivers

Weather and climate effects are of particular significance for the Crop Science Division and are accounted for in both strategic planning and the seasonal business risk. These effects are intensifying as a result of climate change, and both short-term (extreme) weather events and long-term climate changes will increase further.

Acute physical impact drivers

All climate models anticipate an increase in extreme weather conditions (such as drought, heavy rains and storms) that present an elevated risk of crop losses and therefore also pose risks for the agricultural value chain as a whole. Despite all precautions, operations at our sites or those of our customers may be disrupted and crop failures may occur as a result of extreme weather events and natural disasters. In the IPCC forecasts, the intensity of such events varies widely from one region to the next. In the IPCC's regional fact sheets for the Central North America (CNA) region, for example, extreme precipitation is predicted to increase; the South American Monsoon (SAM) region is expected to experience both a delay in the monsoon season and intensified droughts.

In addition to risks, however, climate change can also create opportunities for our business. Bayer's product range and innovative capability – particularly in the agricultural value chain – will create a foundation for leveraging new options and sales opportunities in the future against the background of climate change. As a seed producer, we already offer plants with increased resistance to extreme weather conditions, including short-stature corn that is less susceptible to storms (for more information, please see the Focus on: Agriculture chapter).

We also enable farmers to react better and more quickly to extreme weather conditions with our FieldView™ digital farming platform. For more information, please see Chapter 3.6 Crop Science.

Chronic physical impact drivers

The long-term natural and physical effects of climate change will have a particular impact on the permanent water cycle (for example through a transition to a wetter or drier climate or a delay in the monsoon season), the spread of diseases and insect pests, and further coupling effects of temperature changes. These effects will be particularly relevant for our agricultural business.

We develop strategies to help farmers increase their resilience against the effects of climate change. At the same time, we want to help farmers reduce their own greenhouse gas emissions and cultivate healthy crops. As there are no uniform solutions in agriculture, farmers need numerous options from which they can select the most suitable for their fields and the prevailing local conditions.

In addition, health risks such as cardiovascular disease can also intensify due to hotter summer months or more frequent heatwaves. This could create increased demand for products for cardiovascular disease or nutritional supplements.

Next steps

As data models and insights into climate change are constantly evolving, we will continue to expand and refine our scenario description and analysis in 2023 and beyond. At the same time, we are enhancing our analytical capabilities and expanding our climate models e.g. in order to better understand how various climate zones are changing. By doing this, we want to be in a position to describe future challenges and opportunities as accurately as possible to derive short-, medium- and long-term mitigation measures. Findings from these analyses will play a bigger role in our strategic, portfolio and operational processes.

We also participate in the Value Chain Risk to Resilience working group of the international Business for Social Responsibility network. In addition, we have developed agriculture- and forestry-specific scenario descriptions together with a working group of the WBCSD. Through dialogue in various forums and with different stakeholders, we improve our own analyses and aim to help improve the identification of regulatory and physical climate risks and climate resilience measures throughout the entire supply chain.

7.4 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 manufacture of our products. Further emissions derive from chemical processes in which coal and other energy sources are required to produce chemical reactions. Emissions are also generated by our vehicle fleet and in the extraction and processing of raw materials.

In reporting greenhouse gas emissions, we take account of the recommendations of the Greenhouse Gas Protocol (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 whose annual energy consumption exceeds 1.5 terajoules. In this connection, we have drafted Group regulations for the Group-wide recording of greenhouse gas emissions. In line with the GHG Protocol, we report indirect emissions (Scope 2) according to both the location-based and the market-based method.

Bayer's greenhouse gas emissions fell further in 2022 compared to 2021. We succeeded in reducing our own Scope 1 and Scope 2 emissions by 4.5%, or around 142,000 metric tons, particularly by increasing the share of our electricity derived from renewable energies. Overall, we have already reduced our own emissions (Scope 1 and Scope 2) by 19.5% compared with the reference year 2019.

We address our climate protection activities in detail in our latest Report to CDP (formerly the Carbon Disclosure Project).

Greenhouse Gas Emissions (Scope 1 and 2)

Million metric tons of CO_2 equivalents	2020	2021	2022
Scope 1: Direct emissions[1]	2.01	1.93	**1.91**
of which carbon dioxide (CO_2)	1.96	1.90	**1.85**
of which ozone-depleting substances	0.011	0.011	**0.011**
of which partially fluorinated hydrocarbons (HFCs)	0.022	0.014	**0.039**
of which nitrous oxide (N_2O)	0.008	0.007	**0.007**
of which methane (CH_4)	0.003	0.003	**0.003**
Scope 2: Indirect emissions[2] according to the location-based method	1.75	1.56	**1.56**
Scope 2: Indirect emissions[2] according to the market-based method[3]	1.57	1.24	**1.12**
Total greenhouse gas emissions (Scope 1 and 2) according to the market-based method[3]	**3.58**	**3.17**	**3.03**
of which offset greenhouse gas emissions[4]		0.3	**0.45**
Specific greenhouse gas emissions (kg CO_2e/€ thousand external sales) according to the market-based method[3, 5]	86.55	71.95	**59.72**

[1] In line with the GHG Protocol, we also report the direct emissions resulting from the generation of energy for other companies that is sold as a site service. In 2022, these emissions corresponded to 0.13 million metric tons of CO_2 equivalents.
[2] Typically, CO_2 accounts for 97% 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_2 equivalents.
[3] 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.
[4] Corresponds to a share of 14.9% of Scope 1 and 2 emissions in 2022
[5] Specific Bayer Group emissions are calculated by adding together direct emissions and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2), then dividing the total volume by the external sales volume.

In 2022, Bayer participated in European emissions trading with a total of five plants. The CO_2 emissions of these plants amounted to more than 290,000 metric tons. Due to the varying depth of value creation, direct and indirect greenhouse gas emissions (Scope 1 and Scope 2) are unequally distributed among our divisions. Our raw material extraction activities, including treatment and downstream processing, for the manufacture of the crop protection intermediates of Crop Science are especially energy-intensive – this division therefore accounts for the greatest share of our greenhouse gas emissions.

Greenhouse Gas Emissions by Division (Scope 1 and 2)

Million metric tons of CO_2 equivalents	2020	2021	2022
Scope 1: Direct emissions[1]	2.01	1.93	**1.91**
of which Crop Science	1.65	1.61	**1.58**
of which Pharmaceuticals	0.19	0.18	**0.18**
of which Consumer Health	0.02	0.02	**0.02**
of which other[2]	0.16	0.13	**0.14**
Scope 2: Indirect emissions[3] according to the market-based method[4]	1.57	1.24	**1.12**
of which Crop Science	1.38	1.06	**0.93**
of which Pharmaceuticals	0.13	0.12	**0.11**
of which Consumer Health	0.06	0.05	**0.05**
of which other[2]	0.004	0.003	**0.03**

[1] In line with the GHG Protocol, we also report the direct emissions resulting from the generation of energy for other companies that is sold as a site service.
[2] These include greenhouse gas emissions from the vehicle fleet and emissions caused by the enabling functions.
[3] Typically, CO_2 accounts for 97% 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_2 equivalents.
[4] 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.

Value chain (Scope 3)

The GHG Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard bindingly regulates the reporting of all indirect greenhouse gas emissions from the value chain and separates these emissions into 15 categories. Emissions from eight Scope 3 categories are of material importance to Bayer and together account for our total Scope 3 emissions. We describe the procedures applied by Bayer in the individual categories in detail in the Report to CDP.

Greenhouse Gas Emissions in the Value Chain (Scope 3)

Million metric tons of CO_2 equivalents	2020	2021	2022
Scope 3: Indirect emissions from our upstream and downstream value chain (by materiality)[1]	8.91	8.69	9.64
of which indirect emissions from our upstream and downstream value chain to attain the SBT[2, 3]	7.93	7.91	8.90
of which (3.1) purchased goods and services	6.15	6.08	6.87
of which (3.2) capital goods	0.40	0.46	0.51
of which (3.3) fuel- and energy-related activities	0.63	0.63	0.55
of which (3.4) (upstream) transportation and distribution	0.70	0.71	0.82
of which (3.6) business travel	0.06	0.03	0.15
Progress in the reduction of Scope 3 emissions compared to the reference year 2019[4, 5]	–10%	–10%	+1%

2021 figures restated

[1] Emissions from eight Scope 3 categories are of material importance to Bayer and together represent our total inventory of Scope 3 emissions: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution, (3.5) waste generated in operations, (3.6) business travel, (3.7) employee commuting and (3.12) end-of-life treatment of sold products.

[2] Science Based Target

[3] For the calculation of our reduction target for Scope 3 emissions in line with SBTi, 88% of total materially important Scope 3 emissions in the reference year 2019 are considered (target inventory). The following Scope 3 categories are covered: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution and (3.6) business travel.

[4] 2029 target: 12.3% reduction

[5] All greenhouse gas emissions from air travel in 2020, 2021 and 2022 were offset.

In accordance with the guidelines of the Science Based Targets initiative (SBTi), the calculation of our reduction target for Scope 3 emissions utilizes only the five major categories that made up the biggest portion of our Scope 3 emissions (88%) in the reference year 2019. These are shown in the table on the left. For more information on initiatives to reduce Scope 3 emissions, please see Chapter 7.2 Climate Strategy.

Compared to 2021, the Scope 3 emissions relevant to our reduction target rose by around 0.99 million metric tons, corresponding to an increase of 12.5%. The rise in Scope 3 emissions is primarily due to business growth, the replenishment of inventories and an increase in air freight and business travel. The category 3.1 (purchased goods and services) accounts for the most significant share of our Scope 3 emissions, at 77%.

Total greenhouse gas emissions

In 2022, we reduced our total greenhouse gas emissions (Scope 1, 2 and 3) compared to the reference year 2019 by around 1.1 million tons, while our business has grown significantly over the same period. Regarding the reduction in our own emissions (Scope 1 and 2) we have already exceeded our targets, achieving a decline of 19.5% since 2019.

Reducing emissions in our value chain (Scope 3) is an increasing challenge in the face of a growing business. To achieve significant reductions in the supply chain in the coming years, we are intensifying our collaboration with suppliers, in particular in terms of a shift to renewable energies. We have also specified this in our updated Supplier Code of Conduct. Beginning in 2023, we also aim to develop an internal CO_2 price to manage our Scope 3 emissions. This should create an incentive internally to purchase products with a lower carbon footprint.

Total Greenhouse Gas Emissions (Scope 1, 2 and 3)

Million metric tons of CO_2 equivalents	2019	2022
Total emissions according to the location-based method[1]	12.67	12.38
Total emissions according to the market-based method[2]	12.58	11.93
Specific total emissions (kg CO_2e/€ thousand external sales) according to the location-based method[3]	290.93	243.97
Specific total emissions (kg CO_2e/€ thousand external sales) according to the market-based method[4]	288.87	235.13

[1] Total emissions according to the location-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the location-based method of the GHG Protocol (Scope 2), plus indirect emissions from our value chain. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for total Scope 3 emissions: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution and (3.6) business travel.

[2] Total emissions according to the market-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2), plus indirect emissions from our value chain. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions (see above).

[3] Specific total emissions according to the location-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the location-based method of the GHG Protocol (Scope 2), plus indirect emissions from our value chain, then dividing this total by the external sales volume. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent the target inventory for our Scope 3 emissions (see above).

[4] Specific total emissions according to the market-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2), plus indirect emissions from our value chain, then dividing this total by the external sales volume. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions (see above).

7.5 Energy

Our energy needs have the greatest direct impact on our greenhouse gas emissions. Production accounts for the most significant share of our energy requirement, which depends on the production operations at the sites and the depth of our value chain (please see also Chapter 7.4 Greenhouse Gas Emissions).

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 that we use to generate 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.

One of the targets we have set within the context of our climate strategy is to cover 100% of purchased electricity needs with renewable energies by 2030. To achieve this objective, we have produced a catalogue of criteria such as physical proximity to the production plant and additionality. For more information, please see Chapter 7.2 Climate Strategy.

In 2022, around 32.6% of our purchased electricity was sourced from renewable energies. We concluded additional supply agreements for electricity generated from renewable energies in the United States, Brazil and Germany in 2022. We are thus on track to achieve our target of 100% in 2029.

Compared with 2021 (34.8 petajoules), Bayer's total energy consumption rose by around 1.8% to 35.5 petajoules in 2022. This includes both primary energy consumption, mainly of fossil fuels, and secondary energy consumption. This rise compared to 2021 is primarily due to an increase in production at the sites in Soda Springs, Idaho, and Luling, Louisiana, in the United States.

Energy Consumption

TJ	2020	2021	2022
Primary energy consumption	17,836	18,071	17,525
Natural gas	10,911	10,682	10,287
Coal	566	608	571
Liquid fuels	2,901	2,653	2,688
of which for vehicle fleet/transport	2,480	2,194	2,121
Waste	416	499	481
Other[1]	932	1,068	1,162
Primary energy consumption for third-party companies	2,111	2,561	2,335
Secondary energy consumption	18,022	16,764	17,947
Electricity[2]	12,166	11,059	12,359
of which electricity from power grid	11,451	8,325	8,335
of which electricity from renewable energies	715	2,734	4,024
Steam	4,485	4,381	4,259
of which steam from renewable energies	25	82	92
Steam from waste heat (process heat)	550	574	558
Cooling energy	691	632	631
Secondary energy consumption for third-party companies	131	118	140
Total energy consumption	**35,858**	**34,835**	**35,472**

[1] For example biomass

[2] The proportion of primary energy sources used in generating the electricity consumed depends on the respective electricity mix of our energy suppliers.

Primary and secondary energy consumption is usually dependent on the production volume: the more that is produced, the greater the energy consumption and also the associated greenhouse gas emissions. Energy management systems (such as in line with ISO 50001) help to identify potential energy savings both in production processes and when developing new production processes or converting existing ones. This not only conserves valuable energy resources but is also an economic factor because it enables long-term savings.

At various sites, we have implemented projects designed to produce electricity from renewable energies. For example, additional photovoltaic facilities are currently being installed at locations in Indonesia and the United States with a view to meeting part of the electricity requirement at those sites. Together with our energy provider, we have developed a concept at our Leverkusen site for generating both thermal and cooling energy by geothermal means. This facility is scheduled to come on stream in 2023.

In our Report to CDP, we also describe the projects to save energy that have been implemented at various sites.

Energy efficiency

Bayer reports energy efficiency as the ratio of energy used to external sales. Energy efficiency improved compared with 2021.

Energy Efficiency

kWh/€ thousand external sales	2020	2021	2022
Energy efficiency	241	220	194

For more information on our energy efficiency measures, please see Chapter 7.2 Climate Strategy.

8. Environmental Protection and Safety

Protecting the environment and ensuring the safety of our employees and the people who live near our sites are among our highest priorities. We work continuously to reduce the environmental impact of our business activities and develop product solutions that benefit the environment. Bayer focuses 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.

8.1 Management Approach

Responsibility for steering and monitoring health, safety and environmental protection (HSE) aspects across the Group lies with the Public Affairs, Science, Sustainability & HSE Enabling Function (PASS&HSE), which is assigned to the Chairman of the Board of Management, who also serves as Bayer's Chief Sustainability Officer. The Public Affairs, Science, Sustainability & HSE Enabling Function establishes responsibilities, targets, key performance indicators and framework conditions for the entire Group. These conditions include the provisions of the Group Regulation on HSE Management and HSE Key Requirements, which forms an integral part of the global HSE management system and was approved at the Board of Management level in 2018. This Group regulation describes the basic approach for monitoring HSE processes at Bayer and defines core HSE requirements that need to be implemented worldwide. Detailed requirements for individual health, safety and environmental protection aspects are established in farther-reaching Group regulations that are also binding (see graphic on the next page).

The continuous review and revision of Group regulations by the Public Affairs, Science, Sustainability & HSE Enabling Function, regular mandatory internal audits and external certification processes ensure that the systems at all sites meet the relevant requirements.

Management systems for health, safety and environmental protection issues are in place, and these are integrated into the business processes throughout the Group. Operational responsibility for health, safety and environmental protection lies with the individual divisions, which steer HSE via management systems, committees and working groups at our sites.

Environmental management at the sites also involves the development and implementation of site-specific environmental protection targets and programs to reduce our environmental impact. Environmental protection measures are identified, planned and implemented through cross-functional cooperation between the divisions and enabling functions. The following priorities apply:

// Avoiding waste/emissions
// Recycling in all cases where it is practicable to do so by reasonable means
// Minimizing waste/emissions that cannot be avoided or recycled

We report all relevant HSE data of the Group, including of all fully consolidated companies in which we have a share of more than 50%, collect data on occupational injuries and environmental incidents at all sites worldwide, and record environmental indicators at 216 environmentally relevant production, research and administration sites, compiling this in the Group-wide system. We consider all sites to be environmentally relevant whose annual energy consumption is greater than 1.5 terajoules.

Ecological assessment for capital expenditures

Our HSE commitment extends beyond the scope of legal requirements. We perform a voluntary ecological assessment for capital expenditure projects exceeding €10 million. This includes an evaluation of direct and indirect greenhouse gas emissions. The goal is to adequately assess environmental impact and other sustainability dimensions and involve stakeholders at an early stage.

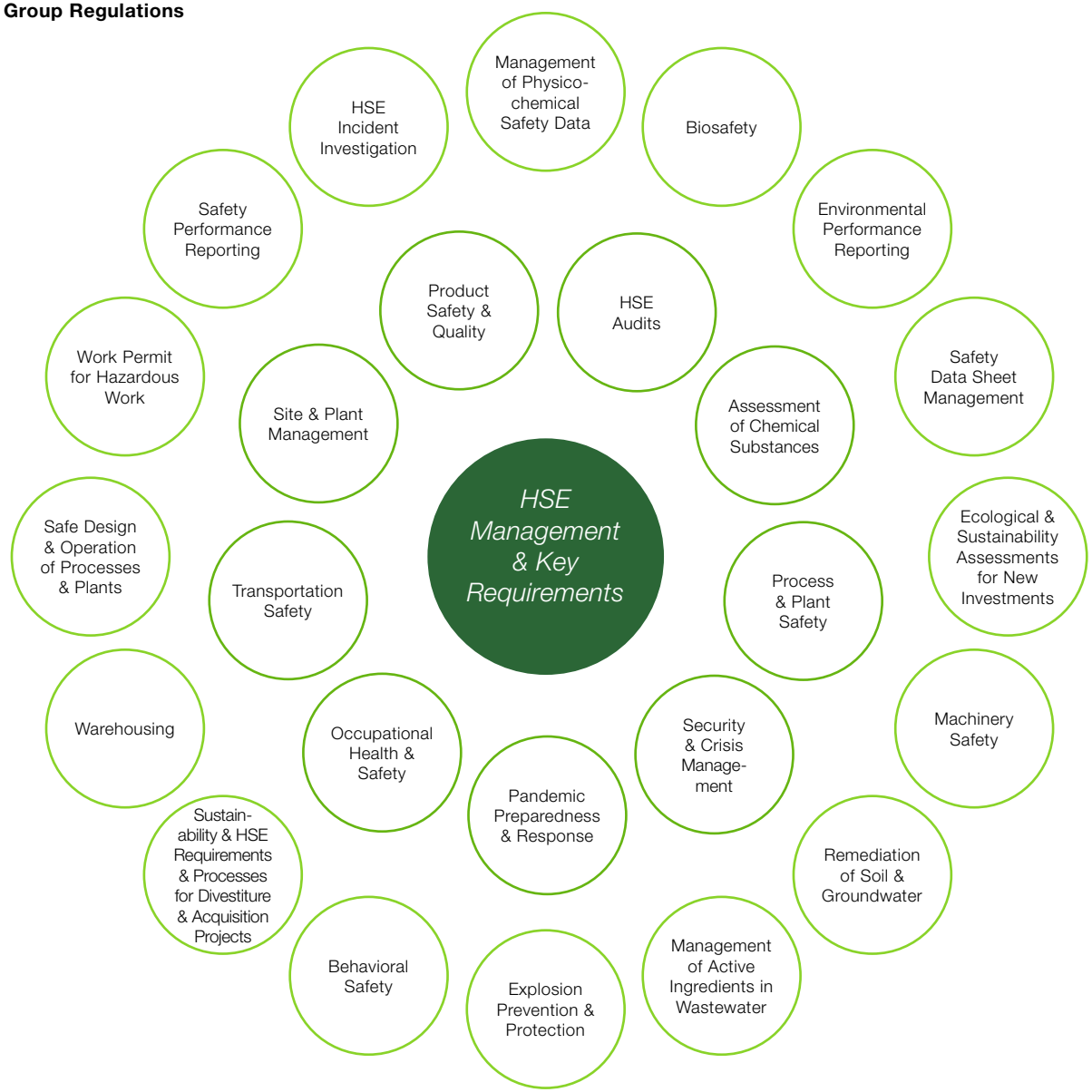
This ecological assessment ensures uniform environmental and sustainability standards worldwide, taking account of Bayer's internal standards and the best available technologies. We safeguard our capital expenditures over the long term by anticipating and addressing future legislative changes at an early stage. Examples of the implementation of capital expenditure projects can be found in the next chapters and in Chapter 7. Climate Protection.

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

In accordance with the Group Regulation on HSE Management and HSE Key Requirements, our sites must have in place an HSE management system that complies with recognized international standards (e.g. ISO 14001 and ISO 45001). Furthermore, 80% of our business activity is to be covered by external certification to the above standards by the end of 2025.

Binding Group Regulations



Standards and Certifications

% of business activities based on energy consumption of environmentally relevant sites	2020	2021	2022
Certification to external standards			
ISO 14001 certification/EMAS validation	56	61	81
ISO 45001 certification/OHSAS 18001[1]	45	50	48
ISO 50001 certification	22	31	29
Degree of coverage with certification to at least one of the above standards	60	65	86

[1] Around 53% of our employees at environmentally friendly sites are covered by the certifications according to ISO 45001/OHSAS 18001.

HSE audits

Audits are an integral component of our global HSE management system. They help to ensure compliance with applicable regulations and 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. The Group Regulation on Health, Safety and Environmental (HSE) Audits defines the basic principles and methodology for selecting, planning, implementing and post-processing using a risk-based decision-making process. Bayer's audit approach is based on 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 uniform standards worldwide. When selecting sites for audit, the focus is particularly on production sites, relevant Bayer warehouses, sites with research and development units, and relevant seed treatment and processing units.

The frequency of audits is determined by considering 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 every two to every five years. Incident-based audits can be carried out in addition to this. The audit criteria comprise all applicable health, environmental protection and safety regulations and standards for the area being audited, including Bayer regulations, local HSE management system regulations, locally applicable legal requirements, 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. Within the scope of these audits, action plans and responsibilities are established to fix the issues identified.

The respective site management, the division and the head of the Public Affairs, Science, Sustainability & HSE Enabling Function are notified of the audit findings. Supplementary to the global HSE audits, sites and country organizations carry out their own internal HSE audits or self-inspections according to a specific risk-based approach.

8.2 Air Emissions

Environmental management at our sites includes the monitoring and reduction of air emissions. Our approach to the issue of air emissions is described in the Group Regulation on HSE Management and HSE Key Requirements.

We use specialized flue gas treatment equipment at our sites to reduce or eliminate pollutants in flue gases. Such equipment is generally tailored to the specific use and specific flue gas. This usually includes:

// Thermal flue gas treatment systems to eliminate volatile organic compounds (VOCs)
// Flue gas scrubbers to reduce VOCs and acid gases
// Particulate collectors such as cyclones to reduce particulate emissions
// Redundant flue gas treatment facilities are available at sites with critical flue gas components. One example is an activated carbon facility at a site in the EMEA region that serves as a redundancy measure for thermal flue gas treatment.

The facilities are equipped with sensors for continuous monitoring and process control of the functions. In accordance with regulatory requirements, flue gas samples are also analyzed by certified laboratories to verify compliance with legal thresholds.

Emissions of ozone-depleting substances (ODS) in 2022 rose by 7.8%. An increase in production at the Vapi site in India led to enhanced use of ODS as raw materials for production.

Further production increases at various US sites and in Vapi, India, led to an overall rise in volatile organic compounds (VOCs). Particulate emissions from seed processes at several sites in Brazil also rose slightly.

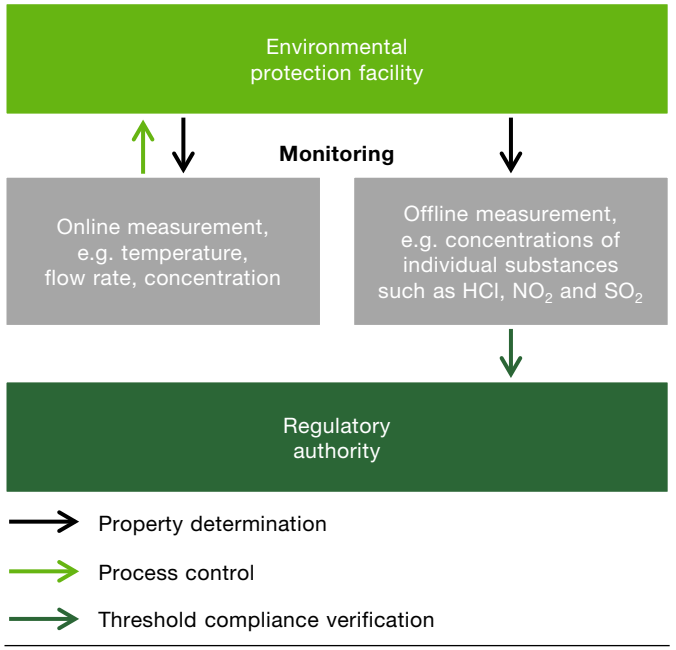
Climate-impacting emissions such as of ozone-depleting substances or volatile organic compounds (VOCs) are also included in the calculation of greenhouse gas emissions; please see Chapter 7. Climate Protection.

Other Direct Air Emissions

1,000 metric tons	2020	2021	2022
ODS[1]	0.0043	0.0039	0.0042
VOCs[2]	0.69	0.43	0.46
CO (carbon monoxide)	1.16	2.66	2.62
NO_x (nitrogen oxides)	4.16	3.57	3.52
SO_x (sulfur oxides)	1.32	1.28	1.29
Particulates	2.29	2.05	2.26

[1] Ozone-depleting substances (ODS) according to the Montreal Protocol, in CFC-11 equivalents
[2] Volatile organic compounds (VOCs) excluding methane

Typical Monitoring Concept for Air Emissions



8.3 Water and Wastewater

Responsible water usage is a cornerstone of our commitment to sustainable development and is described in the Group Regulation on HSE Management and HSE Key Requirements. 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 water shortages for the people living in the catchment areas of our production sites.

In our Water Position, we undertake to comply with international, national and local legislation, and thus to protect water resources, to use them as sparingly as possible and to further reduce emissions into water. In addition, we support local projects that enable access to clean water and sanitary facilities for our employees and the communities in which we are active.

In our water stewardship strategy, we address a variety of factors connected with water, from operational water use and innovative products, such as drought-resistant crops with a reduced water requirement, to our involvement in the value chain and cooperation with partners. For example, we support the CEO Water Mandate of the UN Global Compact with the goal of working with key stakeholders to develop sustainable strategies for water usage. Since 2021, we have also been a member of the Water Resilience Coalition (WRC), the goals of which substantiate and supplement the ambitions of the CEO Water Mandate at the private-sector level. We also participate in the Water and Climate Leaders group of the World Meteorological Organization (WMO) to improve the global political framework and enhance awareness about this issue among the public. We are currently further developing our water strategy to better address the opportunities and risks associated with water stewardship in the future, especially in view of changing climatic conditions. We plan to include the criteria of water quality and quantity in our business and capital expenditure decision-making beginning in 2024, and will develop a suitable method for assessing water for this purpose.

In our annual response to the CDP Water Disclosure, we report in detail on our handling of water and the company-specific water footprint. This equates to a progress report for the CEO Water Mandate. We received an A- rating from CDP in 2022.

RUN BLUE

To induce the crucial parties to undertake more resolute action at the UN 2023 Water Conference in the coming year, Bayer has initiated the RUN BLUE campaign together with the WWF and the water activist Mina Guli to raise awareness about global water problems caused by climate change.

Water use

Most water used at Bayer is either extracted from ground- and surface water, purchased as drinking water and/or is rainwater that has been collected.

Water Use by Source

Million m³	2020	2021	2022
Total water use	57	55	53
of which from groundwater	21.1	20.6	21.3
of which from surface water	15.3	10.1	8.5
of which rainwater	4.0	6.0	2.8
of which drinking water	13.2	15.2	16.7
of which recycled wastewater from third parties	0.8	0.7	0.6
of which other[1]	2.1	1.6	2.2
of which water content of raw materials[2]	0.7	0.7	0.7

[1] Ultrapure water, mineral water
[2] Partly released by chemical reaction

Sites in water-scarce regions

We aim to identify potential for improvement particularly in water-scarce areas or in areas threatened by water scarcity, and to use as little water there as possible. These regions in which water consumption exceeds the available renewable surface and groundwater resources were identified using the Aqueduct Water Risk Atlas of the World Resources Institute (WRI). We used three million cubic meters of water overall in these regions in 2022 (2021: three million cubic meters), accounting for about 5.5% of our total water use.

We had already established water management systems at all relevant sites in water-scarce areas or in areas identified as being threatened by water scarcity by the end of 2020. The relevant Bayer sites here are all locations with annual energy consumption of at least 1.5 terajoules that at the same time account for at least 0.1% our global water consumption.

We are aware that climate change will further exacerbate the problem of water scarcity in the future. To avert future risks for our sites and the local communities, we plan to establish suitable water management systems by the end of 2023 at all relevant sites that will be threatened by water scarcity by 2030. We identify such sites using the base scenario of the World Resources Institute (WRI).

The key characteristics of a sustainable water management policy are a balance between water consumption and availability, and the optimal conservation of water resources. Due to widely varying local situations, each water management system is designed individually on the basis of a detailed risk analysis that takes into account local circumstances and the main parameters of our water supply and disposal. We address the identified risks with locally adapted countermeasures such as the establishment of alternative supply sources, the improvement of wastewater quality or wastewater recirculation. These activities are accompanied by management measures that include regular employee training in water management and participation in roundtables with regulatory authorities and residents.

For example, we have continuously reduced water consumption at our seed site in Ica, Peru, over the past years – from 70 cubic meters per kilogram seed in 2010 to 28 cubic meters in 2021. Key measures included:

// Managing irrigation through moisture sensors in the soil, adapted to weather forecasts and the type and age of the crops
// Increasing employee awareness, e.g. through the daily updated display of water consumption

Water Use in Water-Scarce Areas or Areas Threatened by Water Scarcity[1]

Million m³	2020	2021	2022
Total water use	57	55	53
of which in water-scarce areas or areas threatened by water scarcity[1]	3	3	3

[1] As defined by the World Resources Institute, Aqueduct Water Risk Atlas

Water requirement and use

As we recycle water several times at many of our sites, our total water requirement of 53 million cubic meters (2021: 55 million cubic meters) is much lower than the actual water use volume of 399 million cubic meters (2021: 376 million cubic meters). This yields a mathematical recycling rate of more than 750% (2021: more than 680%). Water is currently recycled by various means at 48 sites, these being responsible for 46% of the water used by Bayer. Recycling measures include reuse of treated wastewater, closure of cooling cycles and recirculation of steam condensates as process water or to irrigate fields.

Water Use by Division 2022

Million m³	Utilization			Recycling		
	2020	2021	2022	2020	2021	2022
Total	**57**	**55**	**53**	**380**	**376**	**399**
Crop Science	44	45	43	380	376	399
Pharmaceuticals	11	8	6	<1	<1	<1
Consumer Health	2	2	2	<1	<1	<1
Other[1]	<1	<1	2	<1	<1	<1

[1] Including water use that is assigned to the enabling functions

Our production sites for crop protection products (Crop Science Division) account for the greatest share of water recycling. Water recycling is almost impossible in seed production as nearly 90% of the water is used to irrigate farmland. In pharmaceutical production, the water recycling rate is low due to stringent legal requirements (Pharmaceuticals and Consumer Health divisions).

Around 33% of all water used by Bayer is cooling water that is only heated in the course of the cooling process and does not come into contact with products. It is returned to the water cycle without further treatment in line with the relevant official permits.

Wastewater

We aim to minimize emissions at our sites worldwide, including emissions into wastewater. Environmental management at our sites therefore includes the monitoring and reduction of wastewater. Our approach to this issue is described in the Group Regulation on HSE Management and HSE Key Requirements. Our Group Regulation on Management of Active Ingredients in Wastewater applies to production sites at which active ingredients are produced or processed. Based on risk assessments, we therefore specify internal thresholds for active ingredient traces that often go beyond legal requirements.

Wastewater at our sites is subject to strict monitoring before it is discharged into the various disposal channels. Compliance with internal and external thresholds is regularly monitored, is overseen by supervisory authorities and external assessors and is also reviewed at regular intervals during on-site audits by internal experts. For example, a number of sites in India have installed online analyzers to monitor critical parameters at the end outlets of their wastewater treatment plants. The analysis results are transmitted directly to the government's Central Pollution Control Board, and the outlet valve of the treatment plant closes automatically if the thresholds are exceeded.

Emissions into Water

1,000 metric tons	2020	2021	2022
Phosphorus	0.38	0.51	**0.61**
Nitrogen	0.48	0.36	**0.24**
TOC[1]	1.54	1.28	**1.11**
Heavy metals	0.0026	0.0032	**0.0035**
Inorganic salts	151	172	**176**
COD[2]	4.61	3.83	**3.33**

[1] Total organic carbon (TOC)
[2] Chemical oxygen demand; calculated value based on TOC figures (TOC x 3 = COD)

The total volume of industrial and mixed wastewater was 24 million cubic meters in 2022, which is comparable to the previous year. Following careful analysis according to official provisions, 4.5 million cubic meters (19%) were categorized as being not environmentally hazardous and returned to the natural water cycle. The remaining 19.5 million cubic meters of wastewater (81%) were purified in wastewater treatment plants (Bayer or third-party facilities), usually through biological wastewater treatment in combination with upstream and/or downstream treatment steps. Suitable treatment processes such as adsorption, precipitation or Fenton oxidation are used depending on the contents, required separation efficiency and flow rate.

Water Discharge by Destination

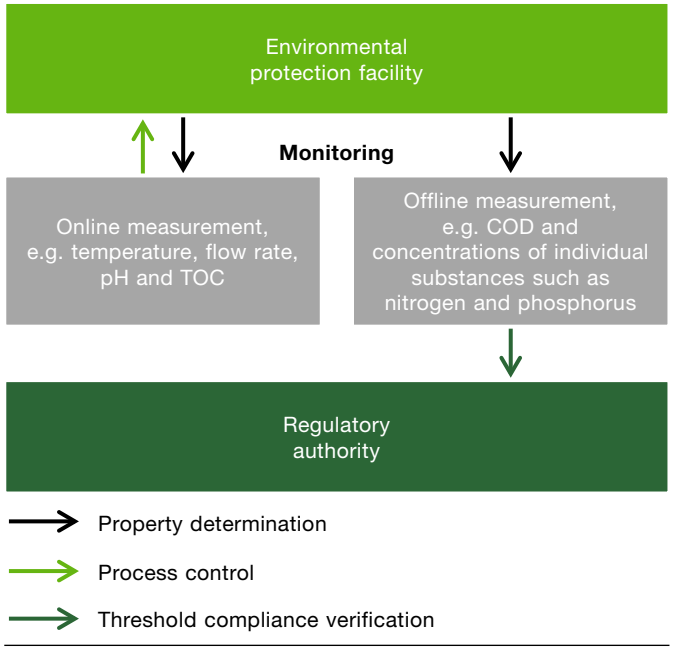
Million m³	2020	2021	2022
Total water discharge[1]	57	55	**53**
of which through evaporation losses	8	7.4	**8**
of which into surface water	16	16.5	**14.5**
of which clean cooling water[2]	14	12	**10**

Water Discharge by Destination

Million m³	2020	2021	2022
of which into seawater	0.1	0.3	**0.2**
of which into groundwater	0.004	0.01	**0.019**
of which into external wastewater treatment plants	5.8	5.5	**7.0**
of which other[3]	2.7	2.3	**2.4**
of which for irrigation[4]	10.9	11	**10**

[1] Of which in water-scarce areas or areas threatened by water scarcity (as defined by the World Resources Institute, Aqueduct Water Risk Atlas) 2022: 0.8; 2021: 0.8; 2020: 0.8
[2] Cooling water that was only heated but did not come into contact with products. It is returned to the water cycle without further treatment in line with the relevant official permits.
[3] Including evaporation, irrigation, seepage
[4] Particularly agricultural irrigation

Typical Monitoring Concept for Wastewater



The wastewater treatment facilities are equipped with sensors for continuous monitoring and process control of plant functionality. In accordance with regulatory requirements, samples are also analyzed by certified laboratories to verify compliance with legal thresholds; see the graphic on the left.

Bayer continued to implement or completed a number of capital expenditure projects in 2022 regarding the construction of wastewater treatment facilities for new production plants or the modernization of existing facilities. These included:

// The specialized thermal inactivation of wastewater from a new production plant in the United States
// The modernization of a wastewater treatment facility in Germany to increase its availability and efficiency
// The renovation of a wastewater filtration plant in Brazil. It is expected that less water will be required to clean the plant thanks to improved filtration technology. At the same time, application of the new technology significantly reduces the cleaning time of the water filtration plant and the risk of injury to cleaning staff.

Remediation and safeguarding of soil and groundwater contamination

In line with the Group Regulation on HSE Management and HSE Key Requirements, Bayer ensures the implementation of measures to prevent the contamination of soil and groundwater. These include inspecting facilities for leaks, implementing effective secondary retention measures for storage tanks, and maintenance and inspection programs. The measures also encompass applying suitable leak identification devices for tanks, containers and pipes containing hazardous materials as well as the installation of sealed surfaces with a

sufficient retention volume, for example in tank loading and unloading areas.

Bayer also actively performs remediation activities to mitigate environmental damage resulting from noncompliant waste management or environmental incidents in the past that was only determined at a later date. Dedicated processes have been established for this purpose that stipulate comprehensive investigation of sites and, where necessary, one or more of the following measures: remediation activities to clean up the impacted environment, safeguarding of contaminated sites so that they do not constitute a danger, and monitoring of the remediation and safeguarding activities conducted.

These are implemented based on statutory requirements and the latest technological standards. Such activities are also designed to avert possible financial damage or reputational risks to the company.

To manage contamination, we have established uniform standards in our Group regulation for the investigation and remediation of such sites. Our specialized teams work systematically with external experts to support all affected sites in the planning, implementation and monitoring of remediation processes and measures, assess their progress, and execute and conclude these cases with a positive effect for people and nature.

To enable the implementation of environmental protection measures and the mitigation of contamination, provisions are established for the expected costs of the remediation of contaminated sites, the recultivation of landfills, the clean-up of environmental pollution at existing production or storage sites and similar measures.

For more information on provisions, please see the 2022 Annual Report.

8.4 Waste and Recycling

We aim 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 our Group regulations, all production sites are obliged to prevent, recycle and reduce waste and to dispose of it safely and in line with good environmental practices. Each of our sites must have an up-to-date waste register that includes the following details for each waste stream: the name and description of the waste, its source and volume and sufficient information on its composition, hazard classification and final treatment and disposal. Bayer ensures that waste is properly disposed of at its sites. We also carry out audits of external disposal facilities for this purpose.

Waste volume generated

The total volume of waste generated rose by 3.7% in 2022 compared to 2021. This was mainly attributable to production being increased at several sites in North and Latin America and larger volumes therefore being disposed of. The volume of hazardous waste decreased by 40,000 metric tons to 276,000 metric tons (2021: 316,000 metric tons) owing to the completion of construction and remediation work at the sites in Dormagen and Berlin, Germany. Hazardous waste from production, including hazardous waste from wastewater treatment plants, decreased in comparison to 2021, at 273,000 metric tons.

Waste volumes and recycling paths are impacted not just by production fluctuations but also by building refurbishment and land remediation work.

Waste Generated

1,000 metric tons	2020	2021	2022
Total volume of waste generated	**935**	**1,001**	**1,038**
of which hazardous waste[1]	305	316	276
of which from production	301	303	273
of which from construction	4	13	3
of which nonhazardous waste	630	685	762
of which from production	565	604	709
of which from construction	64	81	53

[1] Definition of hazardous waste in accordance with the local laws in each instance

Waste disposal volume

Waste can 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. The volume of waste disposed of increased by 3.9% in 2022.

Some 54% (2021: 48%) of this waste was successfully reused or recycled. The proportion of hazardous waste that was recycled was around 15%.

Waste by Means of Disposal

1,000 metric tons	2020	2021	2022
Total volume of waste disposed of[1]	**940**	**998**	**1,037**
Nonhazardous waste disposed of	635	685	762
of which volume removed to landfill	123	78	79
of which volume incinerated	52	53	48
of which volume recycled[2]	365	434	515
of which other[3]	96	120	119
Hazardous waste disposed of	**305**	**313**	**275**
of which volume removed to landfill	16	12	14
of which volume incinerated	226	224	194
of which volume recycled[2]	38	49	42
of which other[3]	25	28	25

2021 figures restated

[1] 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.

[2] Recycling refers to processes through which waste is reused or treated for reutilization.

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

The volume of hazardous waste sent to landfill fell owing to the greater use of waste incineration at the Vapi site in India.

Due to the varying depth of value creation, waste volumes are unequally distributed among our divisions. Crop Science accounts for a greater proportion due in part to its more significant product volume.

Waste by Division

1,000 metric tons	2020	2021	2022
Total volume of waste disposed of[1]	**940**	**998**	**1,037**
of which Crop Science	771	811	895
of which Pharmaceuticals	145	170	126
of which Consumer Health	21	16	14
of which other[2]	3	1	1

[1] 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.

[2] This includes waste attributable to the enabling functions and administration sites of the regions.

Disposal, recycling and processing

Whenever possible and within the framework of legal regulations, we make use of the opportunities in our divisions to recycle solvents, catalysts and intermediates and return them to the production process following treatment. Recycling plays an especially important role at Crop Science and is therefore a key criterion at the process development stage of active ingredient production.

In all divisions, production- and material-based recycling is aligned to the individual requirements of the production processes at the sites. Here are some examples:

// Material-based recycling of solvents from production is implemented at various active ingredient production sites.
// In 2022, a new facility for recycling an inorganic salt went on stream at a site in Germany. This substance is extracted from the production waste and returned to the production process as a raw material with a recycling rate of around 95%.
// Volumes of incineration waste are being reduced at a site in the United States using distillation. At the same time, occupational safety has improved because less manual intervention is required in the process.
// At a site in Germany, iodinated X-ray contrast agent from a returns program is being recycled. The recovered iodine is sold as a raw material because legal requirements prohibit it from being reused in pharmaceutical production.
// Plant residues (such as corncobs or rice husks) from seed production are used for animal feed or fuel.
// Employees and contractors at three sites in Argentina are being given extensive training that enables them to avoid the disposal of waste products at landfills. The waste streams are either reused, recycled, composted or incinerated.
// At a production site in Germany, a new process is currently being developed that should enable the recovery of the majority of a byproduct from a waste stream (mother liquor). This process is expected to lead to a much higher product yield and less incinerated waste.

For products such as pharmaceuticals and crop protection products, reutilization and recycling are usually prohibited by legislation. The disposal of pharmaceutical products from the Pharmaceuticals and Consumer Health divisions is subject to strict safety criteria.

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 (for more information, please see Chapter 3.6 Crop Science, Disposal of containers and old inventories, discontinuation policy).

8.5 Environmental Incidents

We recorded three environmental incidents that resulted in the release of substances into the environment in 2022 (2021: three). For more details on these 2022 environmental incidents, please see the Significant Transport and Environmental Incidents 2022 table in Chapter 8.9 Transportation and Storage Safety.

Factors that determine whether there is a reporting obligation for a specific environmental incident include, in particular, the nature and quantity of the substance, the amount of damage caused and any consequences for the local community. In line with our internal voluntary commitment, we report any leakage of a substance with high hazard potential from a volume of 100 kilograms.

8.6 Occupational Health and Safety

Safeguarding the occupational health and safety of our own employees, and that of the employees of contractors (commissioned outside companies) who are under the direct supervision of Bayer, involves preventing occupational accidents and occupational illnesses, assessing potential hazards, ensuring comprehensive risk management and creating a healthy working environment. The Board of Management, our managerial staff and employees are regularly informed about the incident KPIs and, if necessary, about individual incidents.

HSE management systems are implemented at our sites throughout the Group. In this connection, the same requirements, rules and training measures apply for employees of contractors as for Bayer employees. For more information on the regulations that currently apply to safety, please see the graphic in Chapter 8.1 Management Approach.

Within the context of our occupational health, safety and environmental protection management, Bayer employees and employees of contractors receive extensive training in the prevention of accidents and safety incidents and in promoting and maintaining their own health. The measures range from safety briefings and special training courses on the safe handling of chemical substances to web-based training that highlights the advantages and possibilities of a work environment that promotes health. Overall, more than 58,000 employees completed health and safety training measures in 2022.

Alongside technical and organizational measures, therefore, we see promoting safety-conscious behavior as an important starting point for preventing accidents and injuries. The utilized measures and initiatives take into account globally recognized occupational health and safety principles. We also promote safety-conscious behavior among all our employees through the global Behavioral Safety initiative.

The central data collection platform we launched in 2021 for integrated accident management enables the sites to share accident analysis information with one another digitally and thus determine corrective measures more quickly. The platform also makes it easier for our occupational health and safety experts to exchange information about occupational illnesses and injuries experienced by our employees. We aim to anticipate and avoid accidents at our sites through corrective and preventive measures.

In 2022, the digital transformation and the third year of the COVID-19 pandemic provided new stimuli for the further development of our processes and occupational health and safety measures. One example is the central intranet platform “House of Health,” which gives all employees access to health-related topics.

Occupational health and safety measures also include our global Health and Safety Day with its various activities and training measures, as well as the global HSE Newsletter. The latter enables managerial and nonmanagerial staff in the field of occupational health and safety to regularly incorporate HSE topics into dialogue with employees.

Risk assessment and preventive measures

The workplaces of our employees and those of contractors under the direct supervision of Bayer are regularly subjected to a comprehensive health-related risk assessment and hazard analysis by Bayer experts that also covers possible exposure of employees to chemicals. Details of this process are specified in the Group Regulation on HSE Management and HSE Key Requirements.

Measures derived from this analysis to protect the health of our employees follow the STOP hierarchy: 1) substitution, 2) technical protective measures, 3) organizational protective measures and 4) personal protective measures. These measures and targeted studies are designed to prevent occupational illnesses.

In addition to the appraisals by Bayer experts, both our employees and those of contractors are urged to immediately report work-related hazards or dangerous situations to their supervisors or via the compliance hotline. As with accidents that have actually occurred, we conduct incident analyses based on these reports to determine suitable measures to prevent serious accidents from occurring as far as possible.

We integrate not only our own employees but also those of contractors into the processes for risk assessment and the promotion of safety-conscious behavior.

On top of country-specific regulations regarding 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.

Occupational health and safety in the third year of the COVID-19 pandemic

Occupational health and safety at Bayer was once again heavily impacted by the progression and development of the COVID-19 pandemic in 2022. As the health and safety of our employees are our top priority, the Corporate Crisis Team headed by the Chairman of the Board of Management adapted the existing rules and regulations to the changing risk situations.

All rules, instructions, FAQs and further information for employees are being continuously updated and made available on a central intranet platform for the duration of the pandemic. Our employees are notified at all times of the current status of applicable local measures. This enabled us to reduce COVID-19-related risks for our employees at the workplace again in 2022.

The globally implemented protection concepts and measures take account of the different occupational tasks at the various sites as well as the respective phase of the pandemic (risk matrix). We were able to maintain or quickly restart production at the sites and thus ensure the supply of products to our patients and customers. Measures that helped to maintain production during phases of the pandemic characterized by high risk potential included:

// Working from home wherever possible
// Two-meter distancing rule; in areas where it was not possible to observe this distance, plastic dividers were installed and the use of facemasks during working hours was made mandatory
// Hygiene rules for hand-washing and disinfection, and the general use of a facemask; we provided our employees with masks at an early stage in all countries where it was possible to do so according to national law

In addition, the following measures continue to apply despite lower risk potential:

// Vaccination offers at numerous sites for our employees, their family members and employees of contractors under the direct supervision of Bayer, as well as family members of such contractors
// One result of the pandemic was the rethinking of existing working models. In the global Next Normal Office Concept project, many offices were converted into more flexible and collaborative work environments so as to better meet the employees' individual needs.

Mental health

As the mental health of our employees and their families is a valuable asset worth protecting, we once again placed special emphasis on mental health in 2022.

Through target-group-appropriate information and programs, we are endeavoring to break down taboos surrounding the issue of mental health and are looking to counteract the development of mental illness more proactively in the future with the following initiatives:

// Establishment of the central intranet platform "House of Health," with wide-ranging information and training offerings to address issues such as mental health and healthy living
// Training of more than 180 internal Health Champions and the establishment of a global Health Champions Community
// More than 600 different training courses, lectures and podcasts on maintaining good mental health, aimed at various target groups
// Workshops for managerial staff on mental health and well-being
// We offer our employees and their families so-called Employee Assistance Programs (EAPs) worldwide that focus particularly on psychosocial support from psychological or medical experts who can be consulted online or in person. We have significantly increased the EAP offering over the past two years: we were able to offer EAPs to more than 95% of our employees and their families by the end of 2022, compared with 78% at the beginning of 2021.

Occupational injuries and occupational illnesses

The basis of our reporting on occupational injuries is the Recordable Incident Rate (RIR), which covers all occupational injuries and illnesses suffered by Bayer employees and employees of contractors under the direct supervision of Bayer leading to medical treatment that goes beyond basic first aid. As a result, the RIR covers injuries and occupational illnesses both with and without lost workdays. In 2022, it was at 0.37 cases per 200,000 hours worked, which is equivalent to 413 occupational injuries worldwide (2021: 443). The RIR thus came in below the defined target for 2022 of 0.38. In statistical terms, this means that one recordable incident occurred for more than every 542,000 hours worked. Recordable injuries with lost workdays constituted 204 of the total of 413 occupational injuries, meaning that the corresponding parameter, the Lost Time Recordable Incident Rate (LTRIR), improved slightly from 0.22 in 2021 to 0.18 in 2022. The continued low number of occupational injuries was due in part to increased working from home, which was considerably expanded as a protective measure in connection with the COVID-19 pandemic.

Regrettably, one employee lost his life in a work-related accident in 2022. An employee in Argentina was fatally injured when a flexible big bag plummeted. The employee died in hospital as a result of his injuries.

Recordable Occupational Injuries[1]

	2020	2021	2022
Number of occupational injuries	390	443	413
of which Bayer employees	335	377	365
of which employees of contractors under direct Bayer supervision	55	66	48
Overall rate of occupational injuries (RIR[2])	0.32	0.38	0.37
Rate of occupational injuries with lost workdays (LTRIR[3])	0.20	0.22	0.18
Fatal occupational injuries[4]	2	2	1
Fatal occupational injuries of employees of contractors not under Bayer supervision[5]	4	4	–

2021 figures restated

[1] Recordable occupational injuries of Bayer employees and employees of contractors whose accidents occurred under direct Bayer supervision

[2] RIR = Recordable Incident Rate

[3] LTRIR = Lost Time Recordable Incident Rate

[4] Fatal occupational injuries of Bayer employees and employees of contractors under direct Bayer supervision

[5] These fatalities were not correctly assigned in previous years. The designation of the group of people involved has been corrected.

Rate of Occupational Injuries (RIR) by Region[1]

	2020	2021	2022
Europe/Middle East/Africa	0.40	0.43	0.41
North America	0.47	0.70	0.69
Asia/Pacific	0.15	0.17	0.11
Latin America	0.23	0.18	0.21
Total	**0.32**	**0.38**	**0.37**

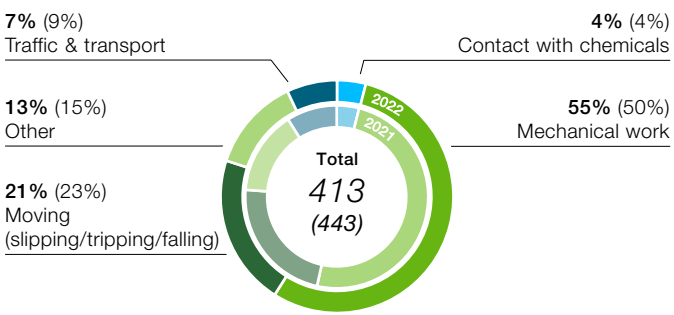
2021 figures restated

[1] The rate also includes employees of contracted external companies whose injuries occurred on our company premises and under Bayer supervision.

To better assess the importance of a recordable accident in terms of specific injuries, an internal Bayer indicator was introduced in 2021 to determine the severity of an injury. We use a numeric value for this severity that results from a combination of categories. It represents an additional dimension to describe the extent of the injury and, on that basis, improve occupational safety.

In 2022, as in previous years, the number of injuries involving contact with chemicals was small (4%) in relation to the total number of occupational injuries.

Notification of Accidents and Injuries 2022 (2021)



A significant proportion of the accidents and injuries suffered by our employees have behavior-linked causes. For example, accidents can occur when employees use smartphones while walking.

Occupational illnesses are also included in the RIR and LTRIR, regardless of whether 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 2022, 38 new cases of occupational illnesses were reported throughout the Bayer Group, 17 of them with lost workdays. These were related to COVID-19 and the musculoskeletal system, among other disorders, without any clearly identifiable pattern of risk areas. The number of cases corresponds to 0.17 occupational illnesses per one million hours worked.

8.7 Biosafety

In accordance with the guidelines of the World Health Organization (WHO) on biorisk management, we consider biosafety 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, the local community and the environment are protected. This includes organisms (in some cases genetically modified) such as microorganisms, invertebrates, vertebrates, plants, cell cultures or parts thereof, and 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 biosafety in each case and verified together with an expert. When needed, we use a digital tool for systematic recording. Employees entrusted with biosafety matters possess the necessary expertise.

Processes for carrying out assessments and other necessary measures are established in a Group Regulation on Biosafety that is based on the specifications of the WHO, among other things. Wherever local laws and regulations are more stringent than the standards laid out by the Group regulation, the more stringent variant takes precedence.

A group of biosafety experts from the divisions and regions cooperates within the Bayer Biosafety Panel. Under the auspices of the accountable expert at PASS&HSE, the global panel is responsible for developing, reviewing and implementing Bayer's biosafety rules throughout the Group. It also advises and supports the biosafety community with which it maintains regular communication to ensure a uniform and high standard of biosafety throughout the company.

The same rules on biosafety apply in amended form for the new cell and gene therapy technology platform as for the rest of the Bayer Group (please see Chapter 2.4 Bioethics). The platform's partners have taken on the Group Regulation on HSE Management and HSE Key Requirements and thus the issue of biosafety, and have undertaken to compile risk assessments. The biosafety experts maintain a steady dialogue with one another.

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

8.8 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 our employees, the environment or neighboring communities. This is conditional on having in place an effective system to ensure plant safety 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 Group regulations on process and plant safety, which also cover topics such as machine and laboratory safety.

Our Group regulations specify uniform procedures and standards for risk assessment and corresponding safety measures and we implement the requisite training. In this way we ensure that a uniform safety level is in place at the 40 Bayer sites at which volumes of hazardous substances significant for plant safety are stored or processed, while going beyond the legal requirements in most countries.

Based on our Group Regulation on Process and Plant Safety, the comprehensive safety concept for a process or plant comprises the following elements:

// An operating concept
// A safety concept (to prevent incidents)
// Damage mitigation concepts

Processes and plants at Bayer are run with a robust operating concept. This concept comprises instructions for safe operation, including start-up and shutdown, maintenance, retrofitting procedures and response to malfunctions. Site emergency response plans define the measures to be undertaken in cases of emergency. These encompass procedural instructions for internal and external communication and reporting, including notification of responsible authorities and surrounding communities. The sites regularly conduct emergency exercises to assess the effectiveness of the deployments and introduce improvements if necessary. Joint exercises are conducted in cases where external personnel are crucial for emergency preparedness. The frequency of these exercises is determined based on the existing risk.

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 analyses and drawing up safety concepts. Using systematic analytical methods, the process risks of our facilities are identified in interdisciplinary teams supervised by these experts. Based on this, the team develops robust protective concepts that take account of health, safety and environmental protection aspects. Among the topics covered by these are the installation of safety valves, spill basins and collecting basins, and the development of emergency shutdown concepts. Everyone involved in this process completes 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 globally uniform quality standards in the development of safety concepts at our production facilities.

Ultimately, the PASS&HSE 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, the related safety concepts for each facility are examined every five years. Technical modifications are subject to a stringent change management process. In accordance with the Group Regulation on HSE Management and HSE Key Requirements, maintenance and inspection programs are also established for the safety facilities to ensure the necessary availability and functionality in case of need. Furthermore,

all facilities and technical apparatus are serviced according to maintenance and inspection plans. Mitigation concepts are designed to mitigate the severity of consequences in case of a loss of containment. Mitigation concepts specific to a chemical process or unit operation comprise a broad spectrum of measures including standard personal protective equipment, safety showers, removal or reduction of the number of people in the danger area during certain tasks, containment systems and perimeter monitoring with gas detection systems.

Plant safety is an integral component of the planning stages for capital expenditure projects. We carry out risk analyses during the various phases of a capital expenditure project. In accordance with our Group Regulation on Safe Design and Operation of Processes and Plants, we examine the applicability of the following principles of inherently safer design and the feasibility of a sound safety concept at a very early stage in the development of new production processes:

// Removing or minimizing potential hazards (e.g. by avoiding particularly hazardous substances, selecting suitable process equipment, construction and design or optimizing process parameters such as pressure, temperature and concentration)
// Avoiding or minimizing potential interruptions (e.g. through quality assurance measures during the construction, installation and operation of the plant technology, the use of maintenance-friendly equipment or the definition of detailed and exact operational procedures that include both start-up and shutdown processes and reactions to foreseeable deviations and malfunctions)
// Designing error-tolerant processes and plants so that possible process deviations do not have any safety-relevant effects such as loss of primary containment (e.g. through sufficient temperature and pressure stability)

Finally, before a new production facility is brought on stream, our safety experts verify all defined safety measures and confirm their proper implementation by carrying out plant and equipment inspections.

Further development of plant safety

To maintain and strengthen safety awareness, we continuously update and improve the globally binding TOPPS (Top Performance in Process and Plant Safety) training program. Participation 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 is available in 15 languages.

We are further developing plant safety through our active participation in internal global and regional networks of experts and as a member of associations such as the European Process Safety Center (EPSC), the Center for Chemical Process Safety (CCPS), Dechema ProcessNet and the German Chemical Industry Association (VCI). We also drive progress in this regard worldwide within the framework of standards.

Since 2019, we have used the globally standardized key performance indicator (KPI) Process Safety Incident Rate (PSI-R) as an indicator for plant safety. This is integrated into the Group-wide reporting system. Reporting of this indicator is based on the requirements of the International Council of Chemical Associations (ICCA). Process safety incidents (PSIs) refer to incidents during which amounts of chemical substances or energy that exceed defined thresholds leak from their primary containment, such as pipelines, pumps, tanks or drums. The PSI-R indicates the number of process safety incidents per 200,000 hours worked. In 2022, the PSI-R was 0.11 (2021: 0.08). A total of 122 process safety incidents occurred in 2022 (Process Safety Incident Count, PSI-C).

In addition, we also indicate the Process Safety Incident Severity Rate (PSI-SR). We report this according to the grading system of the International Council of Chemical Associations (ICCA).

Process Safety Incidents[1]

	2020	2021	2022
Process Safety Incident Count (PSI-C)[1]	92	96	122
Process Safety Incident Rate (PSI-R)[1,2]	0.08	0.08	0.11
Process Safety Incident Severity Rate (PSI-SR)[1,3]	0.21	0.14	0.16

[1] According to ICCA (International Council of Chemical Associations)
[2] Number of PSI incidents per 200,000 hours worked
[3] Degree of severity for all PSI incidents per 200,000 hours worked

To prevent substance and energy releases, the causes of PSIs are analyzed and relevant findings are 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. We pursue this preventive approach so that weaknesses can be identified and corrected before a more serious incident can occur.

8.9 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. As an element of Bayer's HSE management system, transportation and storage safety is monitored through a risk-based audit system. It is also anchored in our rules for collaboration with service suppliers.

Our logistics processes ensure that materials are handled, transported and stored according to the relevant regulations and the materials' respective hazard potential. This also involves selecting suitable logistics and warehouse suppliers. The underlying standards comprise not just internal Bayer guidelines such as the Global Transport Requirements 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 Group Regulation on Storage Safety (Warehousing) applies equally to internal warehouses and external warehouse sites and facilities.

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 in the case 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).

In addition to the legally required training measures, we assign compulsory training courses to our employees from our extensive training portfolio as befits their respective field of activity.

Around 5.6 million consignments were transported in 2022. Despite our extensive safety precautions and training activities, transport incidents nonetheless occur. These 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.

All of the 17 transport incidents in 2022 constituted road transport accidents. Of these transport incidents, six involved the transportation of hazardous materials/dangerous goods (see following table). One of the transport incidents was also an environmental incident. Two of these transport incidents also led to severe personal injuries.

In these incidents, the discharged substances were cleaned up and properly disposed of.

Significant[1] Transport and Environmental Incidents 2022

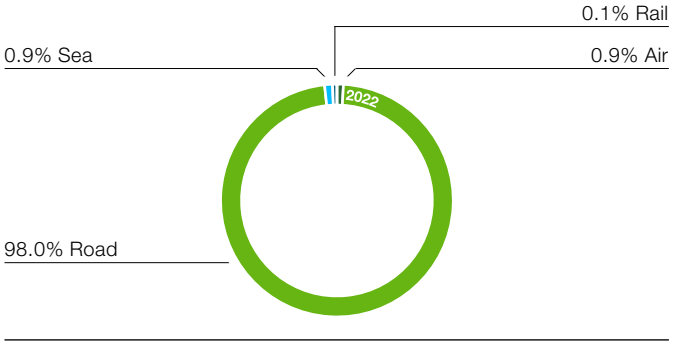
	Transport	Environment	Personal injury
Crop Science, Luling, USA, January While a generator was being filled up with fuel, diesel flowed onto a building site.	–	X	–
Crop Science, Nigel, South Africa, February A truck whose contents also included a Bayer product caught fire. The products burned.	X	–	–
Crop Science, Paracatu, Brazil, February Two trucks collided, one person died and another was injured. Part of the load of crop protection products was spilled.	X	X	X

Significant[1] Transport and Environmental Incidents 2022

	Transport	Environment	Personal injury
Crop Science, Merzifon, Turkey, May A truck belonging to a transport company and containing Bayer products tipped over and part of the load was spilled.	X	–	–
Crop Science, East Hawthorn, Australia, July A truck overturned. Drums containing crop protection products fell into a roadside ditch.	X	–	–
Crop Science, Beijing, China, August A truck belonging to a transport company and containing Bayer products (crop protection products) caught fire.	X	–	–
Crop Science, Muscatine, USA, September Owing to a defective seal, a mixture of methanol and methylamine leaked from a tank.	–	X	–
Crop Science, Thane, India, November A transporter was struck by a bus. One driver died and crop protection products leaked onto the road.	X	–	X

[1] In accordance with the definition and reporting criteria of the ICCA/Responsible Care agreement between the CEFIC and the ECTA, we have reported since 2022 on the significant transport and environmental incidents in connection with the transport of hazardous materials or dangerous goods, or of chemicals.

Means of Transport



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_2 emissions by employing less air transport and adopting more logistics strategies that include railways and waterways.

8.10 Emergency, Security and Crisis Management

We ensure safe working conditions and an environment where our employees can work safely and without fear, whether in the office, in production or undertaking international business travel. In emergency and crisis situations, ensuring the safety and security of our employees, facilities, sites and neighbors is our top priority.

Through Group regulations on emergency planning, emergency response, health, safety, security and crisis management, as well as pandemic planning, Bayer has taken action at global and local level to prepare the organization for extraordinary events (e.g. major damage events or crimes), and assess and process them based on standardized criteria. Subsequently, improvement potential is determined wherever necessary and integrated into existing concepts. Extraordinary events are registered according to a standard Group-wide procedure described in the Group Regulation on Security and Crisis Management and reported to the Global Security Operations Center, which then initiates further steps such as effective information management. This enables us to identify risks facing the company at an early stage and introduce mitigating steps if necessary or provide assistance once incidents have already occurred.

Dealing with such incidents is primarily the responsibility of the local safety, security and crisis organization or the local emergency response team. For this purpose, organizational precautions with defined responsibilities and procedures have been implemented at the sites and in the countries. The responsible persons have been given appropriate training. Depending on how the situation develops, we involve business partners and the local community around the sites, such as city authorities or neighboring companies. Depending on the extent of damage, the Corporate Crisis Team assumes responsibility for further coordination and steering of crisis management and the restoration of operations as an overarching body. Bayer's crisis management system ensures organizational and procedural conditions are in place to avoid or counteract a crisis or to restore regular business operations as quickly as possible after a crisis has occurred.

For example, the Corporate Crisis Team headed by the Chairman of the Board of Management was activated in connection with the COVID-19 pandemic and kept in place until early 2022. It defined the strategic direction of crisis management and was supported by specialized task forces. In addition, the local crisis teams convened in the country organizations as per the crisis response plans and took the necessary steps in accordance with the relevant global stipulations and local laws. Our highest priorities were ensuring the protection and safety of our employees and safeguarding the supply of our products to patients and customers.

In February 2022, a Corporate Crisis Team supported by specialized task forces was activated to deal with the impact to Bayer resulting from the war that had started in Ukraine. The main objective was to ensure that all Bayer employees and their families would be cared for, irrespective of whether they remained in Ukraine or were forced to leave the country. The Corporate Crisis Team took and coordinated the appropriate measures to mitigate the effects of the war on our employees and their families. Besides the crisis management performed at Group level, local crisis teams were activated to establish shelter initiatives and support Bayer employees who had left Ukraine.

Emergency and crisis management is supported by the established Business Continuity Management System, which is based on the ISO 22301 standard. Business continuity plans contain predefined response options for the unavailability of personnel, buildings, machinery, IT systems or suppliers. In line with our Group Regulation on Business Continuity Management, the plans cover various emergency scenarios, such as a longer-term regional blackout or climate-change-related impacts on production sites. The management system comprises suitable IT measures such as safeguarding service provision or ensuring rapid restoration following a disruptive event. The plans are regularly updated and incorporated into training.

As part of its Enterprise Risk Management, Bayer also regularly analyzes safety and security risks and implements suitable identification, prevention and processing measures, including the incident notification process, travel and event security programs, and employee training and information measures pertaining to cybersecurity. Safety and crisis simulation exercises are also regularly conducted at site and Group level. The number of employees and partners involved depends on the type of exercise. Each year, we work with our IT service providers to test the restoration of IT systems and data for one of our global data centers at a different site.

9. Giving and Foundations

The commitment to science, society and the common good has a long tradition at Bayer. Like our business activities, our corporate giving is guided by our purpose “Science for a better life” and our vision “Health for all, hunger for none.” Together with our network of partners, we support social projects around the world in the areas of health, nutrition and the environment and engage with communities to create long-lasting societal impact, increasingly by supporting social innovation and social enterprises.

9.1 Management Approach

Our corporate giving takes the form of monetary and product donations. Close intra-Group cooperation between the Public Affairs, Science, Sustainability & HSE Enabling Function and our country organizations, as well as with the Bayer foundations, ensures a common strategic alignment. At the same time, this approach take accounts of the different challenges and circumstances in each region where Bayer is active.

The Group Regulation on Corporate Giving establishes clear criteria for the eligibility of recipients and the selection of projects. It also sets out our strategy to create long-term impact in line with our purpose, vision and sustainability goals.

Our donations are processed through a database that enables approval by responsible managers, compliance checks and full documentation – and thus ensures oversight of the donations. It also offers a comprehensive and transparent overview of our social investment worldwide. In the case of donations exceeding €50,000, Bayer’s Board of Management has the final vote. To further improve the impact measurement of our corporate giving and ensure alignment with best practices, we joined the Business for Societal Impact initiative (B4SI) in 2021 and the Chief Executives for Corporate Purpose (CECP) network in 2022.

Through our corporate giving, we support social projects in the following focus areas:

Health for all, hunger for none

// Food security, reduction of food loss, increase in food quality particularly for vulnerable groups in low- and middle-income communities
// Access to self-care and healthcare programs for vulnerable groups in low- and middle-income countries
// Maternal and child health, family planning
// Public health

Science for a better life

// Support for frontier research in life sciences, data science and environmental sciences
// Development of science talents, supporting education programs in life sciences, data science and environmental sciences
// Science and society

Environment

// Climate change, biodiversity, and water and waste management

Through our engagement we promote the system-changing power of social innovation, be it through local initiatives or global partnerships. A central aspect of Bayer’s corporate giving is therefore supporting innovative solutions and capacity-building projects of social enterprises aimed at establishing knowledge, abilities and structures.

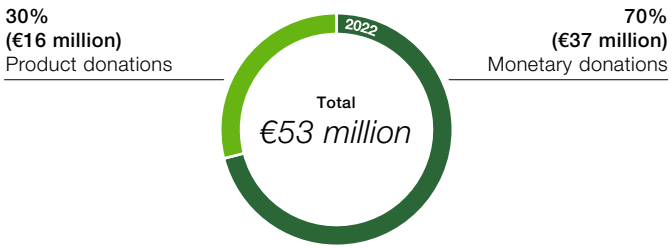
The Bayer foundations – the Bayer Cares Foundation, the Bayer Science & Education Foundation, the Bayer Fund (United States) and the Bayer Foundation India – are the philanthropic arms of Bayer. Their objective is to generate social impact in line with our vision of “Health for all, hunger for none” and our mission “Science for a better life” (please see Chapter 9.3 Bayer Foundations).

9.2 Our Giving in 2022

Inputs

In 2022, Bayer provided €53 million for donations and social impact programs worldwide. This includes product donations to the value of €16 million (book value) to various nonprofit organizations in individual countries. Most of the products donated are prescription drugs and OTC (over-the-counter) products from our Pharmaceuticals and Consumer Health divisions.

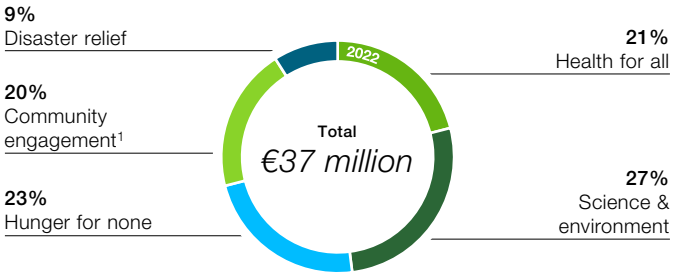
Monetary and Product Donations 2022



Outputs and outcomes of our programs

Bayer's monetary donations in 2022 were distributed around the different focus areas as follows:

Monetary Donations per Strategic Focus Area 2022



[1] Community engagement includes various social initiatives in the communities where Bayer operates, as well as sports & culture donations for local recreational, disabled and competitive sports, cultural events and support for young artists.

Health

A major focus of the projects in the area of health is access to family planning for women in low- and middle-income countries (LMICs) – in accordance with the SDGs and as a key element for empowering women and strengthening societal development. Specifically, Bayer has committed to enabling 100 million women in LMICs to gain access to modern contraception by 2030 (please see the Sustainability Strategy and Focus on: Access to Healthcare chapters). This topic is not only fundamental for the health of girls and women, and ultimately infants as well, but also helps to break the cycle of poverty.

Our cooperation with the United Nations Population Fund (UNFPA) continued in Egypt. The "Your Right to Plan" campaign aims to improve family planning and reproductive health services for Egypt's underserved communities. The goal of the five-year strategic partnership between Bayer and UNFPA is to improve self-determined family planning and reproductive health. Since the beginning of the partnership in 2021, the outreach campaign has been carried out in 21 regions of Egypt. It has been combined with mobile clinics to offer direct family planning services, gynecological examinations, ultrasound diagnosis, prenatal care and neonatal/pediatric services. The campaign reached more than 44,000 people, and over 35,000 people received information on and access to family planning.

Women and girls in emergency situations are a particularly vulnerable part of the population. More than 40% of refugee women want to avoid pregnancy. To tackle this issue, Bayer and the German Red Cross (DRK) developed a family planning module for humanitarian aid applications. It is currently being piloted in Colombia, where it reaches around 50,000 people. This module also maps out the latest version of the so-called Sphere manual, which is the primary reference tool setting minimum standards in humanitarian assistance. In this, family planning has been repositioned as one of the most important and life-saving services. In a next step, the module will be implemented within the global Red Cross Red Crescent Movement in humanitarian emergency care (please see also Chapter 3.8 Pharmaceuticals).

In the Health area, we continue to support patients in underserved communities who are suffering from hemophilia. Bayer is a long-standing donor to the World Federation of Hemophilia and its Humanitarian Aid Program. The objective of the program is to make it possible for people with inherited bleeding disorders to reliably access safe and consistent treatment and care, regardless of their type of bleeding disorder, gender or location. Since the start of the partnership in 2019, more than 9,100 patients have been treated with Bayer products through the donation program. In 2022, the support was mainly given to underserved communities in Asia and Ukraine. For more information on the program, please see treatmentforall.org.

Our commitment also helps in the fight against neglected tropical diseases such as African sleeping sickness, Chagas disease, infection with the pork tapeworm and river blindness (please see the Focus on: Access to Healthcare chapter). Bayer partners with the World Health Organization (WHO) and supported the WHO Roadmap 2030 with monetary and product donations to the amount of €2 million (book value) in 2022.

To reduce maternal and newborn mortality in rural Madagascar, Bayer also funded an integrated health systems intervention by the nonprofit organization Doctors for Madagascar. With the support of Bayer, the charity aims to improve the quality of medical care. In 2022, for example, more than 300 health training courses were conducted for health workers and mothers in the south of Madagascar to improve health literacy regarding care for mothers and children. Around 47,000 women and their children have been reached through this intervention, e.g. through mobile clinics and financial and nutritional support.

Another major product donation in 2022 was given to our long-standing humanitarian response partner Direct Relief. Antibiotics worth €5 million (book value) will assist clinics and patients that otherwise would not have access to the medicines that they require, e.g. in Latin America and Ukraine.

Nutrition

Our efforts in the area of food security focus on initiatives relating to smallholder farmers. These include training measures and access to new technologies, agricultural inputs to increase yields, improved access by smallholder farmers to supply chains, and more financial autonomy for producers.

In 2021, we initiated a series of partnerships with social innovators active on behalf of smallholder farmers in Zambia, Uganda, Ghana, Mali, Nigeria, Guatemala and Peru to support entrepreneurial solutions benefitting smallholders and their families. The progress and impact for some of the projects in 2022 are summarized below:

Saving Grains introduced a grain storage platform to Ghana and Kenya with the help of a Bayer grant. In 2022, more than 100 metric tons of post-harvest losses were avoided, and smallholder farmers increased profits by 50%. The platform is built to scale and has grown tenfold since last year.

Babban Gona enabled 17,000 young farmers to raise poultry and to build an additional income stream with the long-term vision of decreasing unemployment for young people in Nigeria.

International Development Enterprise (IDE) provided smallholder farmers in Zambia with post-harvest loss prevention methods and training with the help of local farmers. In total, 50,000 farmers have been trained in how to avoid post-harvest losses with hermetic bags.

myAgro developed a pilot project in which smallholder farmers can sell Moringa trees to create additional income, while also reducing carbon emissions**.** The pilot should clarify whether Moringa trees can build a valuable and sustainable income stream for farmers in Mali and Senegal – countries that are severely hit by drought caused by climate change.

With the support of Bayer, **Producers Direct** focused on strengthening female farmers' income by using digital cooperative models in Peru and Uganda in 2022. By empowering female farmers with training, access to farm data, finance and better market opportunities, Producers Direct trained more than 1,400 women and enabled them to increase their monthly income on average by up to 85% per year.

With the help of donations from Bayer, **Mercy Corps** continued its program MAS+, which aims at better market access, income, productivity and resilience for local smallholder farmers in Guatemala. In total, 715 farmers from 23 producer groups received training and were able to increase farm productivity and income and improve decision-making and farm practices by adapting to climate variability.

To expand access to essential vitamins and minerals for underserved communities, Bayer has launched the Nutrient Gap Initiative program. As a first step, we decided to focus on pregnant women. For this reason, we established a partnership with Vitamin Angels in July 2020, the objective of which is to foster the adoption of prenatal vitamins as the standard of care for pregnant women, focusing primarily on low- and middle-income countries. There are three areas of collaboration with Vitamin Angels: first, facilitation of the introduction of multiple micronutrient supplementation (MMS); second, joint advocacy through implementation science aimed at improving standards of prenatal care in these developing countries and supporting their transition from iron folic acid to MMS; and third, co-creation of a training curriculum on the value of prenatal supplements geared toward healthcare providers and community health workers. In 2022, the program reached more than four million women and babies in its second year of implementation in 12 countries (please see the Sustainability Strategy chapter).

Environment: water

Water is essential for every living creature on Earth and for the future of humankind. Our society is currently facing a water crisis, with 2.2 billion people without safe access to water today. Bayer is committed to driving awareness of the water crisis and supporting underserved communities especially in the global south with relief programs and innovative solutions to increase access to clean water and sanitation.

In 2022, we conducted the Bayer Social Innovation Award "Change the Course of Water" to support social entrepreneurs with creative ideas on how to tackle water issues in developing countries. Out of 110 applications from 40 countries, Bayer chose four winning social innovators from Uganda, Mexico, Chile and Indonesia. Among the winning

solutions were FreshWater Solutions, which extracts water from the air, and Tusafishe, a company that filters water with the help of Moringa trees. The winners received a grant of €35,000, an invitation to a European innovation conference and award ceremony and marketing support from Bayer. More information can be found here.

In addition to the Social Innovation Awards, Bayer also funded the Pakistani nonprofit organization Tayaba and supported its mission to bring drinking water to rural communities. The organization provides water wheels to rural communities, especially women, to help them transport drinking water.

In 2022, Pakistan saw unprecedented monsoon rains resulting in catastrophic flooding across the nation, leaving one-third of the country under water. Bayer has joined hands with Pakistani nonprofit organization Akhuwat to support people affected by the floods with urgent relief goods, shelter and financial assistance. In addition, a global employee donation campaign was organized with Akhuwat.

Ukraine: humanitarian response

Since the start of the war in Ukraine, Bayer has provided humanitarian support in the form of monetary donations, products and shelter, in addition to facilitating employee volunteering activities. A support fund of €3.5 million was established, enabling donations to local and international nonprofit organizations providing emergency relief such as the German Red Cross, Hungarian Interchurch Aid, Code for Romania, Caravana cu Medici, Polish Red Cross, Ukraine Red Cross and many more.

In an employee donation drive, our colleagues contributed more than €1 million through a Red Cross relief campaign, which Bayer has matched through the fund. This money was used to support the procurement of several ambulances and defibrillators for Ukraine and to set up a mobile medical aid center serving Ukrainian refugees in Poland.

Bayer also used the fund to donate to the Fondation suisse de déminage (FSD) to support their mission to demine land in Ukraine that has been contaminated by mines and unexploded devices since the onset of the war. A donation of €825,000 was dedicated to purchasing a large mechanical mine clearance machine.

Through the disaster fund, Bayer also supported the reconstruction and reequipping of health facilities in Ukraine within the scope of the UNITED24 presidential initiative with a donation of €1.3 million. The donated amount is being equally distributed to two health projects. Half the funding is being used to replace the infrastructure for operating the Chernihiv Medical Center of Modern Oncology, as the valuable equipment and facilities of this cancer center were severely damaged by Russian artillery fire. In addition, the other half of the donation is helping the Romodanov Institute of Neurosurgery to purchase medical equipment for neurosurgical procedures and thus support proper patient rehabilitation.

In addition to the financial support given to nonprofit organizations, we also provided medicines, OTC products and agricultural inputs as donations to the Ukrainian Ministry of Health and Agriculture. In total, product donations with a book value of more than €3.7 million were delivered.

Furthermore, Bayer country organizations and employee-led initiatives have organized numerous local volunteering campaigns. One example is the commitment of the team from Bayer Gastronomy, which converted the "Seminar- & Tagungshotel Große Ledder" training center in Wermelskirchen near the Bayer headquarters in Leverkusen into a shelter. Some 30 refugees from Ukraine have found a temporary home there. Bayer volunteers are supporting the refugees and assisting them with administrative issues. Another example are the Border Angels colleagues from various Eastern European countries who voluntarily offered to transport Ukrainian colleagues to shelters.

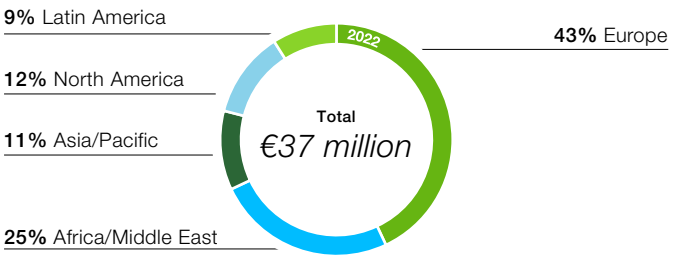
Employee engagement and employee giving

Alongside employee giving campaigns that we introduce in the case of large-scale disasters, Bayer also offers matching programs in different countries throughout the year. In Germany, for example, the Helping Cents program enables Bayer employees to donate the decimal places of their monthly salary. The total amount of the cents collected is doubled by Bayer and earmarked for charitable organizations and their projects. Since 2022, all Bayer employees in Germany have also had the opportunity to have a say in the allocation of money from Helping Cents and to vote for selected projects. In 2022, almost 7,500 employees took part and donated more than €39,000.

Summary

In 2022, we supported more than 400 social projects worldwide. Some 66% of our contributions (cash and product) went to low- and middle-income countries to strengthen the capacity of underserved communities and combat social inequality. With 78 countries targeted through our giving, the geographic split of our monetary donations is as follows:

Monetary Donations per Region 2022



Impact review

In 2022, we also increased our ability to determine the impact of the donation projects we initiated by introducing a standardized impact assessment questionnaire, which is answered by our partner organizations at least six months after payment of a donation. For donation projects in 2022, we received retrospective feedback in more than 70% questionnaires, representing a monetary donation sum of over €24 million. With this amount we were able to benefit 99 organizations that reached 24 million people with their social programs.

For more background information on Bayer's social impact projects, please see our website.

9.3 Bayer Foundations

Bayer's foundations are the company's philanthropic arms. They make an important contribution to society in line with our vision and purpose. The four foundations have different focuses and governance bodies:

Bayer Science and Education Foundation

The Bayer Science and Education Foundation aims to enhance the impact of science as the basis for societal progress in line with Bayer's vision and mission. The foundation's activities are focused on three areas:

// Equality in science to ensure that science can truly address the needs of all
// Collaboration in science and interdisciplinary research as the basis for innovative solutions to address the complex global challenges in health and nutrition
// Trust in science and technology as a crucial step to ensuring effective implementation and acceptance of innovation

The foundation's activities encompass various programs including scientific awards, young talent scholarships, funding for scientific lectures and STEM education grants, along with global gender equality and scientific capacity-building programs. A science council composed of five external scientists advises the foundation and selects the Foundation Science Award winners. The foundation's Board of Trustees is responsible for organizational measures, strategic decisions and financial issues.

The foundation has a worldwide science network of globally recognized academic institutions, start-ups, biotechs and larger companies, along with other foundations and nonprofit and governmental organizations. The foundation's diverse offering ranges from programs with a focus on schools near Bayer's R&D sites to global awards in sub-Saharan Africa.

As the foundation strives for global equality in science, capacity building in sub-Saharan Africa is a key component of its work. Within the partnership established in 2021 with the Alexander von Humboldt Foundation, 10 research scholarships were awarded to young science talents from sub-Saharan Africa in 2022.

In 2022, the foundation again supported more than 70 young talents – life science students, student teachers and apprentices – with fellowships for projects they applied for within the annual Bayer Fellowship Program. By focusing on equity, the jury achieved a well-balanced selection of fellows regarding gender and origin from LMICs.

The foundation's Science@School program for STEM education was significantly restructured in 2022. The new structure opened the doors for younger school students, and especially girls, to enter the program.

To reward individuals who play a key role in promoting science in public discourse and thus counteracting misinformation, the newly established Ernst-Ludwig Winnacker Award was bestowed for the first time in 2022. In addition to the €3,000 award money, the winner has access to up to €10,000 for future activities that enhance the impact of science for the benefit of society.

Bayer Cares Foundation

The Bayer Cares Foundation aims to catalyze advances in social innovation. It empowers social innovators as enablers of long-lasting change. It promotes social innovation in the areas of health, sustainable agriculture and nutrition, and environmental protection. The geographic focus lies on

sub-Saharan Africa, including a strong women empowerment agenda. The strategic direction and financial decisions are determined by the foundation's independent Executive Committee and Board of Trustees.

The foundation's activities comprise three main programs:

// The Social Impact Start-up Academy
// The Women Empowerment Award
// The Social Innovation Ecosystem Fund

To support initiatives at their development stage, the Social Impact Start-Up Academy offers an innovative learning program in collaboration with the Ingolstadt School of Management and Purdue University. Supported by innovation methodologies and toolboxes, students analyze selected social entrepreneurs' business models and generate concrete ideas to boost their growth or enhance their product development as an integral part of their master's program. Since its launch in 2018, 78 projects have been successfully supported through this program.

Through its Women Empowerment Award and the associated growth accelerator, the Bayer Cares Foundation highlights the high-impact innovations of female entrepreneurs in sub-Saharan Africa. 2022 saw the award presented for the second time. This was organized in partnership with "Get in the Ring," one of the world's largest SDG-related start-up competitions. Some 500 female entrepreneurs from 34 countries in sub-Saharan Africa applied for the 2022 awards. Five female entrepreneurs were chosen to receive prize money of €25,000.

The Bayer Cares Foundation's largest program, the Social Innovation Ecosystem Fund (SIEF), is a €20 million grant fund that invests directly in systemic change to drive progress in sustainable and climate-smart agriculture, access to health and improved nutrition in sub-Saharan Africa. The goal of the fund is to support market-creating innovations that empower underserved populations to lift themselves out of poverty. In 2021, with co-funding by the Bill and Melinda Gates Foundation, the Social Innovation Ecosystem Fund entered a collaboration with Mercy Corps AgriFin to enhance the digitization of products and services such as micro crop insurance, tropical weather forecasting and mobile banking for smallholder farmers in sub-Saharan Africa. Over the course of four years, the AgriFin Digital Farmer II program is aiming to reach five million smallholder farmers in the region (at least 40% of whom will be female), boosting their income productivity by at least 50%. As of September 2022, the collaboration had outperformed its impact goals, with roughly 1.7 million farmers already being served.

In the area of health, the Bayer Cares Foundation has joined forces with Medic and PATH to accelerate digital health entrepreneurship. With a two-year, €2 million investment from the Bayer Cares Foundation, PATH and Medic are launching the Digital Health Ecosystem (DHE) project.

The Bayer Cares Foundation aims to be a platform for connecting, engaging and collaborating with an ecosystem of multiple stakeholders. One example is the foundation's Social Innovation Day in Berlin in 2022, with the theme "Harvesting a Healthier Future," which aims to advance systems change through cross-sectoral collaboration.

Bayer Fund (United States)

The Bayer Fund is the philanthropic arm of Bayer in the United States. It makes charitable investments to strengthen the communities where Bayer's customers and employees live and work. The Bayer Fund's primary focus is to improve the quality of life in under-resourced urban and rural communities in the areas of nutrition security, STEM education and health. The Bayer Fund is a nonprofit, tax-exempt organization that is a separate legal entity from Bayer and is governed by articles of incorporation filed in the state of Missouri and laws that set out the basic principles of operation. The entity is managed and steered by Bayer representatives.

In 2022, the Bayer Fund provided grants to more than 2,700 nonprofit organizations supporting underserved communities. Grant recipients deliver high-impact programs that use comprehensive, sustainable approaches supporting access to nutritious foods, health and wellness, and STEM education and engagement programs. Building on the success of the Bayer Fund's initial three-year grant to Operation Food Search in St. Louis for their Fresh Rx Nourishing Healthy Starts program, we renewed our partnership to expand its impact and reach to a larger number of pregnant women and their households.

Bayer Foundation India

The Bayer Foundation India (BFI), a registered nonprofit organization, focuses on identifying new income opportunities in rural areas, designing women-centric approaches, working for the upliftment of aspirational districts, and delivering innovative technology-based solutions to close gaps in healthcare provision in the country. The three focus areas are: Rural Development, Preventive Healthcare, and Education & Community Engagement.

In 2022, the following programs were implemented:

Empowering Farmer Producer Organizations (FPOs) – A total of 42 young and relatively inactive Farmer Producer Organizations (FPOs) (the members of which are farmers) have been identified across seven states in India, with the goal of sustainably improving the livelihoods of smallholder farmers, strengthening their institutional capacity, providing market linkages, and promoting the adoption of recommended agronomy practices. The CSR program has reached out to about 33,500 farmers so far.

Telemedicine (digital health centers) – To assist local communities with access to the best healthcare practitioners, the BFI has set up 29 telemedicine centers in 12 aspirational districts across eight states. Each telemedicine center is expected to cater to at least 25–35 villages.

Atal Tinkering Labs – Encouraging science education among school students. To support the Government of India's flagship initiative, create and promote a culture of innovation and entrepreneurship and inculcate a love for science among school students, BFI has adopted 75 Atal Tinkering Labs (ATLs) across six states in India. Over 24,000 students are part of this initiative.

COVID-19 – Our long-term efforts. BFI collaborated with partners to create awareness among communities about the importance of vaccination and registered over 38,000 people willing to be vaccinated across five states in India. BFI has also set up oxygen plants to meet the critical healthcare needs of citizens and strengthen rural and underserved healthcare facilities in the country. This initiative will support the medical oxygen requirements of over 670,000 community members.

Further Information

Selected Benefits for Employees (by Country)

As part of our Total Rewards Package, we offer our employees various benefits respecting local market needs and conditions. The following overview highlights the most relevant plans concerning leaves, health and insurances in countries with more than 685 employees; it is not a complete list of all benefit programs in place. Many local benefits reflect the cultural background in a country or the country's legal requirements. Not every benefit is available in every location within a country or to every employee (e.g. working remotely is not available for employees working in production).

Countries/ Benefits	FTE (2022)	Maternity leave[1]	Paternity leave[1]	Childcare[2]	Lactation options[3]	Elderly care[4]	Sabbatical (unpaid leave)	Education/Exam leave	Leave for social/ other volunteering	Other leaves[5]	Flexible working hours[6]	Working remotely[6]	Worktime reduction (full-/part-time) possible[7]	Health and well-being programs[8]	Sports and recreation[9]	Employee assistance programs[10]	Health insurance[11]	Life/Accident insurance	Disability insurance
Germany	22,228	X	X	X	–	X	X	X	–	X[12]	X	X	X	X	X	X	X	X	–
USA	18,559	X	X	X	X	X	–	X	X	X	X	X	X	X	X	X	X	X	X
China	7,906	X	X	–	X	–	X	–	X	X	X	X	–	X	X	X	X	X	X
Brazil	5,154	X	X	X	–	–	–	–	–	X	X	X	–	X	X	X	X	X	X
India	4,806	X	–	X	–	–	–	–	–	X	X	X	–	X	X	–	X	X	–
Mexico	4,082	X	X	X	X	–	–	–	–	X	X	X	–	X	X	X	X	X	–
France	2,774	X	X	X	–	–	–	–	–	X	X	X	X	X	X	–	X	X	–
Japan	2,481	X	X	X	X	X	–	–	X	X	X	X	X	X	X	–	X	X	X
Spain	2,293	X	X	–	X	–	X	X	–	X	X	X	X	X	X	–	X	X	X
Argentina	1,914	X	X	X	–	–	–	X	–	X	X	X	–	X	X	–	X	X	–
Philippines	1,906	X	X	–	X	–	–	X	–	X	X	X	–	X	X	–	X	X	X
Russia	1,742	X	X	–	X	–	–	X	–	X	X	X	X	X	X	X	X	X	X
Italy	1,485	X	X	–	–	X	X	X	–	X	X	X	X	X	–	X	X	X	X
Poland	1,466	X	X	–	X	–	–	–	X	X	X	X	X	X	X	X	X	X	X
Switzerland	1,448	X	X	X	X	X	X	X	–	X	X	X	X	X	X	X	X	X	X
Canada	1,203	X	X	X	–	X	–	–	–	X	X	X	–	X	X	X	X	X	X
Finland	1,020	X	X	–	–	–	–	–	–	X	X	X	–	X	X	–	X	X	–
Netherlands	1,008	X	X	–	X	–	X	X	–	X	X	X	X	X	X	X	X	X	X
Turkey	1,006	X	X	–	X	–	–	X	–	X	X	X	–	X	X	–	X	X	X
Indonesia	990	X	X	–	X	–	X	–	–	X	X	X	–	X	X	–	X	X	X
Costa Rica	972	X	X	–	–	–	–	–	–	X	X	X	–	X	–	–	X	X	X
Belgium	945	X	X	–	–	X	–	X	–	X	X	X	X	X	–	X	X	X	X
UK	810	X	X	–	X	–	X	X	X	X	X	X	X	X	X	X	X	X	X
Thailand	710	X	–	–	–	–	–	–	–	X	X	X	–	X	–	X	X	X	X
Australia	689	X	X	–	X	–	X	–	X	X	X	X	X	X	X	X	X	X	X

[1] Length of parental leave (maternity/primary or paternity/secondary) and financial support vary by country; fully paid, partly paid (company and/or government funded), unpaid leave (paternity leave) or combination possible; at least in compliance with statutory requirements; in some countries adoption leaves or additional unpaid leave for childcare possible

[2] Details vary by country, may include company-owned childcare facilities (kindergarten), contracts with childcare facilities, discounted childcare, financial support to childcare, childcare during holidays/back-up childcare

[3] Details vary by country, may include lactation rooms on-site, lactation/breastfeeding time

[4] Details vary by country, may include leave for taking care of close relatives, back-up care

[5] Details vary by country, may include paid or unpaid leave for family duties, marriage, military or civic duties, pilgrimages, emergency situations, compassionate leave

[6] Details vary by country, may not be offered to employees in production facilities or field staff

[7] Details vary by country, may include worktime reduction due to childcare or due to age

[8] Details vary by country, may include health examinations, checkups, personal health assessment, health coaching, free or subsidized vaccination

[9] Details vary by country, may include on-site sport facilities or classes, subsidized gym or gym classes, newsletter on health, fitness and mental health

[10] Details vary by country, may include counseling service (personal or telephone) for employees who need assistance (e.g. personal issues, family, job-related, financial), in some countries also available for family members

[11] Details vary by country, includes basic health insurance, where no public health insurance system is in place, additional topics may be covered e.g. dental, vision, hospitalization, pharmacy; in some countries dependents are also covered

[12] Germany: various programs including: "Family and work": possible termination of contract for seven years with guarantee of re-employment; BayZeit: exemption from work for at least one month (care of children or close relatives or qualification measures); FreiZeit: option to buy a week of free time in addition to vacation from the Company Bonus (managerial employees)

Limited Assurance Report of the Independent Practitioner Regarding the Sustainability Reporting

To Bayer Aktiengesellschaft, Leverkusen, Germany

Engagement

As requested, we have performed a limited assurance engagement on the information in the sustainability report 2022 for the period from January 1 to December 31, 2022 (hereafter referred to as "sustainability report" or "sustainability reporting") of Bayer Aktiengesellschaft, Leverkusen/Germany, (hereafter referred to as "the Company").

We do not express a conclusion on the external sources of documentation, interviews or expert opinions stated in the sustainability reporting.

Responsibilities of the Executive Directors

The executive directors of the Company are responsible for the preparation of the sustainability report in accordance with the principles stated in the Sustainability Reporting Standards of the Global Reporting Initiative (hereafter referred to as "GRI Principles").

These responsibilities of the executive directors include the selection and application of appropriate methods for sustainability reporting and the use of assumptions and estimates for individual disclosures which are reasonable under the given circumstances. In addition, the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of a sustainability report that is free from material misstatement, whether due to fraud or error.

The preciseness and completeness of environmental data in the sustainability report is subject to inherent restrictions resulting from the way how the data was collected and calculated and from assumptions made.

Independence and Quality Assurance of the Independent Practitioner

We have complied with German professional regulations on independence and other professional conduct requirements.

Our auditing firm applies the national legal regulations and professional pronouncements – in particular the Professional Charter for German Public Auditors and German Sworn Auditors (Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer) as well as the Quality Assurance Standard: Quality Assurance Requirements in Audit Practices (IDW QS 1) promulgated by the Institut der Wirtschaftsprüfer (IDW) – and accordingly maintains a comprehensive quality assurance system that includes documented regulations and measures relating to compliance with professional conduct requirements, professional standards and relevant statutory and other legal requirements.

Responsibilities of the Independent Practitioner

Our responsibility is to express a conclusion on the information in the sustainability report based on our work performed within our limited assurance engagement.

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

Our audit firm applies the Quality Assurance Standard: Quality Assurance Requirements in Audit Practices (IDW QS 1) promulgated by the Institut der Wirtschaftsprüfer (IDW). We have fulfilled the professional responsibilities in accordance with the German Public Auditor Act (WPO) and the Professional Code of Conduct for German Public Auditors and Sworn Auditors (BS WP/vBP) including the requirements on independence.

We conducted our work in accordance with the International Standard on Assurance Engagements 3000 (Revised): Assurance Engagements Other than Audits or Reviews of Historical Financial Information (ISAE 3000 (Revised)), developed and approved by the IAASB. This standard requires that we plan and perform the assurance engagement so that we can conclude with limited assurance that no matters have come to our attention to cause us to believe that the information in the sustainability report of Bayer Aktiengesellschaft for the period from January 1 to December 31, 2022 has not been prepared, in all material respects, in accordance with the GRI Principles. The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement; consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. The choice of assurance work is subject to the practitioner's professional judgment.

Within the scope of our limited assurance engagement, which we performed between October 2022 and February 2023, we performed, among others, the following procedures and other work:

- // Gaining an understanding of the structure of the sustainability organization, and of the stakeholders' engagement
- // Remote site audits for Bergkamen, Berlin, Dormagen, Frankfurt, Leverkusen and Wuppertal (all Germany), Antwerp (Belgium), Muttenz (Switzerland), Vapi (India) as well as Itaí, São José dos Campos, Campo Verde, Paracatu and Uberlândia (Brazil), Zárate (Argentina), Orizaba (Mexico), Maria Eugenia Rojas (Colombia) and Berkeley, Constantine, Grinnell, Kansas City, Kearney, Kunia, Molokai, Luling, Muscatine, Rock Springs, Soda Springs, St. Louis and Waco (USA) as part of an investigation into the processes for collecting, analyzing and aggregating selected data
- // Inquiries of relevant personnel involved in the preparation of the sustainability report about the preparation process and about the internal control relating to this process
- // Identification of potential risks of material misstatement concerning the information in the sustainability report
- // Analytical evaluation of the information in the sustainability report
- // Comparison of disclosures with corresponding data in the consolidated financial statements, the annual financial statements and the combined management report
- // Assessment of the presentation of the information

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Practitioner's Conclusion

Based on the work performed and the evidence obtained, nothing has come to our attention that causes us to believe that the information in the sustainability report 2022 of Bayer Aktiengesellschaft, Leverkusen/Germany, for the period from January 1 to December 31, 2022 has not been prepared, in all material respects, in accordance with the GRI Principles.

We do not express a conclusion on the external sources of documentation, interviews or expert opinions stated in the sustainability reporting.

Restriction of Use and Reference to Limitation of Liability

We issue this report as stipulated in the engagement letter agreed with Bayer Aktiengesellschaft. We are liable solely to Bayer Aktiengesellschaft, Leverkusen/Germany, and our liability is governed by the engagement letter agreed with the Company as well as the "General Engagement Terms for Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften (German Public Auditors and Public Audit Firms)" (IDW-AAB) in the version dated January 1, 2017. We draw attention to the fact that the assurance engagement was performed for the purposes of Bayer Aktiengesellschaft and the report is solely designed for informing Bayer Aktiengesellschaft about the findings of the assurance engagement. Therefore, it may not be suitable for another than the aforementioned purpose. Hence, this report should not be used by third parties as a basis for any (asset) decision. We are responsible solely to the Company. However, we do not accept or assume any responsibility to third parties.

Our conclusion was not modified in this respect.

Munich/Germany, February 27, 2023

Deloitte GmbH
Wirtschaftsprüfungsgesellschaft

Michael Mehren
Wirtschaftsprüfer
(German Public Auditor)

Sebastian Dingel

GRI Content Index with the 10 Principles of the UN Global Compact

For fiscal 2022, we are again applying the GRI standards. This report has been prepared in accordance with the GRI Standards. If there is insufficient information available for a GRI disclosure, we have explained this. The GRI Content Index also includes the corresponding principles of the UNGC.

Statement of use	Bayer has reported in accordance with the GRI Standards for fiscal 2022 in the period January 1 to December 31, 2022.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	–

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 2: General Disclosures 2021		
	The Organization and its Reporting Standards		
	GRI 2-1: Organizational details	20; AR 25, 33	
	GRI 2-2: Entities included in the organization's sustainability reporting	4; AR 171	
	GRI 2-3: Reporting period, frequency and contact point	4	
	GRI 2-4: Restatements of information	4	
	GRI 2-5: External assurance	4, 134, 135	
	Activities and Workers		
	GRI 2-6: Activities, value chain and other business relationships	20–21, 78; AR 32	
6	GRI 2-7: Employees	89, 90, 98	We do not report on employees with nonguaranteed working hours. We are checking whether appropriate information will be available for the 2023 reporting year.
6	GRI 2-8: Workers who are not employees	91	
	Governance		
	GRI 2-9: Governance structure and composition	22, 31, 93; AR 17–20, 130, 131, 294–296	
	GRI 2-10: Nomination and selection of the highest governance body	AR 19, 4.1 129, 130	

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 2-11: Chair of the highest governance body	22; AR 22	
	GRI 2-12: Role of the highest governance body in overseeing the management of impacts	17, 22; 31, 32, 83; 13–18	
	GRI 2-13: Delegation of responsibility for managing impacts	31, 32	
	GRI 2-14: Role of the highest governance body in sustainability reporting	31; 17, 18, 28	
	GRI 2-15: Conflicts of interest	AR 130, 131, 134	
	GRI 2-16: Communication of critical concerns	17, 22, 31, 32; AR 14–16, 20	
	GRI 2-17: Collective knowledge of the highest governance body	AR 13, 14, 132, 133	
	GRI 2-18: Evaluation of the performance of the highest governance body	AR 21	
	GRI 2-19: Remuneration policies	24, 25, 32, 100; AR 263, 268, 269, 273, 284–287	
	GRI 2-20: Process to determine remuneration	AR 14–16, 19	
	GRI 2-21: Annual total compensation ratio	AR 291	
	Strategy, Policies and Practices		
1–10	GRI 2-22: Statement on sustainable development strategy	3	
1–6, 7, 10	GRI 2-23: Policy commitments	22, 24–26, 79, 83, 88	
	GRI 2-24: Embedding policy commitments	25, 26, 32, 79–82, 83, 84, 88	
	GRI 2-25: Processes to remediate negative impacts	27, 79, 85	
	GRI 2-26: Mechanisms for seeking advice and raising concerns	27, 79, 85	
	GRI 2-27: Compliance with laws and regulations	AR 14–16, 117, 162, 163, 176, 206, 226–231	
	GRI 2-28: Membership associations	30, 48, 103, 122	
	Stakeholder Engagement		
	GRI 2-29: Approach to stakeholder engagement	17, 22, 32–36, 87, 97	
3	GRI 2-30: Collective bargaining agreements	99	
	Material Topics		
	GRI 3: Material Topics 2021		
	GRI 3-1: Process to determine material topics	32, 33	
	GRI 3-2: List of material topics	33	
	Climate Protection		
7-9	GRI 3-3: Management of material topics	7, 15, 41–43, 79, 100–107, 110, 111	
	GRI 201: Economic Performance 2016		
7, 8, 9	GRI 201-2: Financial implications and other risks and opportunities due to climate change	41–43, 103–106; www.bayer.com/tcfd,	

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
		www.bayer.com/CDP-Climate	
	GRI 302: Energy 2016		
7, 8	GRI 302-1: Energy consumption within the organisation	109	
8	GRI 302-3: Energy intensity	109	
8	GRI 302-4: Reduction of energy consumption	109; www.bayer.com/CDP-Climate	
	GRI 305: Emissions 2016		
7, 8	GRI 305-1: Direct (Scope 1) GHG emissions	107	
7, 8	GRI 305-2: Energy indirect (Scope 2) GHG emissions	107	
7, 8	GRI 305-3: Other indirect (Scope 3) GHG emissions	108	
8	GRI 305-4: GHG emissions intensity	108	
8, 9	GRI 305-5: Reduction of GHG emissions	107, 108	
	Environmental Protection		
7-9	GRI 3-3: Management of material topics	7, 15, 38, 39, 58, 62–68, 102, 110–118	
	GRI 303: Water and Effluents 2018		
7, 8	GRI 303-1: Interactions of water as a shared resource	113-116	
7, 8	GRI 303-2: Management of water discharge-related impacts	114	
8	GRI 303-3: Water withdrawal	113, 114	
8	GRI 303-4: Water discharge	115	
8	GRI 303-5: Water consumption	114	
	GRI 304: Biodiversity 2016		
8	GRI 304-1: Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	65	
7–9	GRI 304-2: Significant impacts of activities, products and services on biodiversity	38, 39, 58, 62–68, 102	
	GRI 305: Emissions 2016		
7, 8	GRI 305-6: Emissions of ozone-depleting substances (ODS)	112	
7, 8	GRI 305-7: Nitrogen oxides (NO_X), sulfur oxides (SO_X) and other significant air emissions	112	
	GRI 306: Waste 2020		
8	GRI 306-1: Waste generation and significant waste-related impacts	64, 116, 117	
8	GRI 306-2: Management of significant waste-related impacts	64, 116, 117	
8	GRI 306-3: Waste generated	116	
8	GRI 306-4: Waste diverted from disposal	116	
8	GRI 306-5: Waste directed to disposal	116, 117	

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	Innovation		
	GRI 3-3: Management of material topics	34, 38, 40, 54, 55, 57, 58, 97, 129, 130; AR 48–69	
	Business Ethics		
10	GRI 3-3: Management of material topics	25–30	
	GRI 205: Anti-corruption 2016		
10	GRI 205-1: Operations assessed for risks related to corruption	26, 27	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	27	We do not report quantitatively on training for the Board of Management and Supervisory Board because data on this is not available in accordance with the requirements of the GRI. Anti-corruption training for employees is implemented globally. We are checking the information by region for the 2023 reporting year.
	GRI 206: Anti-competitive Behavior 2016		
10	GRI 206-1: Legal actions for anti-competitive behavior, anti-trust and monopoly practices	226, 228	
	GRI 207: Tax 2019		
	GRI 207-1: Approach to tax	30	
	GRI 207-2: Tax governance, control, and risk management	30	
	GRI 207-3: Stakeholder engagement and management of concerns related to tax	30	
	GRI 207-4: Country-by-Country Reporting		We do not report any country-by-country information, since this data is not available for 2022. We are examining the possibilities for collecting the corresponding data.
	GRI 415: Public Policy 2016		
10	GRI 415-1: Political contributions	29	
	GRI 418: Customer Privacy 2016		
	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 and the percentage of confirmed compliance incidents. We internally record the precise reason for the grievance, track how it is followed up and take corresponding action in line

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
			with our Group regulation. More detailed information on this would constitute a business secret.
	Product Responsibility		
7	GRI 3-3: Management of material topics	46–62, 68–73	
	GRI 416: Customer Health and Safety 2016		
	GRI 416-1: Assessment of the health and safety impacts of product and service categories	46–62, 68–73	
	GRI 416-2: Incidents of non-compliance concerning the health and safety impacts of products and services	59, 60; AR 8, 14–16, 226–228	
7	GRI 417: Marketing and Labeling 2016		
7	GRI 417-1: Requirements for product and service information and labeling	46–54, 56–61, 63–64, 68, 71, 72	
	GRI 417-2: Incidents of non-compliance concerning product and service information and labeling	AR 8, 14-16, 226–228	
	GRI 417-3: Incidents of non-compliance concerning marketing communications	226, 229	
	Sustainable Food Security		
	GRI 3-3: Management of material topics	5–7, 13–16, 37–45	
	Access to Health Care		
	GRI 3-3: Management of material topics	5–7, 8–12, 16, 74–77	
	Employees		
1, 3, 6	GRI 3-3: Management of material topics	6, 7, 88, 92–99	
	GRI 201: Economic Performance 2016		
	GRI 201-3: Defined benefit plan obligations and other retirement plans	95; AR 197–205	
	GRI 202: Market presence 2016		
6	GRI 202-1: Ratios of standard entry level wage by gender compared to local minimum wage	94	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	92	
	GRI 401: Employment 2016		
6	GRI 401-1: New employee hires and employee turnover	90, 91	
	GRI 401-2: Benefits provided to full-time employees that are not provided to temporary or part-time employees	94, 95, 133	
6	GRI 401-3: Parental leave	98	
	GRI 402: Labor/Management Relations 2016		

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UNGC Principles	GRI Standards	Page and/or link	Comment
3	GRI 402-1: Minimum notice periods regarding operational changes	97	
	GRI 404: Training and Education 2016		
6	GRI 404-1: Average hours of training per year per employee	96	
	GRI 404-2: Programs for upgrading employee skills and transition assistance programs	91, 95, 96	
6	GRI 404-3: Percentage of employees receiving regular performance and career development reviews	96, 97	
	GRI 405: Diversity and Equal Opportunity 2016		
6	GRI 405-1: Diversity in governance bodies and employees	89, 91–93; AR 130, 131	
6	GRI 405-2: Ratio of basic salary and remuneration of women to men	94	
	GRI 406: Non-discrimination 2016		
6	GRI 406-1: Incidents of discrimination and corrective actions taken	27	We do not report on the number of incidents of discrimination. We report on the total number of notifications registered with the compliance hotline and the percentage of confirmed compliance incidents. We internally record the precise reason for the grievance, track how it is followed up and take corresponding action in line with our Group regulation. More detailed information on this would constitute a business secret.
	Supplier Management		
1-8	GRI 3-3: Management of material topics	78–82, 86, 87	
	GRI 204: Procurement practices 2016		
	GRI 204-1: Proportion of spending on local suppliers	78	
	GRI 308: Supplier Environmental Assessment 2016		
7, 8	GRI 308-1: New suppliers that were screened using environmental criteria	80, 81	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.
7, 8	GRI 308-2: Negative environmental impacts in the supply chain and actions taken	80-82	
	GRI 414: Supplier Social Assessment 2016		
1–6	GRI 414-1: New suppliers that were screened using social criteria	80, 81	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.
1–6	GRI 414-2: Negative social impacts in the supply chain and actions taken	80–82, 86, 87	
	Human Rights		
2-5	GRI 3-3: Management of material topics	7, 83–87	
	GRI 407: Freedom of Association and Collective Bargaining 2016		

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UNGC Principles	GRI Standards	Page and/or link	Comment
2, 3	GRI 407-1: Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	80, 81, 83–86, 99	
	GRI 408: Child Labor 2016		
2, 5	GRI 408-1: Operations and suppliers at significant risk for incidents of child labor	80, 81, 83–87	
	GRI 409: Forced or Compulsory Labor 2016		
2, 4	GRI 409-1: Operations and suppliers at significant risk for incidents of forced or compulsory labor	80, 81, 83–86	
	Safety		
1	GRI 3-3: Management of material topics	99, 110–112, 118–124	
	GRI 403: Occupational Health and Safety 2018		
	GRI 403-1: Occupational health and safety management system	110, 111, 118	
	GRI 403-2: Hazard identification, risk assessment and incident investigation	99, 118	
	GRI 403-3: Occupational health services	99, 118, 119	
	GRI 403-4: Worker participation, consultation and communication on occupational health and safety	99, 118, 119	
	GRI 403-5: Worker training on occupational health and safety	118, 119	
	GRI 403-6: Promotion of worker health	91, 99, 119	
	GRI 403-7: Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	46, 120, 121–124	
	GRI 403-8: Workers covered by an occupational health and safety management system	110, 111	The Group Regulation on HSE Management and HSE Key Requirements applies to all Bayer employees and all contractors directly supervised by Bayer. Our global HSE management system is audited internally. We do not report on the number and percentage of workers covered by a management system according to an internationally recognized standard since we use the energy consumption of environmentally relevant sites as a reference parameter.
	GRI 403-9: Work-related injuries	119, 120	We do not report separately on work-related injuries with serious consequences. These are included in the data.
	GRI 403-10: Work-related ill health	119, 120	
	GRI 413: Local Communities 2016		
1	GRI 413-2: Operations with significant actual and potential negative impacts on local communities	110, 121–124	
	Stakeholder and Community Engagement		
1	GRI 3-3: Management of material topics	21, 74–77, 125–131	
	GRI 201: Economic Performance 2016		
	GRI 201-1: Direct economic value generated and distributed	21, 125	
	GRI 203: Indirect economic impacts 2016		

GRI Content Index

UNGC Principles	GRI Standards	Page and/or link	Comment
	GRI 203-1: Infrastructure investments and services supported	74–77, 125–131	,
	GRI 203-2: Significant indirect economic impacts	21, 30, 39	
	GRI 413: Local Communities 2016		
1	GRI 413-1: Operations with local community engagement, impact assessments, and development programs	34, 98, 125, 130	

AR = Bayer Annual Report 2022

Glossary

A

Additionality
Offsetting projects aimed at reducing greenhouse gases must ensure that their reduction, prevention or storage of emissions occurs additionally. This means that the project's climate protection measure would not have occurred without the expected revenue from the sale of emissions certificates. The technical term for this is the additionality of emissions reductions. Furthermore, the emissions reduction measure must be conducted on an ongoing basis.

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)
is the world's most renowned corruption indicator. It is compiled by the International Secretariat of the NGO Transparency International and has listed countries according to their perceived levels of public sector corruption since 1995. The CPI 2020 comprises 180 countries.

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, and 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. This includes 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, such as the Bayer Cares Foundation's Social Innovation Ecosystem Fund.

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.

G

GHG (Greenhouse Gas) Protocol
The Greenhouse Gas Protocol is an internationally recognized tool for recording, quantifying and reporting greenhouse gas emissions. Its standards cover all emissions along the 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 Accounting and Reporting Standard (Scope 3), which covers further indirect emissions along the value chain. Dual reporting was introduced for indirect (Scope 2) emissions. 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.

GxP (Good x Practice) is the umbrella term covering all rules for "good working practice." The "x" in the middle is replaced by the relevant abbreviation for the field of application involved.

H

Herbicide-tolerant plants are resistant to the mechanism of action of a herbicide.

L

LMICs (low- and middle-income countries)
According to the World Bank, these include low- and middle-income economies (low/lower middle/upper middle) with a GNI per capita maximum income ranging from US$1,036 /4,035/ to US$12,535 (based on 2019 figures, calculated according to the World Bank Atlas method).

R

3Rs principle in animal welfare (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 to the animals.

S

Significant locations of operation
A selection of countries that accounted for more than 80% of total Bayer Group sales in 2022 (Argentina, Australia, Brazil, Canada, China, France, Germany, Italy, Japan, Mexico, Russia, Spain, Switzerland, the United Kingdom and the United States).

Masthead

Published by
Bayer AG, 51368 Leverkusen, Germany

Date of publication
Tuesday, February 28, 2023

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