The world is changing at a rapid pace — more and more urgently than ever, solutions are needed for a more sustainable future. Chemistry plays a key role here. In almost all areas of life, it can help overcome pressing global challenges with innovative products and technologies — from climate change and using resources more sparingly to feeding the world's population. This belief is expressed in our corporate purpose and is what motivates us day in and day out: We create chemistry for a sustainable future.

Our corporate purpose
We create chemistry for a sustainable future

Our mission and motivation is to grow profitably and make a positive contribution to society and the environment. For example, BASF’s solutions contribute to climate protection and help to prevent or recycle waste, produce healthy and affordable food, and enable climate-smart mobility.

At the same time, as an energy and resource-intensive company, we are facing what is probably the biggest transformation in our over 150-year history: The shift toward a carbon-neutral and circular economy and the associated landmarks such as the European Green Deal demand from us new concepts and approaches — for the way we produce, for our raw material base and for our energy supply.

We also see these disruptive changes as an opportunity. As the world’s largest chemical company, we want to lead the way and actively and responsibly shape the change. That is why we are gradually switching our energy and raw material supplies to renewable sources. We are strengthening our Verbund structure as the basis for resource-efficient, safe and reliable production. We are developing pioneering low-carbon production processes for our products. We are accelerating our innovation processes and deepening cooperation with partners to develop high-performance products that also require fewer resources and have a lower carbon footprint. We are harnessing the many opportunities of digitalization. We are systematically aligning our portfolio with growth areas and future technologies, and are integrating sustainability into our value chains even more strongly. We create a working environment in which our employees can thrive and contribute to BASF's long-term success. This is how we live our corporate purpose.

For more information on our strategic action areas, see page 28 onward

Good to know
Net Zero Accelerator
The new Net Zero Accelerator unit started work on January 1, 2022. It bundles the extensive cross-company activities with which we want to achieve our ambitious climate protection targets. The unit will initially have around 80 employees and report directly to the Chairman of the Board of Executive Directors. It will focus on accelerating and implementing projects relating to low-CO2 production technologies, circular economy and renewable energies — driving forward BASF’s transformation to a climate-neutral company. In parallel, our operating divisions will continue to work on divisional-specific carbon reduction projects.

For more information on climate neutrality, see pages 27 and 126 to 132
In focus:

Our Journey to Climate Neutrality

Climate change is the greatest challenge of the 21st century. Swift and resolute action is needed to ensure that the targets agreed in the Paris Climate Agreement can be achieved. We stand by this responsibility. In many areas, products and innovations based on chemistry are the key to a climate-neutral future. At the same time, we are working intensively to significantly reduce the carbon footprint of our production and thus of our products.

Our target: net zero emissions by 2050. We have set ourselves an ambitious milestone on this path. By 2030, we want to reduce the greenhouse gas emissions from our production sites and our energy purchases by 25% compared with 2018 – while growing production volumes. This corresponds to a decrease of around 60% compared with 1990. We are intensely pursuing our climate protection targets with investments of up to €4 billion by 2030. Our focus here is on five strategic levers: We are increasingly meeting our energy needs from renewable sources (gray-to-green lever). We are increasingly relying on energy recovery to produce steam (power-to-steam lever). We are working to further improve the energy and process efficiency of our plants (continuous opex lever). We are increasingly replacing fossil resources with bio-based raw materials (bio-based feedstocks lever). And together with partners, we are pioneering nearly carbon-free production processes, especially for emission-intensive basic chemicals (new technologies lever).

We want to play an active and responsible role in shaping the transition toward a climate-neutral society. This calls for new ways of thinking and working together. And it needs a political and regulatory environment that promotes innovation in climate protection, makes it possible to develop new, climate-smart processes that are competitive internationally and, above all, resolutely drives forward the expansion of renewable energies – including through the appropriate land use designations, rapid planning and approval procedures and the swift expansion of grid infrastructure.

One thing is clear: The transformation will require significantly more energy from renewable sources. Initial estimates suggest that at the Ludwigshafen site in Germany alone, we would need to roughly triple or quadruple our current electricity use (2021: 6.0 TWh) to fully implement new, low-carbon electricity-based production processes. To meet this demand, we are investing in our own power assets, especially for wind power, and are increasingly buying green electricity on the market (make & buy approach).

Also critical to success are prices for renewable energy. Substituting fossil fuels is only economically feasible at production costs of 4 to 5 cents/kWh. Consequently, there is an urgent need to expand supply and reduce the levies and fees on electricity prices. In addition, globally comparable carbon pricing – or at least at G20 level – is needed to ensure that climate-friendly processes are competitive internationally.

For more information on energy and climate protection, see page 126 onward
For more information on raw materials, see page 112 onward

Our global climate protection targets

-25%
Reduction in our greenhouse gas emissions by 2030 compared with 2018 (Scope 1 and 2)

Net zero
Greenhouse gas emissions by 2050 (Scope 1 and 2)
Our customers are our number one priority and are at the heart of our strategy. We want to be their most attractive partner for challenges that can be solved with chemistry. BASF supplies products and services to around 90,000 customers from almost all sectors and countries around the world. Our customer portfolio ranges from major global customers and small and medium-sized enterprises to end consumers. Our comprehensive product portfolio means that we are active in many value chains and value creation networks. We use various business strategies, which we adapt to the needs of individual industries and markets. These range from cost leadership in basic chemicals to tailored system solutions for specific customer applications.

Selected awards
- Ford: World Excellence Award
- Dulux: Supplier of the Year Award
- 3M: Supplier of the Year Award

We continue to drive forward our customer focus. We have refined our organizational structure to enable our operating divisions to flexibly address specific market requirements and differentiate themselves from the competition.

We are also improving our customer relationships with a range of measures. For example, since 2019 we have been using the Net Promoter System worldwide to systematically record and optimize our problem-solving skills, product quality and delivery reliability based on direct customer feedback. We have been using a new IT-based customer relationship management system, Salesforce, since 2020. The application helps our sales employees to provide customer support and simplifies their work. Above and beyond this, we have intensified cooperation with our customers to leverage innovation and growth potential together with them. For instance, we established interdisciplinary teams in our business units to even better and more quickly address the needs of our most important customers.

BASF’s strategic orientation is founded on a comprehensive analysis of our markets and competitors. We continuously monitor global trends and anticipate the resulting growth opportunities and risks. The following six strategic focus areas enable us to focus on our customers while strengthening our leading position in an increasingly volatile and competitive environment.

Innovation
Innovation is the bedrock of our success. BASF is a leader in the chemical industry with around 10,000 employees in research and development and R&D spending of around €2.2 billion. We are expanding this position by strengthening specific research activities, for example in battery materials, polymer technologies, catalyst processes or biotechnological methods. In addition, we are bringing research and development even closer together, incorporating our customers’ requirements into our innovation processes even earlier and more intensively, and expanding cooperation with customers, universities, research institutions and other partners. To further strengthen our innovation power, we will reorganize our global research activities in 2022 and bundle them in a global research unit based in Ludwigshafen, Germany.

Our innovation pipeline is geared to sustainability – especially climate protection and the circular economy. This lays the foundation for future growth: We are working intensively on fundamental innovations for products, processes and business models, for example in the chemical recycling of plastics, battery and catalyst technologies, low-carbon production of basic chemicals, and digital.

Good to know

The virtual car
The automotive industry is one of our most important customer sectors. In February 2021, we launched an interactive platform that showcases BASF’s wide range of solutions and innovation expertise in mobility: Customers can explore over 500 application areas in a new virtual car – from high-performance plastics and coatings to automotive fluids, catalysts, cathode materials and more. Detailed information is provided on all products and solutions. The virtual car offers a selection of different powertrain technologies: combustion engine, plug-in hybrid, battery electric vehicle and fuel cell vehicle. E-mobility solutions can also be filtered by material properties such as battery efficiency, corrosion protection or thermal protection. Discover the virtual car at basf-vcar.com

1 The number of customers refers to all external companies (sold-to parties) that had contracts with the BASF Group in the business year concerned under which sales were generated.
more environmentally friendly agriculture. At the same time, we are driving forward product improvements in all business units that offer our customers sustainability and competitive advantages, such as in lightweight construction and surface solutions for the automotive industry, bio-based and biodegradable active ingredients for the cosmetics, detergent and cleaner industries, and energy-efficient building materials.

We believe that the economy, environment and society are inextricably linked and interrelated. We want to create value in all three areas with our products, solutions and technologies. We pledged our commitment to sustainability in 1994 and since then, have systematically aligned our activities with the principles of sustainability. We want to further strengthen our position as a thought leader in sustainability. We see sustainability as an integral part of our strategy as well as our targets, steering processes and business models. This establishes us as a responsible and attractive partner supporting our customers, opens up new growth areas and secures the long-term success of our company. Our approach covers the entire value chain – from responsible procurement and safety and resource efficiency in production to sustainable solutions for our customers.

Since 1990, we have almost halved our carbon emissions while simultaneously doubling sales product volumes. By 2030, we want to reduce1 our absolute CO₂ emissions by 25% compared with 2018 and will invest up to €4 billion to this end. By 2050, we aim to achieve net zero emissions from our production sites and our energy purchases. We are pursuing ambitious climate protection targets with our carbon management. This comprises five strategic levers that we are systematically driving forward to reduce our greenhouse gas emissions (see page 27). To increase the share of renewables in our energy supply, for instance, we entered into pioneering cooperation agreements in 2021. For example, we hold a share in the Hollandse Kust Zuid offshore wind farm, which Vattenfall expects to commission in 2023. Together with RWE, we are developing a project concept for an offshore wind farm in the North Sea. In addition, we have signed long-term purchase agreements for renewable energy with suppliers such as Ørsted and Engie.

Another focus is our product portfolio. We already met our 2025 target of generating Accelerator sales of €22 billion in 2021. In the future, we want to align our product portfolio even more strongly with climate protection, carbon neutrality and circularity in order to meet the growing sustainability demands in our markets with innovative solutions. Consequently, we will update our product portfolio steering target in 2022.

We want to leverage the diverse growth potential of digitalization and seize the associated opportunities to the benefit of our customers. To achieve this, we promote digital skills among our employees, cooperate with partners and make digital technologies and ways of working an integral part of our business. For example, we had introduced augmented reality solutions at 340 plants worldwide as of the end of 2021. We plan to implement these at more than 80 other plants by the end of 2022.

Digitalizing our plants and systematically analyzing data enables us to further automate processes and in this way, increase the capacity, availability and efficiency of our plants, for example with predictive maintenance. Linking data from different sources and using artificial intelligence for smart data analysis opens up numerous opportunities for us to manage our business more efficiently and improve our processes, for example in logistics.

The combination of products, services and digital offerings also opens up new business models and advantages for our customers, such as in agriculture or 3D printing. In addition, digitalization enables us to further strengthen our innovative power. BASF has one of the most powerful supercomputers in the chemical industry – Quriosity. It can be used to significantly accelerate complex computational processes such as the simulation of molecules, enabling new chemical products to be developed more quickly, for example.

At the same time, we are already working on groundbreaking technologies such as quantum computing, including as a founding

1 In March 2021, we replaced our previous target of CO₂-neutral growth until 2030 (baseline 2018: 21.9 million metric tons of CO₂-e) with a new, more ambitious climate protection target to reduce absolute CO₂ emissions by 25% compared with 2018 (new target: 16.4 million metric tons of CO₂-e).
Porfolio

The acquisitions and divestitures made in the past few years have oriented our portfolio even more strongly toward innovation-driven growth areas. In 2021, we successfully integrated the polyamide business acquired from Solvay, further strengthening our position in engineering plastics. We closed the divestiture of our pigments business to the fine chemicals company DIC as planned in the first half of 2021. The sale of our shareholding in Solenis to Platinum Equity was also completed as planned in November 2021. We intend to close the divestiture of our kaolin minerals business to KaMin, announced in November 2021, in the second half of 2022, subject to the approval of the relevant merger control authorities.

We steer our six segments along our value chains. Our operating divisions drive forward our industry and customer orientation with differentiated strategies.

We are expanding our battery materials business with further investments and strategic partnerships and are developing innovative recycling concepts, in particular to supply the fast-growing global e-mobility market with sustainable solutions. We are currently building a precursor plant for cathode active materials1 in Harjavalta, Finland, and a production plant for cathode materials2 in Schwarzhheide, Germany. Both plants are scheduled for startup in 2022. In Schwarzhheide, we are also building a prototype plant for battery recycling, which is expected to start up in 2023.2 We also reached another important milestone in the development of a global value chain for battery materials with the formation of BASF Shanshan Battery Materials Co., Ltd. in China at the end of August 2021. With production facilities in all key regions and a global capacity of 160 metric kilotons of cathode materials from 2022 onward, we are able to serve cell manufacturers and OEM customers in all relevant markets with tailored and sustainable solutions. We also entered into a number of cooperative agreements in 2021, including with battery cell manufacturers such as CATL and SVOLT and automotive manufacturers such as Porsche. The aim is to jointly drive forward the development of innovative cathode materials and recycling technologies.

The Asian market will play a key role in our future growth. With a share of more than 45%, China is already the world’s largest chemical market and will be an even stronger driver of growth in global chemical production in the future. Our strong innovation, production and sales base in Asia, and in particular in China, enables us to respond to the needs of our customers in a differentiated way. To further strengthen our position in this dynamic growth market, we plan to build a second Verbund site in China, in Zhanjiang in the southern Chinese province of Guangdong. Construction on the first plants continued as planned in 2021. They are scheduled for startup in 2022. We will also expand the Verbund site we operate together with Sinopec in Nanjing, China, by 2023. This investment includes new production plants for selected products in the Petrochemicals and Intermediates divisions.

The transition to electromobility is leading to fundamental changes in the automotive industry. As a leading chemical supplier to the automotive industry, we will further strengthen our focus on battery materials and battery recycling. To this end, in January 2022, we started the carve-out process for our mobile emissions catalysts business, automotive catalysts recycling and the associated precious metal services unit. The new, standalone organizational structure prepares the business for the upcoming changes in the internal combustion engine market.

Employees

Our employees are key to BASF’s success. That is why we believe that it is important to have an inspiring working environment that fosters and develops employees’ individual talents and enables them and their teams to perform at their best. We are pursuing three action areas to make our high-performance organization even more so: empowerment, differentiation and simplification. At the same time, we encourage and promote a leadership culture that empowers our employees to respond to customer needs quickly and efficiently with a solution orientation. We value diversity in people, opinions and experience as being crucial to creativity and innovation.

We embrace bold ideas, help our employees to implement them and learn from setbacks. It is founded on an open feedback and leadership culture based on mutual trust, respect and dedication to top performance.

1 The investment in Finland is co-financed by Business Finland, the Finnish government organization for innovation funding and trade, travel and investment promotion.
2 Our investment and research activities in Schwarzhheide and Ludwigshafen, Germany, receive funding from the German Federal Ministry for Economic Affairs and Climate Action and the Ministry for Economic Affairs, Labor and Energy of the German state of Brandenburg under the IPC4E on Batteries (funding code 16BZF101A/B).
Our CORE values define how we want to work together – as a team, with our customers and our partners.

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

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

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

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

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

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

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

Good to know

CORE Leadership Values

Leaders have a special responsibility for our success, especially in challenging and changing times. Good leadership provides support and is vital to our employees’ motivation and performance. That is why we have derived specific leadership skills from each CORE corporate value – our CORE Leadership Values. They serve as guiding principles and describe our expectations of leadership behavior – such as living optimism, inspiring teams, promoting diversity and making even difficult decisions.

We support our leaders at every stage of their careers in fulfilling their responsibilities and acting as role models. One component of this is the CORE Leadership Upskilling program launched in 2021. It comprises a range of virtual training modules and learning resources that encourage self-reflection and provide opportunities for global dialog.

For more information on what we expect from our leaders, see page 98
The transition to a climate-neutral society is the greatest challenge of the coming decades. Many of our products and technologies are key to this transformation. For example, we are developing innovative battery materials, lightweight materials, and additives for climate-smart mobility. Catalysts and other emission control technologies from BASF reduce emissions in many applications. Materials from BASF make buildings more energy efficient and generating power from wind and solar energy possible. We help farmers reduce carbon emissions with our integrated offering of seeds, crop protection and digital solutions. We are continuously expanding our portfolio of climate protection products. At the same time, we are working hard to significantly reduce the carbon footprint of our production and our products in our carbon management.

Population growth and rising prosperity will increase demand for food, household and personal care products, drugs, clothing and much more. At the same time, consumer behavior is changing. Sustainability aspects are playing an increasingly important role in our value chains. Our innovative solutions for agriculture enable higher yields from the same land area, contributing to a food supply that meets diverse economic, environmental and social requirements. We offer food and feed manufacturers and customers in the pharmaceutical, cosmetics, detergents and cleaners industries a product portfolio focused on sustainability, which we are continually expanding with bio-based and biodegradable solutions.

Growing resource scarcity means that resources and materials must be used responsibly. We develop and market innovative technologies and products in a wide variety of areas to keep recyclable materials in circulation for as long as possible. Going forward, we will align our business models, products and processes even more strongly with the circular economy. For example, we are driving forward the chemical recycling of plastics and improving mechanical recycling with new products and technologies. Other action areas include the use of renewable and recycled raw materials and the recovery of metals from spent batteries and catalytic converters.

Digitalization and connectivity offer many opportunities to optimize our processes; maintenance work can be planned in advance, innovation processes accelerated or logistics concepts and customer relationships improved. In addition, new business models are opening up, for example in agriculture or with products for the electronics and semiconductor industries.

In the emerging countries of Asia and South America, we have an innovation, production and sales base that has grown over several decades. We are strengthening this position with further investments.

It is important for us to understand which global trends will shape the future. On this basis, we can identify opportunities, align our strategies and operations, monitor risks and create value added for our stakeholders.

In focus: 
Global Trends and Growth Opportunities for BASF
Chemicals

The Chemicals segment is at the heart of the Verbund. It reliably supplies BASF’s other segments with chemicals to produce higher value-added products. It also markets high-quality basic chemicals and intermediates to customers in downstream industries. In this way, the Chemicals segment makes a significant contribution to BASF’s organic growth.

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

Furthermore, we are constantly improving our global production structures and aligning these with regional market requirements. For example, we closed a production plant for butanediol in Kuantan, Malaysia, in 2021. We also plan to expand our 2-ethylhexanoic acid plant there, which is scheduled for startup in 2024.

Materials

The Materials segment develops new plastics applications, high-performance materials, systems and digital solutions. Our product portfolio is unique in the industry. We aim to grow mainly organically by differentiating ourselves from our competitors with our systems-oriented application expertise and industry knowledge, and creating maximum value in our isocyanate and polyamide value chains. Our advanced material simulation capabilities are a unique selling proposition in the industry and enable us to operate close to our customers.

Additional differentiators are our products that contribute to the circular economy and our more sustainable production processes. BASF is active in substantial parts of plastic value chains, from monomers to polymers and their formulated specialties. Combined with our specific technology knowledge, this offers us the unique ability to shape and close cycles ourselves. One concrete example is our pilot projects for recycling used mattresses: Based on a wet chemical process developed by BASF, precursors recovered from old mattresses can be used to produce new mattress-sized blocks of flexible polyurethane foam. Other examples include our ChemCycling™ project, biomass balanced products and certified...
compostable bioplastics. This also enables us to meet growing customer needs in all key markets.

Tailor-made service and product offerings enable us to continuously expand the range of applications in our portfolio. We operate close to our customers with our global production network.

**Industrial Solutions**

The Industrial Solutions segment markets and develops ingredients and additives for industrial applications. These include fuel and lubricant solutions, ingredients for paints and coatings, electronic materials and plastic additives. We concentrate on research and development and invest in the creation of innovations with the aim of enabling more efficient resource use. This is why we develop more sustainable products and processes, for example, in polymer dispersions, resins and plastic additives, and enable our customers to contribute to sustainability through their applications and processes. Other focus areas are efficient production setups, backward integration in our Production Verbund’s value chains, capacity management, and technology and cost leadership.

Our global presence enables us to operate close to our customers and their industries. As a reliable partner, we offer high-quality products at good value. We work on new solutions together with our customers and strive for long-term partnerships that create profitable growth opportunities for both parties. To achieve this, we draw on our innovative strength and our many years of experience and in-depth industry expertise. Through our in-depth application knowledge and technological innovations, we strengthen customer relationships in key industries such as the automotive, plastics and electronics industries.

**Surface Technologies**

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

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

The above trends mean that the automotive industry is currently undergoing a fundamental transformation. As one of the largest chemicals suppliers to this industry, we will, as announced in December 2021, further strengthen our focus on battery materials and recycling and pursue an ambitious growth plan. We will also establish a new entity (BASF Automotive Catalysts and Recycling) within the Catalysts division for mobile emissions catalysts, automotive catalysts recycling and associated precious metal services. The carve-out process started in January 2022. The new organizational structure will prepare the business for the upcoming changes in the internal combustion engine market and allow for future strategic options.

**Nutrition & Care**

In the Nutrition & Care segment, we strive to expand our position as a leading provider of nutrition and care ingredients for consumer applications. We aim to enhance our capabilities in areas such as biotechnology and broaden our portfolio with bio-based and biodegradable products. In this connection, BASF has entered into partnerships to further strengthen its position in the bio-based surfactants and actives market. One example is the technology cooperation with Holiferm Ltd, Manchester, United Kingdom. The focus here is on the development of fermentatively accessible glycolipids for home and personal care and industrial formulator applications.

Our enzymes business enables us to pursue a targeted, accelerated marketing strategy and expand our portfolio for natural and biotechnological products. Furthermore, we are investing in natural and biological substances. BASF’s biopharma business supports the biopharmaceutical industry by supplying the raw materials used to produce biological drugs.

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

**Agricultural Solutions**

Farming is fundamental given that by 2050, the world’s population is expected to increase by two billion people.¹ In the Agricultural Solutions segment, we believe that the way forward for agriculture is to find the right balance and create value for the environment, society and business. While the demand for food, feed, fiber and energy is growing, natural resources are limited. Agriculture is a key enabler in providing enough healthy, affordable food and responding to changing consumer behavior while reducing the impact on the environment.

¹ Source: U.N. World Population Prospects 2019
As one of the world’s leading agricultural solutions companies, we are committed to making a positive impact on sustainable agriculture and food systems. Our innovation-driven strategy for agriculture focuses on selected crops and their appropriate cultivation systems in specific regions. We integrate sustainability criteria into all business and portfolio decisions. In doing so, we help farmers achieve better yield – yield that is produced in ways that are recognized as valuable by society, are kind to the planet and enable farmers to produce economically.

We leverage our expertise in research and development and our deep understanding of the way individual growers manage their farms to provide offers across technologies. These include novel solutions for seeds, traits, crop protection and digital products, which we link intelligently. This enables us to offer farmers solutions tailored to their region and crop systems to safeguard yields, mitigate risks and fulfill societal requirements.
Targets and Target Achievement 2021

Business success tomorrow means creating value for the environment, society and business. That is why we have set ourselves ambitious targets along our entire value chain. We report transparently on our target achievement so that our stakeholders can track our progress. In order to grow profitably, we want to grow sales volumes faster than global chemical production, further increase our profitability, achieve a return on capital employed (ROCE) considerably above the cost of capital percentage and increase the dividend per share every year based on a strong free cash flow.

We also pursue broad sustainability targets. In this context, we significantly raised our CO₂ reduction target in 2021.² We want to strengthen the sustainability focus of our product portfolio and will update our portfolio steering targets in 2022.³ We also strive to strengthen the sustainability of our supply chains and use resources responsibly. We want to further improve safety in production. In addition, we aim to promote diversity within the company and create a working environment in which our employees feel that they can thrive and perform at their best.

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

For more information on financial indicators, see page 52 onward
For more information on sustainability along the value chain, see page 96 onward

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1. Dividend proposed by the Board of Executive Directors
2. Includes Scope 1 and Scope 2 emissions. In March 2021, we replaced our previous target of CO₂-neutral growth until 2030 (baseline 2018: 21.9 million metric tons of CO₂e) with a new, more ambitious climate protection target to reduce absolute CO₂ emissions by 25% compared with 2018 (new target: 16.4 million metric tons of CO₂e).
3. We already reached our 2025 sales target for Accelerator products in 2021. Consequently, we will update our product portfolio steering target over the course of 2022.
Increase the proportion of women in leadership positions with disciplinary responsibility to 30% by 2030

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

We regularly calculate the employee engagement level. The most recent survey was conducted in 2020. The next survey is planned for spring 2022.
Material Investments and Portfolio Measures

In addition to innovations, investments make a decisive contribution toward achieving our ambitious growth and climate protection goals. We use targeted acquisitions to supplement our organic growth. Our focus is on innovation-driven growth areas and sustainable technologies.

**At a glance**

€3.4 billion
Capex in 2021

€25.6 billion
Capex planned for 2022 to 2026

By investing in our plants, we create the conditions for the profitable growth we strive for and continuously improve the efficiency of existing production processes. Investments in new technologies and in the transformation of our energy supply will help to achieve our growth targets and our ambitious climate goals. For the period from 2022 to 2026, we are planning capital expenditures (capex) totaling €25.6 billion, including €12.9 billion for our major growth projects.2

For more information on our investments from 2022 onward, see page 150.

Investments and acquisitions 2021
Million €

<table>
<thead>
<tr>
<th>Investments</th>
<th>Acquisitions</th>
<th>Total</th>
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<tbody>
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<td>Intangible assets</td>
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<td>992</td>
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<tr>
<td>Property, plant and equipment</td>
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<td>332</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>4,156</strong></td>
<td><strong>725</strong></td>
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1 Including restoration obligations, IT investments and right-of-use assets arising from leases

With a world market share of over 45%, China is already the largest chemical market and will drive growth in global chemical production to an even greater extent in the future. We expect China’s share to increase to over 50% by 2030. To further strengthen our position in Asia, we plan to build a new integrated Verbund site in Zhanjiang in the southern Chinese province of Guangdong. The first plants started construction in 2020, and we made further progress on these in 2021. They are scheduled for startup in 2022. We will also expand the Verbund site we operate together with Sinopec in Nanjing, China, by 2023.

In addition, we are refining our portfolio through acquisitions that promise above-average profitable growth as part of the BASF Verbund to help reach a relevant market position. A key consideration is that these are innovation-driven or offer a technological differentiation, and make new, sustainable business models possible. Investments and acquisitions alike are prepared by interdisciplinary teams and assessed using various criteria. In this way, we ensure that economic, environmental and social concerns are included in strategic decision-making.

**Investments in the segments and regions**


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

2 Major growth projects are the construction of our future Verbund site in Zhanjiang, China, as well as our battery materials activities.
Overview of material investments

<table>
<thead>
<tr>
<th>Segment</th>
<th>Location</th>
<th>Project</th>
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<tr>
<td>Chemicals</td>
<td>Antwerp, Belgium</td>
<td>Capacity expansion: ethylene oxide plant</td>
<td>2022</td>
</tr>
<tr>
<td></td>
<td>Kuantan, Malaysia</td>
<td>Capacity expansion: 2-ethylhexanoic acid plant^a</td>
<td>2024</td>
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<tr>
<td></td>
<td>Nanjing, China</td>
<td>Capacity expansion: tertiary butylamine plant</td>
<td>2021</td>
</tr>
<tr>
<td></td>
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<td>Capacity expansion: propionic aldehyde, propionic acid, purified ethylene oxide, ethylenediamines and ethylenamines, and build a new tert-butyl acrylate plant.</td>
<td>2023</td>
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<tr>
<td></td>
<td>Zhanjiang, China</td>
<td>Construction: neopentyl glycol plant</td>
<td>2025</td>
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<tr>
<td></td>
<td>Chalampé, France</td>
<td>Construction: world-scale production plant for HMD</td>
<td>2024</td>
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<tr>
<td></td>
<td>Geismar, Louisiana</td>
<td>Capacity expansion: MDI plants</td>
<td>2026</td>
</tr>
<tr>
<td></td>
<td>Zhanjiang, China</td>
<td>Construction: engineering plastics plant</td>
<td>2022</td>
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<tr>
<td>Industrial Solutions</td>
<td>Jiaxing, China</td>
<td>Capacity expansion: production plant for sulfuric acid</td>
<td>2023</td>
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<tr>
<td></td>
<td>Jinshan, China</td>
<td>Capacity expansion: synthetic esters</td>
<td>2022</td>
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<td></td>
<td>Jurong, Singapore</td>
<td>Capacity expansion: antioxidants (Irganox®)</td>
<td>2022</td>
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<td></td>
<td>Pasr Gudang, Malaysia</td>
<td>Capacity expansion: production plant for acrylics dispersions</td>
<td>2021</td>
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<tr>
<td></td>
<td>Pontecchio Marconi, Italy</td>
<td>Capacity expansion: antioxidants (Irganox®)</td>
<td>2021</td>
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<td></td>
<td></td>
<td>Capacity expansion: light stabilizers (Tinuvin® NOR® 356)</td>
<td>2021</td>
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<tr>
<td>Surface Technologies</td>
<td>Chennai, India</td>
<td>Capacity expansion: plant for mobile emissions catalysts</td>
<td>2022</td>
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<td></td>
<td>Harjavalla, Finland</td>
<td>Construction: precursor plant for cathode active materials</td>
<td>2022</td>
</tr>
<tr>
<td></td>
<td>Pinghu, China</td>
<td>New surface treatment site</td>
<td>2021</td>
</tr>
<tr>
<td></td>
<td>Schwarzheide, Germany</td>
<td>Construction: cathode active materials plant</td>
<td>2022</td>
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<td></td>
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<td>Construction: battery recycling prototype plant</td>
<td>2023</td>
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<tr>
<td>Nutrition &amp; Care</td>
<td>Antwerp, Belgium</td>
<td>Capacity expansion: alkoxylates</td>
<td>2018-2022</td>
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<td>Düsseldorf, Germany</td>
<td>Gradual upgrade of production plants in accordance with the Good Manufacturing Practice Standard issued by the European Federation for Cosmetic Ingredients (EFIC)</td>
<td>2023</td>
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<tr>
<td></td>
<td>Jinshan, China^a</td>
<td>New production line: UV filters</td>
<td>2023</td>
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<td></td>
<td>Ludwigshafen, Germany</td>
<td>Capacity expansion: production plant for methane sulfonic acid</td>
<td>2022</td>
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<td></td>
<td></td>
<td>Capacity expansion: production plant for vitamin A</td>
<td>2021</td>
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<tr>
<td>Agricultural Solutions</td>
<td>Beaumont, Texas</td>
<td>Modernization of site infrastructure</td>
<td>2022</td>
</tr>
<tr>
<td></td>
<td>Hannibal, Missouri</td>
<td>Modernization of site infrastructure</td>
<td>2022</td>
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<tr>
<td></td>
<td>Nurnhem, Netherlands</td>
<td>Expansion of breeding facilities for vegetable seeds</td>
<td>2021</td>
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<tr>
<td></td>
<td>Singapore</td>
<td>New formulation hub for crop protection products</td>
<td>2022</td>
</tr>
<tr>
<td></td>
<td>Sparks, Georgia</td>
<td>New facility for seed treatment formulations</td>
<td>2021</td>
</tr>
</tbody>
</table>

^a Operated by a fully consolidated joint venture with Petronas Chemicals Group Berhad
^b Operated by a joint venture with Sinopec
^c This project was relocated from Kaohsiung, Taiwan, to Jinshan, China.

Chemicals

Strategically, our investments concentrate on the growth markets to support the growth of our customers in China. In 2021, for example, we increased the production capacity for tertiary butylamine. Together with our partner Sinopec, we are pushing ahead with plans to further expand the site in Nanjing, China, to strengthen the joint production of chemical products in China. For instance, we plan to further expand our production capacities for propionic aldehyde, propionic acid, purified ethylene oxide, ethanamines and ethylenediamines, and build a new tert-butyl acrylate plant. The expanded and new plants are scheduled to come onstream in 2023.

Materials

In the Materials segment, production capacities at the methylene diphenyl isocyanate (MDI) plants in Geismar, Louisiana, were successfully increased by one third following the construction of a new MDI synthesis unit, which was completed with the start of operations in 2020. In the final phase, we plan to increase capacities to around 600,000 metric tons per year by 2026. With this gradual capacity expansion, we are supporting the continuing growth of our North American MDI customers.

The construction of the first plants at our smart Verbund site in Zhanjiang, China, is in progress. The new plants are scheduled to come onstream in 2022. They will produce engineering plastics and thermoplastic polyurethane (TPU) to serve the increasing needs of various growth industries in the southern China market and in other Asian markets.

BASF is investing in a new world-scale production plant for hexamethylenediamine (HMD) at the Chalampé site in France. The
new plant will increase BASF’s annual HMD production capacity to 260,000 metric tons. Production is expected to start in 2024.

**Industrial Solutions**

In the Industrial Solutions segment, we are increasing global production capacity for the antioxidant Irganox® 1010 through a project to expand production at the site in Jurong, Singapore. With the completion of the project in 2022, BASF aims to better serve the growing demand from customers in Asia, Europe, the Middle East and Africa. In addition, we increased production capacity for the antioxidant Irganox® 1520L by 20% at the site in Pontecchio Marconi, Italy, in the first quarter of 2021.

To meet the increasing demand for high-quality dispersions solutions in the growing ASEAN, Australian and New Zealand markets, we have doubled the production capacity for acrylics dispersions in Pasir Gudang, Malaysia. The additional capacities started up in the first quarter of 2021. We are currently building our third electronic-grade sulfuric acid plant in Jiaxing, China. This investment will more than double BASF’s existing sulfuric acid production capacity in the country to serve the rapidly growing semiconductor industry. The site expansion is scheduled for completion in 2023.

**Surface Technologies**

We aim to expand our position as a leading and innovative provider of battery materials and benefit from the strong growth in this market segment. A global, customer-focused production network for battery materials is crucial here. Construction of our new production plant for cathode materials in Schwarzheide, Germany, continued as planned in 2021. The new plant will use precursors from the production facility under construction in Harjavalta, Finland. The two plants are scheduled for startup in 2022 and will produce cathode active materials for around 20 gigawatt hours of cell capacity per year. With these investments in Finland and Germany, BASF aims to become the first cathode active materials supplier with local production capacities in what are currently the main markets: China, Japan, North America and Europe.

In addition, BASF announced in 2021 that it will build a battery recycling prototype plant in Schwarzeheide, Germany. Startup is planned for 2023. The prototype plant will allow for the development of operating procedures and optimization of technology to deliver superior returns of lithium, nickel, cobalt and manganese from end-of-life lithium-ion batteries.

**Nutrition & Care**

In Ludwigshafen, Germany, we started up the expanded vitamin A production facilities for the Nutrition & Care segment in July 2021. We also invested in the expansion of alkoxylate capacities at the Verbund site in Antwerp, Belgium.

By mid-2022, BASF will increase its capacities for methane sulfonic acid by around 65% in response to growing cross-industry demand, strengthening its position as a leading global producer. To this end, we are investing in the construction of a new methane sulfonic acid plant at the Ludwigshafen site in Germany. Methane sulfonic acid is an organic acid used in numerous applications ranging from chemical and biofuel synthesis to industrial cleaning and metal surface treatment in the electronics industry.

**Agricultural Solutions**

The investment in a formulation hub for crop protection products in Singapore will, from 2022 onward, ensure that multiple formulation technologies are produced in close proximity to farmers in Asia Pacific. We also invested in the expansion of our production site in Sparks, Georgia, establishing a new formulation plant for seed treatment products, which came into operation in 2021. At the Nurnhem site in the Netherlands, we continued the expansion of our breeding facilities for vegetable seeds with a state-of-the-art tomato greenhouse, which has been available since 2021. Further investments were made in the modernization of site infrastructure in North America. To meet continuing high demand for our innovative solutions in the future, between 2022 and 2026, we will invest more than €950 million in developing and expanding our infrastructure, including state-of-the-art R&D facilities, and in our production and formulation capacities for active ingredients as well as for seed solutions.

For more information on our segments, see page 72 onward

**Good to know**

**New Verbund site in Zhanjiang**

Based on its goal of net zero emissions by 2050, BASF has made further progress toward reducing its carbon footprint. In June 2021, we signed a purchase agreement for renewable electricity with China Resources Power, Hong Kong, China, under the new Guangdong renewable energy trading rules in China. This will enable us to run the first plants at BASF’s new Verbund site in Zhanjiang entirely on renewable energy. The new plants are scheduled for startup in late 2022. This is a significant step toward transforming our energy supply in China.

Discover the smart Verbund site in Zhanjiang, China, at basf.com/zhanjiang
Acquisitions

On August 31, 2021, BASF and Shanshan announced the formation of BASF Shanshan Battery Materials Co., Ltd. The newly formed entity is majority-owned by BASF (BASF 51%; Shanshan 49%). It has four sites in Hunan and Ningxia, China, with more than 1,600 employees. BASF Shanshan Battery Materials Co., Ltd. will focus primarily on the rapidly growing electric vehicle (EV) market while serving global consumer electronic and energy storage market segments. The business is a part of the Catalysts division.

Following approval of the relevant authorities, we completed the purchase of 49.5% of Vattenfall’s Hollandse Kust Zuid wind farm on September 1, 2021. The purchase price was €0.3 billion. Wind farm construction began in July 2021. Once fully operational in 2023, the wind farm will be the largest commercial offshore wind farm in the world. This wind farm does not receive any subsidies for the power produced. On December 6, 2021, BASF and Allianz Capital Partners announced that they had reached an agreement on the purchase of a 25.2% interest by Allianz Capital Partners in Vattenfall’s Hollandse Kust Zuid (HKZ) wind farm by Allianz. This follows a transaction on December 4, 2021, by Allianz Insurance Companies (Allianz), announced that they had reached an agreement on the purchase of 25.2% of the Hollandse Kust Zuid (HKZ) wind farm by Allianz.

Divestitures

On May 31, 2021, BASF completed the sale of its production site in Kankakee, Illinois, to a subsidiary of One Rock Capital Partners, LLC. The agreement also includes the vegetable-oil-based sterols and natural vitamin E business as well as the anionic surfactants and esters produced at the Kankakee site. The purchase price was $177 million. The transaction affected the Nutrition & Health and Care Chemicals divisions.

On June 30, 2021, we closed the divestiture of our global pigments business to the Japanese fine chemical company DIC, Tokyo, Japan. The business transfer agreement, which affected around 2,500 employees, was signed on August 29, 2019. The purchase price on a cash and debt-free basis was €1.15 billion. The Diversion & Pigments division was renamed Dispersions & Resins following the transaction closing.

On November 9, 2021, BASF and Clayton, Dubilier & Rice sold their shares in Solenis to Platinum Equity, a private equity company based in Beverly Hills, California. With over 5,200 employees, Solenis serves customers in water-intensive industries by helping them solve complex water treatment and process improvement challenges. BASF held a 49% share in Solenis after transferring its paper and water chemicals business to the company in February 2019. This was reported as a non-integral investment accounted for using the equity method. The remaining 51% of the shares were held by funds managed by Clayton, Dubilier & Rice, and by Solenis management. The purchase price attributable to BASF was €1.1 billion.

On November 30, 2021, we completed the sale of the precision microchemicals business to Entegris. The transaction included fixed assets and inventories. The purchase price amounted to $90 million. The precision microchemicals business was part of the Surface Treatment business unit of BASF’s Coatings division, operating under the Chemetall brand.

Agreed transactions

On November 18, 2021, BASF and KaMin LLC / CADAM S.A. (KaMin) signed an agreement to sell BASF’s kaolin minerals business to KaMin, a global performance minerals company headquartered in Macon, Georgia. Currently, the kaolin minerals business is part of BASF’s Performance Chemicals division and has approximately 440 employees in North America, Europe and Asia. The divestiture comprises the production hub with sites in Daveyville, Todcville, Edgar, Gordon and related mines, reserves and mills in Toomsboro and Sandersville in Georgia. The refinery catalysts operations located at the same site are not part of the divestiture. Pending approval by the relevant authorities, closing of the transaction is expected in the second half of 2022.

On December 6, 2021, BASF and Allianz Capital Partners, on behalf of Allianz Insurance Companies (Allianz), announced that they had reached an agreement on the purchase of 25.2% of the Hollandse Kust Zuid (HKZ) wind farm by Allianz. This follows a transaction between Vattenfall and BASF under which BASF acquired 49.5% of HKZ from Vattenfall on September 1, 2021. BASF will continue to receive most of the power produced by its originally acquired share of 49.5% of HKZ under a long-term fixed-price corporate power purchasing agreement. The transaction is expected to close in the first quarter of 2022, subject to the approval of the relevant merger control authorities.

On December 28, 2021, BASF reached an agreement to divest its production site in Quincy, Florida, and the associated attapulgite business to Clariant for a purchase price of $60 million. The Quincy facility employs around 75 employees and manufactures clay-based mineral products used in a variety of industrial applications. The transaction affects the Dispersions & Resins division and is expected to close in the summer of 2022, subject to the approval of the relevant antitrust authorities.
Our financial targets follow a steering concept that is aligned with our values. The return on capital employed (ROCE) is used as the key target and management indicator for the BASF Group. As stated in our strategic goals, we aim to achieve a ROCE considerably above the cost of capital percentage every year. With ROCE, the same logic and data is used for our value-based management, external communication with the capital markets and variable compensation. This means we use the same yardstick for internal management, employee incentivization and our shareholders’ expectations.

As part of our corporate strategy and the sustainability targets derived from this, we have also used CO₂ emissions and Accelerator sales as the most important nonfinancial key performance indicators since the 2020 business year. Two targets are based on these indicators: sustainability-oriented portfolio management with our Sustainable Solution Steering method and reducing absolute CO₂ emissions. We reached our Accelerator sales target in 2021, earlier than planned. Consequently, we will adjust our portfolio steering target over the course of 2022.

Calculating ROCE and cost of capital

ROCE is calculated as the EBIT of the segments as a percentage of the average cost of capital basis.

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

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

We have integrated the cost of capital percentage into our ROCE target as a comparative figure. This is determined using the weighted cost of capital from equity and borrowing costs (weighted average cost of capital, WACC). To calculate a pre-tax figure similar to EBIT, the cost of capital is adjusted using the projected tax rate for the BASF Group for the business year. In addition, the projected net expense of Other is already provided for by an adjustment to the cost of capital percentage. The cost of equity is ascertained using the capital asset pricing model. Borrowing costs are determined based on the financing costs of the BASF Group. The cost of capital percentage for 2022 is 9% (2021: 9%).

Calculation of CO₂ emissions

We calculate our absolute CO₂ emissions on the basis of greenhouse gas emissions, which are the sum of direct emissions from production processes and the generation of steam and electricity (Scope 1), as well as indirect emissions from the purchase of energy (Scope 2). Direct emissions from the generation of energy for third parties are not considered here. Relevant emissions include other greenhouse gases according to the Greenhouse Gas Protocol, which are converted into CO₂ equivalents.

We set ourselves even more ambitious targets with our roadmap to climate neutrality, which we presented in March 2021: Compared with the 2018 baseline, we want to reduce greenhouse gas emissions by 25% by 2030.¹ We aim to achieve net zero emissions (Scope 1 and Scope 2) by 2050.

¹ For more information on CO₂ emissions and our climate protection targets, see page 126 onward.
Calculation of Accelerator sales

Accelerator sales refer to sales generated by the BASF Group from products in our strategic portfolio to third parties in the business year concerned. Accelerator products make a substantial sustainability contribution in the value chain. In line with our corporate strategy, we set ourselves the global target of achieving €22 billion in Accelerator sales by 2025. This target was already achieved in 2021. Consequently, we will adjust our portfolio steering target over the course of 2022.

For more information on sustainability-oriented portfolio management, see page 141 onward.

Value-based management throughout the company

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

In addition to ROCE as the BASF Group’s most important financial key performance indicator, we use EBIT before special items and capex (capital expenditure) as key performance indicators that have a direct impact on ROCE and as such, support its management.

- **EBIT before special items** is used to steer profitability at Group and segment level. This is calculated by adjusting the EBIT reported in the Consolidated Financial Statements for special items, making it especially suitable for assessing economic development over time. **Special items** arise from the integration of acquired businesses, from restructuring measures, certain impairments, gains or losses resulting from divestitures and sales of shareholdings, and other expenses and income that arise outside of ordinary business activities.

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

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

For more information on the development of these indicators, see Results of Operations from page 56 onward.
The concept of conserving resources, recycling and feeding waste back into the system is not new for BASF. As early as 1865, it underpinned the foundation of our company: At that time, Friedrich Engelhorn pursued the idea of producing synthetic dyes from coal tar – a waste product – and organizing production efficiently in an integrated Verbund structure. We are still committed to this tradition today and are aligning our actions more strongly than ever with circularity. The chemical industry is doubly important for the transition to a circular economy. Firstly because many value chains start here. And secondly because many products and technologies based on chemistry help to close loops. That is why both aspects – switching to renewable raw materials and innovations for more circularity – are core elements of our Circular Economy Program.

For example, we already use bio-based and renewable raw materials in our production (see page 113). To further reduce the resource and carbon footprints of our products and solutions, we will align our raw material base even more strongly toward recycled and renewable raw materials. For instance, we aim to process 250,000 metric tons of recycled and waste-based raw materials in our production plants annually from 2025. Together with partners, we are analyzing waste streams and raw material sources to find the best solution and develop suitable, innovative processes (see page 115). This is the case, for example, in the chemical recycling of used tires and different types of plastics, where we can feed recovered raw materials such as pyrolysis oil or monomers back into our Verbund structure at different points. Another example is the recovery of valuable metals from spent batteries and catalytic converters.

In addition, we are developing innovative products and technologies in many areas that will increase the service life of materials or their recyclability and compostability. One example is additives for the mechanical recycling of plastics. A Group-wide co-funding program supports our employees in developing new business models for the circular economy – from the initial idea to market launch. Our target: By 2030, we want to double our sales of solutions for the circular economy to €17 billion. These are products that are based on alternative raw materials, that close material loops or increase the resource efficiency and durability of products.

For more information on recycled raw materials, see page 115 onward.

For more information on sustainable solutions and the circular economy, see page 141 onward.

**In focus:**

**Thinking and Acting Circular**

As the world’s population grows, so does demand for limited natural resources. At the same time, many recyclable materials end up in landfill or in waste incineration. New concepts are needed to decouple growth from resource consumption. Reduce, reuse and recycle are the keywords of this transition to a system of more sustainable product cycles with less resource consumption and lower carbon emissions.

Together with partners, BASF is developing innovative products and technologies to improve recyclability and enable resources to be fed back into the system in the future. One example is chemical recycling. Find out more about how used tires and mixed plastic waste are converted into new raw materials in the online report at report.basf.com.

**Our circular economy targets**

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<thead>
<tr>
<th>250,000 metric tons</th>
<th>€17 billion</th>
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<tr>
<td>Recycled and waste-based raw materials processed every year from 2025</td>
<td>Sales of solutions for the circular economy by 2030</td>
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</table>
We implement our corporate purpose – We create chemistry for a sustainable future – by systematically incorporating sustainability into our strategy, our business, and into our assessment, steering and compensation systems. We secure our long-term success with products, solutions and technologies that create value added for the environment, society and the economy.

Our Sustainability Concept

Our strategic approach

At a glance

- Sustainability aspects integrated into corporate steering
- Targets for climate protection, product portfolio, circular economy, procurement, safety and employees
- Strategic guidelines on stakeholder management and our societal engagement

Sustainability is at the core of what we do and a driver for growth and value. Analyzing our contributions to sustainability also enables us to manage risks effectively. We pursue a holistic sustainability approach that covers the entire value chain – from our suppliers and our own activities to our customers. We have formulated commitments for our conduct along the value chain and underpinned these with corresponding targets and measures (see page 36).

Based on our corporate strategy and the global targets derived from this, we steer the sustainability targets (reduce absolute CO₂ emissions¹ by 25% by 2030 compared with baseline 2018 and achieve €22 billion in Accelerator² sales by 2025) as most important key performance indicators. To this end, we have established the necessary steering mechanisms and control systems at Group level. Our global activities to reduce greenhouse gas emissions include using renewable energy sources, implementing energy and resource efficiency in our production (see page 126). We use the Sustainable Solution Steering method to improve the sustainability contributions of our product portfolio along the value chain (see page 141). To assess the sustainability performance of our products and identify solutions with a substantial sustainability contribution in the value chain, we regularly reassess our product portfolio. We already reached our 2025 sales target for Accelerator products in 2021. Consequently, we will update our product portfolio steering target over the course of 2022.

In addition to the climate protection and Accelerator sales targets, we have set ourselves further sustainability goals. A particular focus is the circular economy due to its strong connection to climate protection. We have defined further targets on water management, responsible procurement, engaged employees, women in leadership positions, occupational health and safety, and process safety.

We have also set up a project organization to achieve our climate protection targets. The new Net Zero Accelerator unit concentrates on implementing and accelerating projects on low-carbon production technologies, the circular economy and renewable energies. As a co-founder of the U.N. Global Compact and a recognized LEAD company, we contribute to the implementation of the United Nations’ Agenda 2030. Our products, solutions and technologies help to achieve the U.N. Sustainable Development Goals (SDGs), especially SDG 2 (Zero hunger), SDG 5 (Gender equality), SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 8 (Decent work and economic growth), SDG 12 (Responsible consumption and production) and SDG 13 (Climate action). To prioritize these, internal experts assessed the impacts and positive contributions of our products, our corporate targets and strategic action areas. The Value to Society method is used to measure the contribution of our activities along the value chain. This assesses our positive and negative impacts on the environment, society and the economy (see page 47).

We identify key sustainability topics with our comprehensive materiality analysis. The graphic on page 46 shows how we assess relevant topics. Here, we take into account topics that we have an impact on, topics that have an impact on us, and topics that our stakeholders consider important to us. The topics identified based on these three dimensions of materiality are: climate and energy, health and safety / product stewardship, water, emissions to air and soil, resource efficiency and waste, biodiversity, human rights, employment and diversity.

¹ The target includes Scope 1 and Scope 2 emissions. Other greenhouse gases are converted into CO₂ equivalents in accordance with the Greenhouse Gas Protocol. In March 2021, we replaced our previous target of CO₂-neutral growth until 2030 (baseline 2018: 21.9 million metric tons of CO₂e) with a new, more ambitious climate protection target to reduce absolute CO₂ emissions by 25% compared with 2018 (new target: 16.4 million metric tons of CO₂e).
² Accelerator products make a substantial sustainability contribution in the value chain.
Our organizational and management structures

We are constantly working to broaden our contributions to key sustainability topics and reduce the negative impact of our business activities. Together with decentrally organized specialists, the Corporate Strategy & Sustainability unit in the Corporate Center is responsible for integrating sustainability into core business activities and decision-making processes. This unit’s tasks include the global steering of climate-related matters.

The new Net Zero Accelerator project organization has reported directly to the Chairman of the Board of Executive Directors since January 2022. It focuses on the further acceleration and implementation of existing and new projects to achieve CO₂ reduction targets at company level worldwide and drives them forward.

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

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

In 2018, we established our Sustainable Finance Roundtable, which discusses topics related to sustainable finance. Here, experts from departments such as Finance, Corporate Strategy, Investor Relations and Communications discuss upcoming new legal requirements. The interdisciplinary group analyzes the steadily growing requirements, assesses the impact on BASF and drives forward the necessary change processes as well as the concrete implementation of measures. In a U.N. Global Compact task force, we are developing recommendations on how the SDGs should be considered in financial decisions and in interactions with investors.

Identifying and assessing sustainability topics¹,²

<table>
<thead>
<tr>
<th>Materiality dimension</th>
<th>BASF evaluation approach</th>
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<tr>
<td>Impact of BASF</td>
<td>Value to Society method:</td>
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<tr>
<td></td>
<td>– Monetization of positive and negative effects along the value chain</td>
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<tr>
<td></td>
<td>– Topics with impacts that cannot be expressed in monetary terms included based on relevance for external stakeholders and on assessments of internal experts</td>
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<tr>
<td>Prioritization and grouping in internal workshops</td>
<td>Impact on BASF</td>
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<td>– Business units surveyed as part of strategy development</td>
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<td>– Positive and negative effects of individual sustainability trends on the businesses analyzed based on meta-study</td>
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<tr>
<td>Relevance for our stakeholders</td>
<td>Material topics</td>
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<td></td>
<td>– Big data analysis based on external publications</td>
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<td></td>
<td>– Results complemented and confirmed by surveys and interviews with external experts</td>
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</table>

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

We are aware that our business activities can have both positive and negative impacts on the environment and society. We aim to increase our positive contributions and minimize the negative impacts of our business activities. To achieve this, we need to understand how our actions and our products impact society and the environment.

We already have many years of experience in this area from evaluating our products and processes using methods such as Eco-Efficiency Analyses, the SEEbalance® Socio-Eco-Efficiency Analysis, our Sustainable Solution Steering portfolio analysis, BASF’s corporate carbon footprint or the calculation of Product Carbon Footprints.

We want to holistically capture the value we contribute to society along the value chain and make this transparent. However, there are still no uniform, global standards for measuring and reporting on companies’ overall impact that cover economic, environmental and social aspects of business activities along the value chain. This is why we developed the Value to Society method in 2013 together with external experts. We can use this methodological approach to compare the significance of financial and sustainability-related impacts of our business activities on society and show their interdependencies. The results illustrate the positive contributions and negative effects, both at BASF and in our value chains. Positive factors include taxes paid, wages, social benefits, employee training and our net income. Negative contributions include environmental impacts such as carbon emissions, land use and emissions to air, soil and water, as well as health and safety incidents. The positive impacts of our economic activities declined in 2020, primarily due to the economic conditions caused by the coronavirus pandemic, which led to lower economic value added. In addition, higher water consumption and increased land use in supplier and customer industries had a greater impact on the environment.

Overall, the Value to Society method helps us to continually monitor our progress. It complements existing concepts for assessing risks and business opportunities by providing a macro perspective and enables us to derive the necessary business steps.

We are a founding member of the value balancing alliance e.V. (VBA) and have contributed our knowledge and experience to this cross-industry initiative. We support the development of an accounting and reporting standard that makes the value companies provide to society transparent and comparable. The aim is to present the financial, ecological, and social impacts of business activities on the basis of a standardized framework. The VBA is supported by major auditing firms, the Organisation for Economic Co-operation and Development (OECD), leading universities and other partners. Together with the OECD and the Business for Inclusive Growth (B4G) coalition, we are pushing to further expand the social indicators. Here, BASF leads the Impact Measurement working group together with partners. Through the VBA, we are involved in the E.U.'s Platform on Sustainable Finance. Together with the VBA and other partners, we supported the establishment of the International Sustainability Standard Board (ISSB), are involved in the work of the World Economic Forum (WEF) and are part of the G7 Impact Taskforce. Our Corporate Finance unit is also involved in the work of the European Financial Reporting Advisory Group’s (EFRAG) Project Task Force on European sustainability reporting standards.

The method developed by the VBA was enhanced and refined on the basis of feedback from the scientific community and member companies. Amendments include the addition of two social indicators and the calculation of downstream impacts, as well as revisions to financial indicators, for example. This enhanced method will again be piloted by all member companies and the results will be fed back to the VBA for further development.

For more information on this method and the results of Value to Society, see basf.com/en/value-to-society
For more information on our sustainability tools, see basf.com/en/measurement-methods
For more information on value balancing alliance e.V., see value-balancing.com

Our stakeholder management

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

We established an external, independent Stakeholder Advisory Council (SAC) in 2013 and the Human Rights Advisory Council (HRAC) in 2020. In the SAC, which is led by the Chairman of the Board of Executive Directors, international experts from academia and society contribute their perspectives to discussions with BASF’s Board of Executive Directors. The HRAC is an advisory body comprising external human rights specialists and internal experts. This helps us to critically reflect on our positions and address potential for improvement.

1 The net income of BASF’s production presented in the Value to Society is calculated using the BASF Group’s net income, adjusted for the interest result, the other financial result and noncontrolling interests.
2 Value to Society results are calculated annually following the publication of the BASF Report. Accordingly, the statements on this in the BASF Report 2021 refer to the evaluation conducted for the 2020 business year.
Our political advocacy is conducted in accordance with transparent guidelines and our publicly stated positions. The same applies to our activities in associations. For instance, we again published an Industry Associations Review in 2021 comparing the energy and climate protection positions of BASF and the most important associations of which we are a member, with explanations on our approach.

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

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

For more information on our guidelines for responsible lobbying, see basf.com/guidelines_political_communication
For more information on the Industry Associations Review, see basf.com/corporategovernance
For more information on the Human Rights Advisory Council, see basf.com/human-rights-council
For more information on the Stakeholder Advisory Council, see basf.com/en/stakeholder-advisory-council

### Stakeholder demands and expectations of BASF

#### Customers
- Innovative and sustainable solutions
- Reliable partner
- Cost effectiveness

#### Investors
- Attractive dividend yield
- Transparency and risk minimization
- Strong long-term share performance

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

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

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

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

### Our societal engagement approach

Through our societal engagement, we want to help disadvantaged groups tackle their specific challenges – whether through initiatives in our immediate communities or around the world in cooperation with global organizations. We want to foster societal cohesion by supporting and protecting health, skills and resources. We support projects that aim to have a lasting impact on specific target groups and offer learning opportunities for participating cooperation partners and BASF (see page 106).

In this way, societal engagement is an important part of the implementation of our sustainability strategy and our corporate social responsibility. Our societal engagement policy provides the guardrails for our activities in this area. It stipulates that all engagement measures worldwide must be conducted in line with our compliance policy, BASF’s strategy and our sustainability commitments.

For more information on our societal engagement, see page 106
Innovation

Protecting our climate and making the best use of limited natural resources while supplying the fast-growing global population with food, energy and clean water are among the greatest challenges of our time. Innovations based on chemistry play a pivotal role in overcoming these. That is why we are working together with our customers on innovative processes, technologies and products for a more sustainable future.

Innovation has always been the key to BASF’s success. The knowledge and skills of our highly qualified employees is our most valuable resource here and the source of our innovative strength. We had approximately 10,000 employees involved in research and development worldwide in 2021.

Our research and development expenses amounted to €2,216 million in 2021 (2020: €2,086 million). Research and development activities in our operating divisions, which is mainly application and customer-related, accounted for 83% of this figure. Corporate research, in which we bundle cross-divisional and long-term topics, was responsible for 17% of these expenses.

Our innovation focus is on developing sustainable solutions for our customers. We ensure our long-term competitiveness by helping our customers reduce their carbon footprint, use resources more efficiently, or manufacture products in a more environmentally friendly way and to recycle them, to name a few examples.

In 2021, we generated sales of over €11 billion with products launched on the market in the past five years that stemmed from research and development activities. In the long term, we aim to continue significantly increasing sales and earnings with new and improved products – especially with products that make a substantial sustainability contribution in the value chain (see page 141).

Our central research is currently divided into three global divisions, run from Europe, Asia Pacific and North America: Process Research & Chemical Engineering (Ludwigshafen, Germany); Advanced Materials & Systems Research (Shanghai, China); and Bioscience Research (Research Triangle Park, North Carolina).

We have already brought our research and development units closer together over the past few years. We will reorganize our global research activities in 2022 to further strengthen our innovation performance and respond to our customers’ industry-specific requirements even better and more quickly going forward. Business and application-driven research units that are currently allocated to the three corporate research divisions will be integrated into the operating divisions, aligning them even more closely with the needs of our customers. The aim is to further shorten the time to market for new products and accelerate BASF’s organic growth. Research activities that are relevant to several operating divisions will be bundled in a central research division steered from Ludwigshafen, Germany. This unit will continue to be globally organized with research centers in Europe, North America and Asia Pacific. Together with the development units in our operating divisions, it forms the core of our global Know-How Verbund.

We will continue to use corporate funding to finance research of broad relevance to the BASF Group that goes beyond the industry-specific focus of the individual operating divisions.

Research and development expenses by segment 2021

<table>
<thead>
<tr>
<th>Segment</th>
<th>€2,216 million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture Solutions</td>
<td>41%</td>
</tr>
<tr>
<td>Surface Technologies</td>
<td>13%</td>
</tr>
<tr>
<td>Industrial Solutions</td>
<td>8%</td>
</tr>
<tr>
<td>Materials</td>
<td>9%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>4%</td>
</tr>
<tr>
<td>Corporate research, Other</td>
<td>17%</td>
</tr>
</tbody>
</table>
We strengthen existing research focus areas and continually develop new key technologies that are of central significance for our operating divisions, such as polymer technologies, catalyst processes or biotechnological methods.

We promote creative and agile research approaches. We are driving forward the development of new business areas. For example, we are developing innovative coating technologies and materials that make innovative surfaces and functions possible. Functional films can be used to reduce the frictional resistance of surfaces or improve UV protection and weather resistance, for example. Our innovative solutions help our customers to achieve their sustainability goals.

As part of our Carbon Management R&D Program, we are carrying out intensive research into pioneering, low-carbon production processes for basic chemicals such as hydrogen (see page 132). This will enable us to offer our customers products with a lower carbon footprint in the future.

**Employees in research and development**

~10,000

Our **global research and development presence** – and its effectiveness – is vital to our long-term success. This enables us to respond to the needs and requirements of the regional markets in a differentiated way and leverage growth potential.

The Ludwigshafen site in Germany is and will remain the largest in our Research Verbund. Investments there include a combined laboratory building for cleanroom and elemental analysis. The new building’s modern digitalization and automation solutions set new standards in safety and efficiency. It is scheduled to open in 2022. In addition, we will build a new Catalyst Development and Solids Processing Center in Ludwigshafen, Germany, by 2024 to bring process innovations and new chemical catalysts to market faster.

We want to continue advancing our research and development activities, especially in Asia. For instance, in 2021 we started the third expansion phase for the BASF Innovation Campus in Shanghai, China. With this expansion, BASF will strengthen its research and development capabilities for advanced materials and systems as well as for chemical engineering. Construction is expected to be completed by the end of 2022.

A strong presence outside Europe creates new opportunities for developing and expanding our customer relationships and scientific collaborations as well as for gaining access to talented employees. This strengthens our Research and Development Verbund and makes BASF an even more attractive partner and employer.

The number and quality of our **patents** also attest to our power of innovation and long-term competitiveness. In 2021, we filed around 820 new patents worldwide. The Patent Asset Index, a method that compares patent portfolios, once again ranked us among the leading companies in the chemical industry in 2021.

**Global network**

Our global network of top universities, research institutes and companies forms an important part of our Know-How Verbund. It gives us direct access to external scientific expertise, talented minds from various disciplines as well as new technologies – and helps us to quickly develop targeted, marketable innovations, strengthen our portfolio with creative new projects, and in this way, reach our growth targets.

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

**Eight Academic Research Alliances**

**Access to scientific expertise, talented minds and new technologies**

The Northeast Research Alliance (NORA) and the California Research Alliance (CARA) are located in the **United States**. NORA focuses on materials science and biosciences, catalysis research, digitalization and cooperation with startups. Teams at the interdisciplinary CARA research center are working on new functional materials, formulations, digital methods, catalysis, chemical synthesis, and in engineering sciences and biosciences.

The Joint Research Network on Advanced Materials and Systems (JONAS) is active in **Europe** and concentrates on supramolecular chemistry, polymer chemistry and the incubation of sustainable technologies. We are working on innovative components and materials for electrochemical energy storage with the Karlsruhe Institute of Technology (KIT) at the Battery and Electrochemistry Laboratory (BELLA). At the joint Catalysis Research Laboratory (CaRLa), BASF is researching homogeneous catalysis in cooperation with the University of Heidelberg. BasCat is a joint laboratory operated by the UniCat cluster of excellence and BASF at the Technical University of Berlin, where new heterogeneous catalysis concepts are being explored together with the Fritz Haber Institute of the Max Planck Society, also based in Berlin. The iL (Innovation Lab) in Heidelberg, Germany, focuses on functional printing, printed sensors and IoT (Internet of things) applications.

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

[The Academic Research Alliances are complemented by cooperative partnerships with around 280 universities and research institutes as well as collaborations with a large number of companies.]

For more information on our collaboration initiatives, see basf.com/innovate-with-us
Recycling industrial off-gases: Industrial off-gases are usually incinerated or thermally recovered. In both cases, CO₂ is emitted. To avoid this and to recycle the main components of the off-gases so they can be used in chemical production, BASF has been researching an innovative process, gas fermentation, with the U.S. startup LanzaTech since 2018. The interdisciplinary team achieved an important breakthrough in 2021: using special bacteria, they were able to produce n-octanol from carbon monoxide and hydrogen for the first time. The molecule is an alcohol and is used in cosmetics, for example. Normally, microorganisms cannot produce n-octanol, which is toxic to them. However, using biotechnological methods, LanzaTech was able to program the organisms to produce and tolerate n-octanol as part of a gas fermentation process. In parallel, BASF researchers developed a process that enables the continuous separation and purification of n-octanol. Following successful implementation in the laboratory, the team is now working on further process improvements. Integrating gas fermentation technology into the BASF Verbund could contribute to a carbon-neutral circular economy in the future.

Bio-based and biodegradable ingredients: Circular economy and sustainability are also playing an increasingly important role for our customers in the detergent and cleaner industry. That is why interdisciplinary teams at BASF have been working hard on the question of how to optimize cleaning performance and environmental compatibility. The focus here is on new ingredients that can be produced from renewable raw materials and biodegraded at the end of their productive life cycle. This calls for new approaches in research and development. We are developing a fundamental understanding of how biodegradation occurs under different conditions in joint projects with academic partners and closely coordinated laboratory and field research. The additional integration of new digital tools and faster screening and testing methods enables us to shorten our development times and develop high-performance, environmentally compatible ingredients – not only for cleaning purposes, but also for cosmetics and industrial applications such as agrochemicals.

Animal-free testing methods: The European Union wants to significantly improve the safety of chemical products. BASF supports this goal and has been actively working to make it a reality for many years. For example, in order to meet expanded requirements and additional testing obligations under the E.U.’s Chemicals Strategy for Sustainability in the future, we are developing innovative in vitro methods with our own laboratory team and together with partners. Among other things, they will help us to efficiently and reliably detect and evaluate potential hormonal effects of substances – even without animal testing. BASF has been researching alternative methods for many years and recently reached an important milestone: In 2021, the OECD approved the world’s first toxicology testing strategy without animal testing – a joint project between BASF and Givaudan (see page 123). It can be used to reliably predict whether a substance causes allergic reactions in the skin without animal testing. We make all methods developed by us and approved freely available to interested companies and authorities.