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[a] The management report of Merck KGaA has been combined with the Group management report and published in the 2024 Merck Annual Report as well as in the annual financial statements of Merck KGaA. The Management Report also contains the combined (Group-) Sustainability Statement of Merck KGaA, which we issue pursuant to sections 289b – 315b and 315b – 315c HGB. The 2024 Annual Report is an additional, non-official publication, which does not comply with the requirements of the European Single Electronic Format (ESEF). The official annual financial report for fiscal 2024, prepared in accordance with the ESEF format, has been filed with the electronic German Federal Gazette (elektronischer Bundesanzeiger) and is available on the website of the German company register.
This combined management report contains certain financial indicators such as operating result (EBIT), EBITDA, EBITDA pre, net financial debt and earnings per share pre, which are not defined by International Financial Reporting Standards (IFRS). These financial indicators should not be taken into account in order to assess the performance of Merck in isolation or used as an alternative to the financial indicators presented in the consolidated financial statements and determined in accordance with IFRSs.
The figures presented in this combined management report have been rounded. This may lead to individual values not adding up to the totals presented.
The Statement of Corporate Governance according to section 15d HGB in conjunction with section 289f (1) sentence 2 HGB is available at **https://www.merckgroup.com/en/investors/corporate-governance/reports.html**.
It is our aim to ensure that our communication is inclusive and so we strive to use language that is both non-discriminatory and easy to read. This report attempts to use gender-neutral language, which may not yet be consistent in all instances. Even if masculine forms are used, all genders are explicitly meant.

[1] German Commercial Code.

Fundamental information about the Group

Company Profile and Structure

We are Merck, a science and technology company dedicated to sparking discovery and elevating humanity. In our three business sectors Life Science, Healthcare and Electronics, we work together to create value on behalf of customers and patients.

Ever since we were established in 1668, we have continuously reinvented ourselves and adopted a long-term mindset. This approach is rooted in responsibility, care and respect: for our work, our employees, our customers, patients, society, and our planet. We are committed to working toward a better future and delivering sustainable progress for humankind.

The founding family, now in its 13th generation, is still the majority owner. This is made possible by the structure of our company as a corporation with general partners (Kommanditgesellschaft auf Aktien – KGaA). In a KGaA, the total capital is divided between general partners and limited partners; the general partners are personally liable with their assets, while the limited partners are liable with their contributions. The founding family holds a 70.274% stake in the listed MERCK Kommanditgesellschaft auf Aktien (Merck KGaA), Darmstadt, as a general partner via the Group's ultimate parent company, E. Merck Kommanditgesellschaft, Darmstadt. The remaining 29.726% of the share capital of Merck KGaA is traded on the regulated market of the Frankfurt Stock Exchange and other stock exchanges.

The assessment of business development and the allocation of financial resources are carried out uniformly by the entire management of the company for the Life Science, Healthcare and Electronics business sectors as well as the Group's Enabling Functions. In addition to the Chair of the Executive Board and CEO Belén Garijo, the Members of the Executive Board are Matthias Heinzel, CEO Life Science, Peter Guenter, CEO Healthcare, Kai Beckmann, CEO Electronics, and Helene von Roeder, Chief Financial Officer.

We hold the global rights to the Merck name and brand. The only exceptions are Canada and the United States. In these countries, we operate as MilliporeSigma in the Life Science business, as EMD Serono in the Healthcare business and as EMD Electronics in the Electronics business.

Apart from our three business sectors, our financial reporting presents five regions: Europe, North America, Asia-Pacific, Latin America, and the Middle East and Africa. As of December 31, 2024, we had 62,557 employees[1] worldwide. The figure as of December 31, 2023, was 62,908 employees[1].

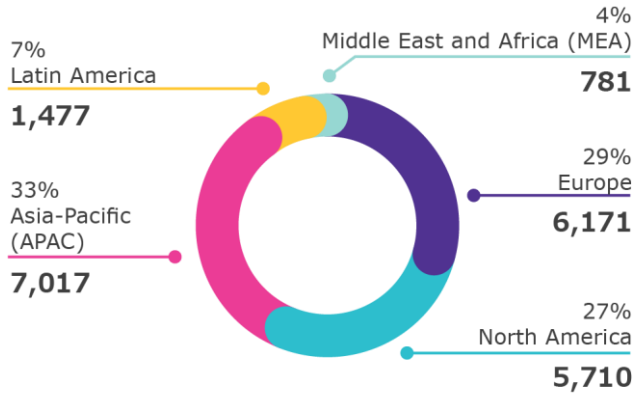
We have summarized further details on our employees and important sustainability topics, as well as the key indicators used to monitor sustainability and the degree to which we have achieved our strategic goals, in the "**(Group-) Sustainability Statement**".

For fiscal 2024, we exercise the option of publishing the Statement on Corporate Governance on the Group's **website** in accordance with section 315d HGB in conjunction with section 289f (1) sentence 2 HGB.

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

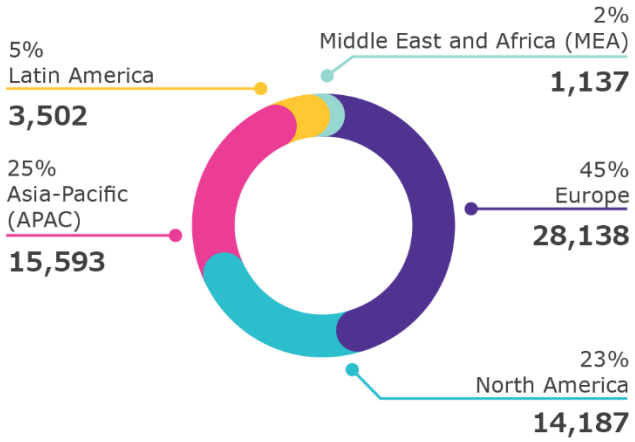
Merck Group

Net sales by region
€ million/in % of net sales



Merck Group

Employees by region as of December 31, 2024[1]
Number/in %



[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. These numbers refer to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

Life Science

We are a leading global provider of products, solutions and services for a wide range of customers, including research and diagnostic labs, biotech and pharmaceutical companies, as well as the industrial sector.

Across our Life Science business sector, we collaborate with the global scientific community to deliver innovations. To this end, we offer a broad and deep product portfolio as well as global services as a contract development and manufacturing organization (CDMO), ranging from process development to commercialization. In fiscal 2024, we continued to consistently develop our strategy and strengthened our position as a diversified life science company with our three business units Science & Lab Solutions, Process Solutions and Life Science Services.

The development of preventive and personalized medicine is progressing steadily. It is therefore essential to set standards for robust, scalable and efficient processes for production of novel modalities such as antibody-drug conjugates (ADCs) and those for cell-, gene- and mRNA-based therapies. This progress will support the expansion of novel therapies as well as the treatment of further complex and chronic conditions including cancer, heart disease, diabetes, and muscular dystrophy.

To accomplish this, more than 1,700 scientists in research and development (R&D) within Life Science across twelve global sites focus on strengthening our core portfolio. They have enabled our three business units to launch more than 9,200 products and solutions, including those launched via our “faucet program” for antibodies, reference materials and nanomaterials.

In addition to our diversified portfolio of products and services, we offer a wealth of expertise to our customers around the world: We are constantly seeking opportunities to work together with leading universities around the world to advance research. For example, in May 2024 we signed a non-binding memorandum of understanding with the Korea Advanced Institute of Science and Technology (KAIST) to collaboratively advance the research and development ecosystem in Korea for industrial applications in life science. By partnering with this academic institution, we will provide researchers at KAIST’s labs with products from our chemistry and biology portfolios. A collaboration will also be established for joint R&D projects, focusing on advancing innovation in prioritized research areas.

In fiscal 2024, Life Science generated 42% of Group sales and 39% of EBITDA pre (excluding Corporate and Other). Europe and North America generated 70% of Life Science’s sales in 2024; Asia-Pacific and Latin America accounted for 29% of sales.

Science & Lab Solutions

The Science & Lab Solutions business unit supports customers in the biotech and pharmaceutical industries, public authorities and scientific institutions and other industrial markets. Customers can access a broad portfolio including reagents, consumables, devices, instruments, software, and services for research, production and testing in addition to lab water instruments, microbiology and biomonitoring products, test assays, analytical reagents, and flow cytometry kits and instruments.

In the first half of 2024, we introduced our M-Trace® software and the associated mobile app for microbiological quality control, a comprehensive data tracking solution to digitalize sterility testing. The software helps ensure overall process safety by automatically documenting data for every step of the testing process. This reduces the risk of deviations, false positive results and human error.

In June, we announced a collaboration with the New York City-based Michael J. Fox Foundation, New York, USA, aimed at advancing Parkinson's research to slow the progression of the disease, leveraging our SMCxPRO® immunoassay technology to help detect low levels of a biomarker associated with cell dysfunction in patients. The service is now available to the scientific community, making it possible to track the response of different therapeutic options to disease progression.

In December, we acquired Netherlands-based HUB Organoids Holding B.V., Utrecht, a pioneer in the field of organoids. Organoids are cell culture models that mimic the functions of an organ. They can accelerate drug development, improve the understanding of disease treatments in diverse populations and reduce the industry's dependence on animal testing.

Process Solutions

The Process Solutions business unit supports biotech and pharma customers that focus on developing and manufacturing traditional and novel therapies with its comprehensive portfolio of products and services, including filtration devices, chromatography resins, single-use systems, process chemicals, and excipients for bioprocessing.

In May 2024, we signed a definitive agreement to acquire the life science company Mirus Bio LLC (Mirus Bio) for a purchase price of US$ 617 million. Based in Madison, Wisconsin, USA, Mirus Bio specializes in the development and commercialization of transfection reagents, such as its own TransIT-VirusGEN®. These transfection reagents are used to help introduce genetic material into cells and thus play a key role in the production of viral vectors for cell and gene therapies. The transaction officially closed on July 31, 2024.

In September, we launched the first scalable single-use mixer specifically designed for manufacturing ADCs. ADCs are a rapidly emerging and relatively new class of therapeutic agents that can target and selectively kill tumor cells while protecting healthy ones. The Mobius® ADC Reactor enables biopharmaceutical companies to produce their therapies faster and more safely by offering accelerated turnaround times and fewer cross-contamination risks, all while maintaining high product quality. Additionally, the new reactor's single-use assemblies are manufactured using Ultimus® film technology, making the bags stronger, more durable and more resistant to leaks.

Life Science Services

The Life Science Services business unit manufactures traditional and novel modalities for biotech and pharmaceutical customers, including monoclonal antibodies, high-potency active pharmaceutical ingredients, antibody-drug conjugates, and viral and gene therapy products, as well as mRNA. With our integrated offering of contract development, manufacturing and testing services, we support customers from preclinical phases to commercial production.

In April, we launched a first-of-its-kind, all-in-one, validated genetic stability assay. The Aptegra™ genetic stability platform replaces five different assays and four different technologies with one assay that uses a digital platform with next-generation sequencing technology. This approach reduces testing time by 66% compared with traditional methods. The platform meets all regulatory requirements for genetic stability assurance, including gene copy number assessment.

In October, we opened our new € 290 million biosafety testing facility in Rockville, Maryland, USA. Biosafety testing and analytical development are fundamental components of drug development and commercialization for traditional and novel modalities. The 23,000 square-meter facility houses biosafety testing, analytical development and cell banking manufacturing services. The new site will feature advanced testing capabilities, including a rapid methods package that enables the fast testing of large sample volumes for virus contamination. This package is the first to include the Blazar® CHO Animal Origin Free (AOF) panel, a targeted molecular method for detecting virus families.

Investments to expand capabilities and production

- In February, we opened a new € 20 million, 10,000-square-meter distribution center in Cajamar, São Paulo, Brazil, to better serve our customers in the region and meet the country's growing demand for life science products.
- In March, we announced the expansion of our M Lab™ Collaboration Center in Shanghai, China, which brought together with several laboratories of the BioReliance® Biologics Testing Center under the new name Shanghai Technical Application and Testing Center. Shanghai M Lab™ is one of nine customer cooperation centers in our network.
- Also in March, we announced an investment of more than € 300 million in a new Bioprocessing Production Center in Daejeon, Korea. The new site is the largest investment in Asia-Pacific in the Life Science business sector to date and demonstrates our commitment to expanding our capacities in the fast-growing region. The production facility will manufacture essential products for biotechnology such as dry powder cell culture media, process liquids and sterile sampling systems, as well as offering small-scale pre-GMP production. By the end of 2028, the center is also expected to have a distribution center and an automated warehouse.
- In April, we announced the investment of more than € 300 million in a new research center in Darmstadt, Germany, named the Advanced Research Center. Starting in 2027, the building will be home to more than 500 employees focusing on researching solutions for manufacturing antibodies, mRNA applications and additional products required for biotechnological production.
- In June, we announced an investment of € 68 million in a new quality control building at our global headquarters in Darmstadt. The facility will bring together approximately 135 employees from across several departments in a single state-of-the-art collaborative space.
- Also in June, we also opened our newly expanded distribution center in Schnelldorf, Germany. With an investment of more than € 180 million, we have almost doubled our space. Alongside a new manual down-filling facility, the site now provides more space for distributing a wide range of products to laboratories and research facilities worldwide. The Schnelldorf site employs more than 400 engineers and experts in manufacturing and distribution.
- In late October, we announced the € 70 million expansion of our ADC manufacturing capabilities at our Bioconjugation Center of Excellence facility in St. Louis, Missouri, USA. This investment will significantly expand existing capacity and enhance our offering as a CDMO, reinforcing our commitment to partner with new and existing customers in the pharmaceutical industry as they advance their drug development pipelines. With the added capacity and upgraded process and analytical development labs, we will provide support for early-stage and commercial bioconjugates.

Healthcare

Our Healthcare business sector helps to create, improve, and prolong lives across the therapeutic areas of oncology, neurology & immunology and fertility as well as cardiovascular, metabolic and endocrinological disorders. As a global specialty innovator, with a strong established business, we deliver a diversified portfolio of therapies to millions of patients around the world, every day.

Throughout the reporting year 2024, we ensured the supply of our medicines beyond the demand anticipated at the start of the year despite ongoing geopolitical crises. Even as some of our competitors experienced shortages, we provided support and worked diligently to ensure, whenever possible, that patients could access an alternative therapeutic option.

In 2024, Healthcare generated 40% of Group sales and 46% of EBITDA pre (excluding Corporate and Other). Europe and North America generated 53% of Healthcare's net sales in the reporting year. Asia-Pacific and Latin America accounted for 40% of sales in 2024.

Oncology

Erbitux® (cetuximab) remains our best-selling healthcare product with € 1,162 million in sales in 2024. Erbitux® is a standard of care for patients with epidermal growth factor receptor (EGFR)-expressing, RAS wild-type metastatic colorectal cancer (mCRC) as well as both recurrent and/or metastatic and locally advanced squamous cell carcinoma of the head and neck (SCCHN). With approximately 200 active clinical trials involving Erbitux®, including more than 30 Phase III trials, we are committed to continuously advancing our robust lifecycle management strategy.

We have continued to make progress in transforming the global standard of care for patients with locally advanced or metastatic urothelial carcinoma (UC) as we continue to obtain additional regulatory and reimbursement approvals for Bavencio® (avelumab), our anti-PD-L1 antibody. Currently approved as a first-line maintenance treatment for advanced UC in over 70 countries, Bavencio® has become a standard of care in the treatment of this disease based on the results of the pivotal JAVELIN Bladder 100 trial, the only Phase III trial of an immunotherapy to demonstrate a significant overall survival benefit in the first-line maintenance setting.

Bavencio® is also approved in the first-line treatment of advanced renal cell carcinoma in combination with axitinib and is a standard of care as a monotherapy in metastatic Merkel cell carcinoma, a rare form of skin cancer.

We are also continuing to expand the availability of Tepmetko® (tepotinib), our oral MET inhibitor designed to inhibit the oncogenic MET receptor signaling caused by MET (gene) alterations. In February, the U.S. Food and Drug Administration (FDA) granted full approval to Tepmetko®, which had previously been available in the United States under accelerated approval. Tepmetko® is now available in approximately 40 markets globally, with regulatory submissions under review in additional markets.

In June 2024, we announced the discontinuation of the randomized Phase III TrilynX trial evaluating xevinapant plus chemoradiotherapy in patients with unresected locally advanced squamous cell carcinoma of the head and neck (LA SCCHN). The Phase III clinical trial XRay Vision evaluating xevinapant plus radiotherapy in patients with resected LA SCCHN was also discontinued (see "**Research and Development**" for further details).

We continued to advance our pipeline of novel oncology medicines in 2024. We presented first-in-human data for the first antibody-drug conjugate (ADC) developed in our labs, M9140, an ADC targeting carcinoembryonic antigen-related cell adhesion molecule 5 (CEACAM5), and advanced a second ADC, targeting GD2 (disialoganglioside expressed on tumors) into a Phase I clinical trial (see "**Research and Development**" for further details).

We also initiated new clinical studies for our portfolio of small-molecule DNA damage response (DDR) inhibitors. With our potent and selective inhibitor of ataxia telangiectasia and Rad3-related (ATR) tuvusertib (M1774) and

the selective PARP1 (poly ADP-ribose polymerase 1) inhibitor M9466 (also known as HRS-1167), licensed from Jiangsu Hengrui Pharmaceuticals Co. Ltd., we are exploring the potential of these investigational compounds in various tumors. This includes a Phase II trial opened in 2024 to evaluate the potential of two combinations with tuvusertib to overcome resistance to PARP inhibition in ovarian cancer (see "**Research and Development**" for further details).

Neurology & Immunology

We develop therapies for people living with neurological and immune-mediated conditions and aim to help significantly improve quality of life for them and their caregivers. Our portfolio is the result of over two decades of experience in MS research and currently includes two approved products for the treatment of relapsing MS (RMS): Rebif® (interferon beta-1a) and Mavenclad® (cladribine tablets).

Mavenclad®, the only short-course, oral disease-modifying therapy for the treatment of adults with various forms of highly active relapsing MS, achieved blockbuster status in 2024 for the second consecutive year, with total net sales of more than US$ 1 billion (€ 1,062 million). More than 100,000 patients have now benefited from Mavenclad® across more than 90 countries, including those of the European Union, Switzerland, Australia, Canada, and the United States. Rebif®, a disease-modifying drug, has been a standard treatment in RMS for over 20 years with almost 2 million patient-years of therapy since approval.

Beyond MS, we are continuing to expand the disease focus of our Neurology & Immunology therapeutic area by developing potential first-in-class treatments for conditions with high unmet medical needs. In June 2023, the FDA granted orphan drug designation for cladribine capsules for the treatment of generalized myasthenia gravis (gMG), and we initiated a global Phase III clinical trial program in June 2024.

In immunology, we have a Phase II clinical trial program of the investigational oral therapy enpatoran in cutaneous lupus erythematosus (CLE) and systemic lupus erythematosus (SLE). In October 2024, we shared an analysis from the CLE cohort of the study, which showed that enpatoran met its primary endpoint with an acceptable safety profile in CLE patients. The results from the SLE cohort of the study are anticipated in early 2025.

Fertility

We are a global market leader in fertility drugs and treatments. Infertility is an increasing challenge globally due to demographic change and lifestyle adjustments. Based on the latest data from WHO, one in six people worldwide is affected by infertility.

With our broad portfolio of treatment options, devices, and advanced fertility technologies, we aim to contribute to improved treatment outcomes that help couples fulfill the dream of parenthood.

According to the latest data, more than six million babies have been born worldwide with the help of Gonal-f®, a therapeutic within our Fertility portfolio. It contains the active ingredient follitropin alfa (r-hFSH alfa), which is a recombinant form of the natural hormone FSH and is available in a convenient and ready-to-use pre-filled injection pen. A recent real-world study from France showed improved live birth outcomes with Gonal-f® compared with other commonly used gonadotropins. Real-world evidence complements randomized clinical trials by providing additional insights into long-term treatment effects in large, heterogeneous patient populations.

To support and meet the needs of a variety of patients, in addition to Gonal-f®, we also offer another key product called Pergoveris®. This product combines recombinant human follicle-stimulating hormone (r-hFSH) and recombinant human luteinizing hormone (r-hLH) and represents another treatment option for women with severe FSH and LH deficiency. Pergoveris® is also available as a ready-to-use pre-filled injection pen, eliminating the need for mixing. To complement Pergoveris® and Gonal-f®, we offer Ovidrel® rhCG, Cetrotide® GnrRH antagonist and Crinone® progesterone.

Cardiovascular, Metabolism & Endocrinology

The Cardiovascular, Metabolism & Endocrinology (CM&E) portfolio, which includes the medicines Glucophage®, Euthyrox®, Concor®, and Saizen®, is the largest franchise of the Healthcare business sector in terms of sales.

Glucophage®, containing the active ingredient metformin, is a drug for the first-line treatment of type 2 diabetes and is available in more than 100 countries. In recent years, Glucophage® has been approved by additional health authorities for use in prediabetes in cases where pronounced lifestyle changes failed to produce the desired outcome.

Euthyrox®, with the active ingredient levothyroxine, is a leading medicine for the treatment of hypothyroidism, a disease with high prevalence but still low diagnosis rates in most emerging markets.

Concor®/Concor Cor®, containing bisoprolol, is a beta-blocker for treating hypertension and cardiovascular diseases such as coronary heart disease and chronic heart failure. In addition to Concor®/Concor Cor®, the Concor® family includes fixed-dose combinations such as Concor Plus®/Lodoz® (bisoprolol with hydrochlorothiazide).

Saizen®, which contains the active ingredient somatropin, is our primary endocrinology product and is indicated for the treatment of various growth hormone disorders in both children and adults. Saizen® can be administered using the Easypod® auto-injector, the only growth hormone injection device capable of remotely transferring data such as injection times, dates, and doses to the web-based software system Growzen® Connect, which can be accessed by healthcare professionals, patients and caregivers. Alternatively, Saizen® can be delivered using Aluetta, a simple pen injection device.

Electronics

We are an integral part of the semiconductor ecosystem. With our materials, the related delivery equipment and tools for metrology and inspection, we are a significant part of the value chain for semiconductor processing. Our broad and innovative product portfolio helps solve key industry challenges. In doing so, we place a special focus on high-performance chips needed for applications including artificial intelligence (AI). We provide our materials, systems and services to all major industry players. To this end, we work closely with our customers in the key regions of North America, Europe and Asia Pacific and are a reliable and stable partner with our global network of R&D, production and distribution sites.

After a cyclical downturn, the semiconductor market began to recover during the course of the reporting year 2024, driven mainly by the positive market development for semiconductor materials for AI chips and advanced nodes. Global semiconductor industry sales are expected to grow between 9% and 12% year-on-year up to 2027. To meet the expected growth in demand in the next few years, major semiconductor manufacturers are investing in ramping up their production capacities. Accordingly, we are continuously expanding capacities at our sites all over the world in lockstep with our customers' plans.

We serve manufacturers of logic, memory and analog microchips. The evolution of AI and the unabated growth of data volumes in our digital world are setting ever tougher computing requirements for microchips. They need to be able to process (logic chips) and retrieve (memory chips) more data faster. The electronics industry is working on ever higher-performing devices with microchips that are smaller, faster and more efficient. Accordingly, advanced nodes are required with a higher transistor and memory cell density and more complex architectures (e.g. 3D stacking). Moreover, the most advanced packaging technologies, such as heterogeneous integration, are playing a significant role in further boosting system performance in semiconductors. Heterogeneous integration requires precise measurements of interconnects and components, leading to growing demand for innovative metrology and inspection tools alongside materials for front-end manufacturing (see the section on the **acquisition of Unity-SC**). Miniaturization, vertical stacking as well as heterogeneous integration require more and new process steps and, consequently, new material solutions for further densification.

We continuously strengthen our comprehensive portfolio in order to play a role in developing ever more sophisticated technologies, in doing so catering to the growing demand for cutting-edge microchips required in AI and high-performance computing. Due to this growing complexity, we need a broad portfolio and in-depth expertise to identify solutions that increasingly consist of innovations that build upon one another in a cumulative fashion. To this end, we rely on our Materials Intelligence™ – combining materials science and AI in an interdisciplinary and targeted way, with the objective of working with our customers to make this innovation process more efficient and reducing complexity effectively. As such, we are among the trailblazers when it comes to the next generation of logic and memory chips.

The Electronics business sector consists of the Semiconductor Solutions, Display Solutions (named Optronics since January 1, 2025) and Surface Solutions business units. Three cross-functional boards support the business units: the Technology Leadership Board, the Supply Chain Leadership Board and the Commercial Leadership Board. They define cross-sector standards, drive forward exchange on best practices, promote transparency, and therefore play a key role in our matrix organization.

In July 2024, we signed an agreement to divest the Surface Solutions business to Global New Material International Holdings Ltd. (GNMI) for an agreed purchase price of € 665 million (see **Surface Solutions** section).

Electronics accounted for 18% of Group sales in 2024, and its share of EBITDA pre (excluding Corporate and Other) was 15%. The majority of semiconductors and displays are manufactured in Asia. In 2024, Asia-Pacific generated 68% of Electronics' net sales, with Europe and North America accounting for 29% of sales. Semiconductor Solutions accounted for 69% of our Electronics sales in 2024, while Display Solutions contributed 20% and Surface Solutions 11%.

Acquisition of Unity-SC, SAS

As the industry moves towards more complex and integrated systems, metrology and inspection tools are becoming increasingly important to enable precise semiconductor manufacturing, as they help reduce production costs and optimize yields. To enhance our capabilities in this area, we have acquired Unity-SC, SAS (Unity-SC), a provider of 3D optical metrology and inspection instrumentation for the semiconductor industry based in Montbonnot-Saint-Martin near Grenoble, France. The acquisition was completed on October 31, 2024 for a purchase price amounting to € 144 million within the meaning of IFRS 3 (International Financial Reporting Standards), plus additional payments linked to the achievement of milestones. This transaction expands our expertise and our portfolio. Moreover, it enables us to deliver process control solutions in advanced packaging and heterogeneous integration for microchips and their internal connecting structures, which are essential for manufacturing advanced semiconductors, especially for AI chips. Unity-SC metrology and inspection tools measure key parameters during wafer processing and packaging steps. By adding these metrology and inspection tools for manufacturing to our portfolio, we are gaining a key technology and can obtain further insights into how our materials can increase added value for our customers.

Semiconductor Solutions

As the largest business unit in terms of sales within our Electronics business sector, Semiconductor Solutions offers products and services for the semiconductor industry. We are developing materials and solutions for the next generation of semiconductor components – helping to make microchips smaller, faster, more powerful, and more sustainable.

A microchip undergoes a large number of process steps during fabrication, and each of these steps is enabled by specialized materials that are subject to tough requirements. We supply a strong portfolio of materials for every key process step, focusing in particular on wafer processing. Our expertise not only covers the materials themselves, but also how they are integrated during fabrication to make the final components.

Our Semiconductor Solutions business unit consists of the Thin Films, Formulations, Specialty Gases, and Delivery Systems & Services business fields.

- The Thin Films business field supplies solutions and products for our customers in the fields of dielectrics (organosilanes and spin-on dielectrics) and metallic materials. Thin film technology allows materials to be deposited and removed on an atomic level, enabling more layers, higher complexity and new architectures – all essential factors for AI applications.
- The portfolio of the Formulations business field is divided into the areas of Patterning and Planarization. It includes lithography products such as photoresists, anti-reflective coatings and materials for directed self-assembly (DSA). Additionally, we offer a range of cleans and selective etch chemistries that help improve the patterning process. The Planarization business encompasses materials for chemical-mechanical planarization (CMP), which are essential for achieving the desired surface flatness and precision in semiconductor manufacturing.
- The Specialty Gases business field provides high-purity gases for semiconductor manufacturing. These gases are crucial for precise deposition, doping, etching, and cleaning during wafer processing. With a strong commitment to meeting the semiconductor industry's stringent requirements, our Specialty Gases business supports the industry in the development of advanced electronic devices.
- The Delivery Systems & Services (DS&S) business field, with its systems business, develops and installs reliable delivery equipment to ensure the safe and responsible handling of specialty chemicals and gases for semiconductor manufacturing. At many of the industry's sites, production facilities and delivery systems are operated and maintained by our MEGASYS® Total Gas and Chemical Services employees.

Display Solutions

Our Display Solutions business unit (named Optronics since January 1, 2025) controls light for imaging, processing, measurements, and inspection. We materialize light through display materials, optical technologies, and metrology. These include the businesses with liquid crystals (LC), display patterning materials (photoresists), materials for organic light-emitting diodes (OLED), and reactive mesogens. We support our customers in developing novel technologies beyond TV monitors for IT, mobile devices, the automotive industry, gaming, and other applications. Together with our customers, we are working in the field of AR/VR to expand the range of application scenarios to include optoelectronic technologies. Furthermore, we collaborate very closely with leading panel makers to develop next-generation products with LCD (liquid crystal display) technology for the electronics market.

Thanks to the acquisition of Unity-SC, the business unit now also offers optical metrology equipment (see the section on **Unity-SC**), making full use of its optical capabilities. Optical components are becoming increasingly important when it comes to meeting requirements for more computing power, higher bandwidth and faster data transmission. At Electronics, we develop optical technologies with the goal of enhancing the performance of electronic devices.

Surface Solutions

In our Surface Solutions business unit, we provide our customers with solutions that help them create functional and decorative surfaces of all kinds. We focus on markets for automotive coatings, cosmetics, and, to a smaller extent, industrial applications. With our portfolio of active ingredients, we enable cosmetics manufacturers to enrich their skin care products with moisturizing, protective or anti-aging effects. Moreover, our functional solutions serve many innovative applications, from dirt-repellent and easy-care surfaces to laser markings of plastic parts and cables.

Given our strategic focus on the electronics market and the advancement of future technologies, the Surface Solutions business is no longer at the core of what we do in Electronics. On July 25, 2024, we signed an agreement to divest the Surface Solutions business unit to GNMI, also known under the Chesir brand name. The company is one of the largest manufacturers of pearlescent pigments with sites in China and Korea. The agreement comprises the majority of the global production, sales and development activities of our Surface Solutions business unit. Its presence in Europe and North America would complement that of GNMI, which is represented in Asia. The transaction is expected to close in the second half of 2025 and is subject to regulatory approvals and the satisfaction of certain other customary closing conditions.

Strategy*

Vision and strategy fundamentals

In an ever more complex world increasingly characterized by macroeconomic and geopolitical tensions, we once again demonstrated our impressive resilience and returned to growth in fiscal 2024. Driven by factors such as an aging population, new technologies and climate change, we believe that the demand for scientific breakthroughs has never been greater.

We embrace change as a catalyst for innovation and growth. United behind our vision of "Sparking Discovery, Elevating Humanity", we are committed to creating a brighter, healthier and more sustainable world by empowering science to achieve breakthroughs. Our history spanning more than 356 years, coupled with our diversified business model, puts us in an excellent position to continue to tap into attractive global markets with long-term growth potential.

By implementing our innovation-centric strategy, we will continue to strengthen our position as a leading science and technology company. Our Life Science business sector targets the expanding market for complex molecules and novel modalities, for example. In Healthcare we focus on specialty pharmaceuticals in Oncology and Neurology & Immunology, with established products such as Erbitux® and Bavencio® for cancer and Mavenclad® for multiple sclerosis. In Electronics, we benefit from the increasing demand for semiconductors, which is driven by aspects including data growth, artificial intelligence (AI) and the Internet of Things (IoT).

The ongoing development and integration of digital and data-based technologies will considerably increase our value creation and our capacity for innovation in all three business sectors. Our data and digital strategy is anchored in a clearly defined roadmap designed to continuously enhance our digital infrastructure and elevate our digital differentiation from competitors across our businesses. A recent example of this is our strategic partnership with Siemens, for which we signed a memorandum of understanding in fiscal 2024. Together, we have set the goal of driving digital transformation across our business sectors through strategic projects in the field of smart manufacturing (Smartfacturing).

At the same time, we are committed to maintaining our positive impact on society and the planet by incorporating environmental, social and corporate governance considerations into our growth ambitions. By 2030, we intend to achieve progress for more than one billion people through sustainable science and technology. Moreover, we will fully integrate sustainability into our value chains by the same year. In addition, we will achieve climate neutrality and reduce our consumption of resources by 2040.

Our strategic investments are intended to further expand our positions in high-growth areas, enabling strong long-term profitable growth and attractive cash generation. In this context, active management of our business portfolio will remain a crucial element. Recent examples include the acquisition of Mirus Bio LLC, United States, a leader in transfection reagents for cell and gene therapies, and Unity-SC, France, a provider of metrology and inspection instrumentation for the semiconductor industry. In addition, we signed an agreement to divest our Surface Solutions business unit to sharpen our focus on high-tech applications in Electronics.
Merger and acquisition (M&A) measures will continue to play an essential role in optimizing our positioning for decades to come.

* The contents of this chapter or section are voluntary and therefore not audited. However, our auditor has read the text critically.

Business strategies

Life Science

Our Life Science business sector continues to be a global leader in the approximately € 220 billion life science market. As the impact of pandemic-associated supply disruptions and recent capital constraints diminishes, we are poised for growth. We anticipate a medium- to long-term annual market growth rate of 5% to 7%, which presents numerous opportunities for our Life Science business to deliver value to customers in rapidly evolving segments. Our updated strategic plan will concentrate on increasing sales and EBITDA pre by strengthening our focus on academic, biotech and pharma customers and establishing portfolio leadership. At the same time, we intend to improve our customer experience and drive operational excellence. Over the medium to long term, we will continually advance along three themes.

First, we are recognized for offering products, services and solutions that perfectly meet our customers' scientific and technical needs thanks to our diverse portfolio. To build on this, we are strengthening a unified sector-wide portfolio strategy that aligns our offerings with the emerging needs of our target customers. Second, we will advance our new product development by increasing our research and development (R&D) allocation, pursuing bigger and bolder innovation projects and driving more collaborations. This will invigorate our portfolio with new technology anchors and bring about a step change in the value of our R&D portfolio and returns with new products. Third, we will pursue complementary inorganic paths through targeted collaborations and M&A measures to expand our offerings in attractive segments.

By 2030, we aim to have evolved our portfolio to address the needs of academic, biotech and pharmaceutical customers even more effectively along the molecule and modality journey from concept to commercialization, including discovery research, process development, manufacturing, and testing.

The pursuit of differentiation through portfolio leadership guides our business ambitions.

In Science & Lab Solutions, we aim to accelerate innovation for scientific labs and manufacturers to advance health and contribute to a sustainable future. In Process Solutions, our ambition is to anticipate and shape the future of biomanufacturing together with our customers. We will achieve this through a uniquely differentiated offering, amplified by our commercial execution. And in Life Science Services, our objective is to become an acknowledged, trusted and innovative service provider for the biotech and pharma industry, aiming for an excellent position in our targeted modalities, especially antibody-drug conjugates, viral vectors and mRNAs.

Our commitment to science and technology aligns with our customers' needs for innovative solutions that facilitate new discoveries and manufacturing efficiencies.

While we aim to secure a lasting role as a scientific and technical leader, we must also evolve our customer experience and drive operational excellence to meet changing customer expectations and continue to grow profitably. On the theme of customer experience, we aim to provide seamless interactions along the customer journey.

We will advance our multichannel sales approach, e-commerce platform and sustainability and improve our service levels. Through operational excellence initiatives, our business processes and integrated supply chain organization will become more agile, resilient and customer-centric.

A sharper focus on the needs of academic, biotech and pharmaceutical customers will unite our teams globally around our declared purpose to impact life and health with science.

Healthcare

The global pharmaceutical industry continues to deliver robust growth at attractive margins. Although the macroeconomic and geopolitical environment has displayed increasing volatility for a number of years, the impact of cyclical and/or crisis-related market fluctuations on the industry's underlying growth drivers – i.e. demographic shifts, increasing access to medicines and the emergence of innovative new therapeutic approaches – remains comparatively modest, resulting in relatively constant demand for pharmaceutical products. Our diversified portfolio and our geographical footprint have proven resilient and represent a solid foundation for the future success of our Healthcare business.

In developed and, increasingly, in emerging markets, the majority of pharmaceutical market growth and long-term profitability stems from innovation. Similarly, the growth of our Healthcare business is primarily driven by launches of innovative products, while our mature portfolio provides us with a strong foundation to continue our investment in innovation. Given these dynamics, we remain steadfast in our ambition to continue to grow as a global specialty innovator. Innovative launches in Oncology and Neurology & Immunology put us at the leading edge of change and fuel the growth of our business. Our ambition builds on a solid foundation, and we continue to grow our established franchises, Cardiovascular, Metabolism & Endocrinology and Fertility, both sustainably and profitably. Complementing our portfolio with external innovations further boosts our growth outlook and ensures long-term sustainability. In our decision-making, we focus on areas in which we have the best chance of success thanks to our scale and the diligent trade-off of clinical versus commercial risks in our pipeline.

Despite recent setbacks in late trial phases of our pipeline, we remain committed to innovation. We continue to drive pipeline projects with the aim of bringing innovative medicines to patients, maximizing our existing portfolio and continuing our expansion in growth markets.

To maximize the results of our R&D investments and ensure their long-term sustainability, we continuously progress our R&D model to expand our innovation capabilities. Furthermore, we aim to increase our intake of external innovation in line with industry practice in order to bolster our pipeline with more attractive business opportunities.

We continue to focus on specialty medicine franchises. Within each specialty franchise, our approach is to develop deep internal expertise and insights, from internal research to commercialization, augmented by recruiting external talent and strategic collaborations. To optimize the holistic value and focus of our pipeline, we continuously monitor and assess the potential of our pipeline candidates, based on clinical data, strategic fit and financial criteria, to determine the best way forward.

We aim to reinforce and expand our global presence, bringing the innovation of our pipeline to patients and growing our business in all major markets. With innovation being the key growth driver and the majority of absolute pharmaceutical market growth stemming from developed markets, we aim to strengthen our position in these markets through our innovative portfolio. At the same time, rapidly evolving healthcare infrastructure in emerging markets will be a large growth driver for many of our established products in the future. Managing the balance between delivering innovative new medicines while leveraging our strengths in further markets and ensuring the profitable growth of the existing business will be a strategic imperative.

Electronics

Our ambition is to be a leading partner in materials and material-related equipment as well as services for the electronics industry by maximizing added value for our customers with our Materials Intelligence™. We have successfully taken up a leading role in the semiconductor ecosystem and already serve the world's most important industry players with one of the broadest portfolios. The semiconductor ecosystem is one of the most innovative, fast-paced and scientifically advanced industries. Our portfolio and innovation mindset are ideally suited to helping the industry overcome technological challenges. Our increasingly data-driven solutions are designed to address all areas of 3D densification, including miniaturization, performance optimization, vertical stacking, and heterogeneous integration.

We are investing in innovations and sustainable alternatives to help the industry overcome its sustainability challenges. Recognizing the increased demand for sustainable solutions, we see an opportunity to offer products that are unique in the market and lead the industry toward more resource-efficient production of end products.

The medium- and long-term growth prospects of the industry remain very attractive. The increasing importance of AI and the unabated growth of data volumes in our digital world are setting ever-tougher computing requirements for microchips, which need to be able to process more data faster (logic chips) and enable faster data access (memory chips). Semiconductors will thus continue to be indispensable in numerous industries. The most important end market growth drivers are the next generation of chips enabled by advanced nodes – especially for AI – and the end device replacement cycle accelerated by this, accompanied by an increasing semiconductor content per device. Both growth drivers will have a positive impact on Electronics' business in wafer processing and microchip packaging. AI in particular is and will remain the driving force behind business development.

These factors are expected to act as a catalyst for growth and market development over the next decade. To produce ever more powerful and energy-efficient microchips, innovation in novel materials will be even more essential. This leads to further miniaturization and ever more complex architectures in semiconductors. We drive customer intimacy by embedding innovations and solutions from our brand portfolio in the technology roadmaps of our customers. At the same time, we are continuously broadening the scope of our offering beyond our current focus on the wafer processing chain and are investing to support the realization of new architectures through heterogeneous integration in chip manufacturing.

Additionally, we expect that expertise in optronics will become even more important. Optical technologies are gaining in importance in the semiconductor industry. Market forecasts take the same view and predict that semiconductor and optical technologies will increasingly converge. To address this growing field of convergence, we will use our Materials Intelligence™, leveraging our deep technological expertise in optics and chemistry throughout critical production processes in the electronics industry. Our strengths – ranging from organic synthesis to our expertise in manufacturing semiconductor components – are essential to utilizing new business opportunities in the field of optoelectronic technologies, such as in augmented reality, virtual reality and mixed reality, as well as the newly acquired metrology and instrumentation business of Unity-SC. Furthermore, the pace of innovation in AI chips requires heterogeneous integration with optical interconnects in order to manage efficiency and high-bandwidth data transfer as well as overcome the transmission limitation of traditional electrical wiring. Additionally, the further development of our display businesses with liquid crystals and materials for organic light-emitting diodes remains an important part of our optronics portfolio and will open up new opportunities.

In our view, we are also well prepared for very long-term trends in the industry. One example is the fusion of semiconductor technology and biotechnology, which is already emerging in neuromorphic chips and biosensors. We believe that a multidisciplinary approach to science will power the next wave of human progress; we call this approach "bioconvergence" because it leverages synergies across digital and material science as well as biotechnology.

With the divestment of Surface Solutions, we are sharpening our focus on the electronics industry in order to play an even more important role within the semiconductor ecosystem.

Data & digital strategy

We accelerate innovation as a long-term growth driver by leveraging collaboration through data and digital technologies among other things. Our mission is to harness the transformative power of data and digital innovations in everything we do to spark discovery and elevate humanity. By embedding our vision into our Data & Digital strategy, we strive to provide best-in-class solutions for our three business sectors and deliver value to the industries they serve.

We are expanding our innovation efforts into new technologies, markets and digital business models with a strategic focus on enhancing existing assets and capabilities. The newly established Data, Digital & IT Executive Council under the joint leadership of the Group Chief Science & Technology Officer and the Group Chief Information Officer leads this effort, integrating transformative technology trends to foster innovation across our business sectors.

Our approach is exemplified by joint initiatives, such as UPTIMIZE, our data and AI ecosystem, and the Smartfacturing program, which enhance operational excellence and streamline processes across sectors. UPTIMIZE provides a harmonized data and AI operating model, enabling us to derive actionable insights and scale the company’s machine learning and AI capabilities.

The Smartfacturing program is building a robust infrastructure for scalable AI capabilities by using real-time data from IoT sensors, connected equipment and operational systems. This drives operational efficiency, product quality and an adaptive supply chain, enabling us to effectively meet evolving market demands and regulatory requirements.

Data culture is foundational to our digital transformation. Through data upskilling initiatives and generative AI literacy programs, including our own myGPT Suite, we empower our workforce to use data effectively and securely, ensuring a collaborative approach to innovation and value creation.

Sustainability strategy

In our view, sustainable entrepreneurship and profitable growth go hand in hand; we can remain competitive only by creating added value for society. Through our innovative and high-quality products, we want to help meet global challenges. At the same time, these types of products secure our financial performance capability. Responsible action is an integral part of our company culture. This also includes respecting the interests of our employees, customers, investors, and society.

Safety and ethics matter just as much to us as business success. We mitigate ethical, economic, environmental, and social risks as far as possible. From the early stages of development through to disposal, we keep an eye on the entire life cycle of a product and integrate circular economy aspects. We apply strict sustainability standards to our procurement activities. During product manufacture, it is important to us to keep the environmental impact as low as possible, which is why safe production, high environmental standards and strict quality management are of course so crucial to us. By supplying products that meet extensive sustainability criteria, we also help other companies to achieve their sustainability goals.

Sustainability is a key element of our corporate strategy. We pursue three strategic sustainability goals: By 2030, we intend to achieve progress for more than one billion people through sustainable science and technology. Moreover, we will fully integrate sustainability into our value chains by the same year. In addition, we will achieve climate neutrality and reduce our resource consumption by 2040. With these goals, we are helping to achieve the UN Sustainable Development Goals. Overall, our sustainability strategy is centered on seven focus areas within which we are realizing numerous initiatives and projects today and tomorrow, measuring our progress as we go.

We use 16 key indicators to record and assess our progress towards achieving our sustainability goals. Our annual Long-Term Incentive Plan for Executive Board members and senior executives contains a sustainability factor. We use it to measure performance over a period of three years based on selected key indicators for each of our three sustainability goals. Details on how this sustainability factor is calculated can be found in the "**Compensation Report**". In the reporting year, the company tied 15% of variable employee compensation to sustainability parameters.

As such, we are in the process of transforming our company with the aim of balancing environmental, social and governance aspects – for us as a company, for our stakeholders and for society at large. We are integrating sustainability into the innovation process and all parts of the value chain, in doing so positioning ourselves as a responsible company, and expect a lasting competitive advantage. It is our aim to decouple the growth of our businesses from negative environmental impacts.

More information about sustainability topics, as well as the key indicators used to monitor sustainability and the degree to which we have achieved our strategic goals, can be found in the "**(Group-) Sustainability Statement**".

Strategic finance and dividend policy

We pursue a conservative financial policy characterized by the following aspects:

Financial flexibility and a conservative funding strategy

We ensure that we meet our obligations at all times and adhere to a conservative and proactive funding strategy that involves the use of various financial instruments. Our diversified and profitable business activities form the basis for our strong and sustainable cash flow generation capacity. Moreover, we have several funding resources in place. A € 2.5 billion syndicated loan facility is in place until 2029 to cover unexpected cash needs. This credit line is a backup facility that is intended to be used in exceptional circumstances only.

We also agreed upon several bilateral loan facilities. In addition, we have a commercial paper program with a volume of € 2.5 billion at our disposal. Within the scope of this program, we can issue short-term commercial paper with a maturity of up to one year.

The bond market also represents an important source of financing. The most recent bond issue took place in August 2024 (€ 0.8 billion hybrid bond issue). The use of various instruments provides a broad financing basis and addresses different investor groups.

Maintaining reliable and long-term business relations with a core group of banks

We work mainly with a well-diversified, financially stable and reliable group of banks. Due to our long-term business approach, bank relationships typically last for many years and are characterized by professionalism and trust. The banking group consists of financial institutions with strong capabilities and expertise in various products and geographical regions. We regard these banks as strategic partners and therefore involve them in important financing transactions.

Strong investment-grade rating

The rating of our creditworthiness by external rating agencies is an important indicator of financial stability. A strong investment-grade rating is a cornerstone of our financial policy as it safeguards access to attractive financial conditions on the capital markets.

In November 2024, our rating was confirmed by Moody’s (A3, stable outlook); Standard & Poor’s confirmed our rating (A, stable outlook) in December 2024.

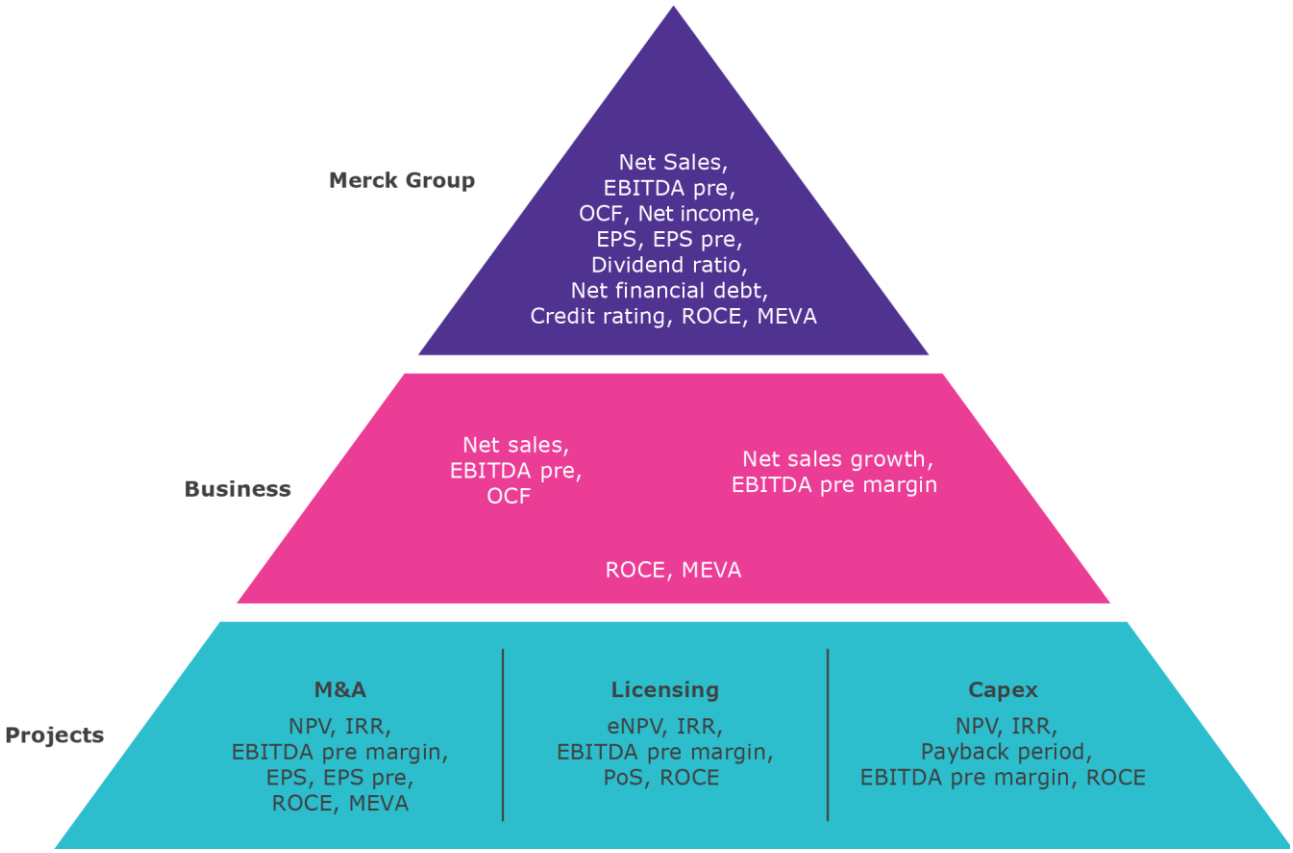
Sustainable dividend policy

We are pursuing a sustainable dividend policy. Provided the economic environment develops in a stable manner, the current dividend represents the minimum level for future dividend proposals. Our dividend policy will follow business development and earnings increases over the coming years. However, dividend growth could deviate, for example, within the scope of restructuring or in the event of significant global economic developments. We aim for a target corridor of 20% to 25% of earnings per share pre.

Internal Management System

As a global company with a diverse portfolio of products and services, we use a comprehensive framework of indicators to manage performance. The most important key performance indicator (KPI) for measuring performance is EBITDA pre[1].

The Value Creation and Financial KPI Pyramid, which summarizes our important financial performance measures, reflects the comprehensive framework of financial KPIs to steer the businesses and prioritize the allocation of cash resources. It consists of three managerial dimensions: Merck Group, Business, and Projects, each of which requires the use of different indicators.



Abbreviations
EBITDA pre[1] = Earnings before interest, income tax, depreciation and amortization as well as adjustments.
EBITDA pre-margin[1] = Earnings before interest, income tax, depreciation and amortization as well as adjustments as a percentage of net sales.
EPS = Earnings per share.
EPS pre[1] = Earnings per share pre (earnings per share before adjustments).
MEVA[1] = Merck value added.
OCF[1] = Operating cash flow.
ROCE[1] = Return on capital employed.
NPV[1] = Net present value.
IRR[1] = Internal rate of return.
eNPV[1] = Expected net present value.
PoS[1] = Probability of success.
M&A = Mergers and acquisitions.

[1] Not defined by International Financial Reporting Standards (IFRS).

Key performance indicators of the Group and its businesses

The three key performance indicators of net sales, EBITDA pre, and operating cash flow (OCF) are the most important financial indicators for assessing our operational performance. Accordingly, we refer to these KPIs in the **Report on Economic Position**, the **Report on Risks and Opportunities**, and the **Report on Expected Developments**. As the most important indicators of financial business performance, the KPIs are key elements of our performance management system.

Net sales

Net sales are defined as the revenues from the sale of goods, services rendered to external customers, and commission income and profit sharing from collaborations, net of value-added tax, and after sales deductions such as rebates or discounts. Net sales are the main indicator of our business growth and are therefore an important parameter of external as well as internal performance measurement. In addition, organic sales growth compared with the annual target is used for internal performance management. Organic sales growth shows the percentage change in net sales versus a comparative period, adjusted for exchange rate and portfolio effects. Exchange rate effects may arise as a result of foreign exchange fluctuations between the functional non-euro currency of a consolidated company and the reporting currency (euro). By contrast, portfolio effects reflect sales changes due to acquisitions and divestments of consolidated companies or businesses.

Merck Group

Net sales

			Change	
€ million	**2024**	2023	€ million	%
Net sales	**21,156**	**20,993**	**163**	**0.8%**

EBITDA pre

EBITDA pre is the main performance indicator measuring ongoing operational profitability and is used internally and externally. To permit a better understanding of the underlying operational performance, the operating result is adjusted to exclude depreciation and amortization, impairment losses and reversals of impairment losses, as well as adjustments. These adjustments are restricted to the following categories: integration expenses, IT expenses for certain projects, restructuring expenses, gains/losses on the divestment of businesses, acquisition expenses, and other adjustments. The classification of specific income and expenses as adjustments follows clear rules and is subject to strict governance at the Group level. Within the scope of internal performance management, EBITDA pre allows for efficiency improvements to be implemented in processes without the performance of the operating business being affected by exceptional items or restructuring expenses. The following table shows the composition of EBITDA pre in fiscal 2024 compared with the previous year. The International Financial Reporting Standards (IFRS) figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Merck Group

Reconciliation EBITDA pre[1]

	2024			2023			Change
€ million	IFRS	Elimination of adjustments	pre[1]	IFRS	Elimination of adjustments	pre[1]	pre[1]
Net sales	**21,156**	**–**	**21,156**	**20,993**	**–**	**20,993**	**0.8%**
Cost of sales	-8,671	41	-8,630	-8,600	43	-8,558	0.8%
Gross profit	**12,485**	**41**	**12,526**	**12,392**	**43**	**12,435**	**0.7%**
Marketing and selling expenses	-4,536	30	-4,506	-4,510	44	-4,466	0.9%
Administration expenses	-1,370	154	-1,216	-1,392	246	-1,146	6.1%
Research and development costs	-2,279	11	-2,269	-2,445	7	-2,438	-7.0%
Impairment losses and reversal of impairment losses on financial assets (net)	-8	2	-7	-51	–	-51	-87.1%
Other operating income and expenses	-646	333	-313	-385	138	-247	26.8%
Operating result (EBIT)[1]	**3,645**			**3,609**			
Depreciation/amortization/impairment losses/reversals of impairment losses	2,134	-277	1,856	1,880	-87	1,792	3.6%
EBITDA[2]	**5,779**			**5,489**			
Restructuring expenses	144	-144	–	249	-249	–	
Integration expenses/IT expenses	103	-103	–	118	-118	–	
Gains (-)/losses (+) on the divestment of businesses	-46	46	–	-51	51	–	
Acquisition-related adjustments	26	-26	–	18	-18	–	
Other adjustments	68	-68	–	56	-56	–	
EBITDA pre[1]	**6,072**	**–**	**6,072**	**5,879**	**–**	**5,879**	**3.3%**
thereof: organic growth[1]							6.9%
thereof: exchange rate effects							-3.6%
thereof: acquisitions/divestments							-0.1%

[1] Not defined by International Financial Reporting Standard (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Operating cash flow (OCF)

Operating cash flow results from Merck's current business activities and describes the cash generated from operating activities. It is influenced mainly by EBITDA pre, income tax, the financial result, and changes in net working capital.

Merck Group

Operating cash flow

			Change	
€ million	**2024**	2023	€ million	%
EBITDA pre[1]	**6,072**	**5,879**	**193**	**3.3%**
Adjustments[1]	-293	-390	97	-24.9%
Finance result[2]	-108	-125	17	-13.4%
Income tax[2]	-751	-650	-101	15.5%
Changes in working capital[1]	-63	-141	78	-55.4%
thereof: Changes in inventories[3]	36	-89	124	>100.0%
thereof: Changes in trade accounts receivable[3]	79	-8	88	>100.0%
thereof: Changes in trade accounts payable/refund liabilities[3]	-178	-43	-134	>100.0%
Changes in provisions[3]	62	188	-126	-67.0%
Changes in other assets and liabilities[3]	-309	-755	446	-59.1%
Neutralization of gains/losses on disposal of fixed assets and other disposals[3]	-2	-150	148	-98.6%
Other non-cash income and expenses[3]	-22	-72	50	-69.6%
Operating cash flow	**4,586**	**3,784**	**802**	**21.2%**

[1] Not defined by International Financial Reporting Standard (IFRS). Adjustments according to definition above.

[2] According to Consolidated Income Statement.

[3] According to the Consolidated Cash Flow Statement.

Investments and value management

Sustainable value creation is essential to secure the long-term success of the company. To optimize the allocation of financial resources, we use a defined set of parameters as criteria for prioritizing investment opportunities and portfolio decisions.

Net present value (NPV)

The main criterion for prioritizing investment opportunities is net present value. It is based on the discounted cash flow method and is calculated as the sum of the discounted free cash flows over the duration of a project. The weighted average cost of capital (WACC), representing the weighted average of the cost of equity and cost of debt, is used as the discount rate. Different markups are applied to the WACC depending on the nature and location of the respective project.

Internal rate of return (IRR)

The internal rate of return is a further important criterion for the assessment of acquisition projects and investments in property, plant and equipment, as well as intangible assets. It is the discount rate that makes the present value of all future free cash flows equal to the initial investment or the purchase price of an acquisition. A project adds value if the internal rate of return is higher than the weighted cost of capital including markups.

Return on capital employed (ROCE)

In addition to NPV and IRR, return on capital employed is an important metric for the assessment of investment projects when looking at individual accounting periods. It is calculated as the adjusted operating result pre (EBIT pre) divided by the sum of property, plant and equipment, intangible assets, trade accounts receivable, trade accounts payable, and inventories.

Payback period

An additional parameter to prioritize investments in property, plant and equipment, and intangible assets is the payback period, which indicates the time in years after which an investment will generate positive net cash flow.

Merck value added (MEVA)

Merck value added gives information about the financial value created in a period. Value is created when the return on capital employed (ROCE) of the company or the business is higher than the weighted average cost of capital (WACC). MEVA metrics provide us with a powerful tool to weigh investment and spending decisions against capital requirements and investors’ expectations.

Capital market-related parameters

Net income, earnings per share (EPS) and earnings per share pre (EPS pre)

Earnings per share are calculated by dividing profit after tax attributable to the shareholders of Merck KGaA (net income) by the weighted average number of theoretical shares outstanding. The use of a theoretical number of shares takes account of the fact that the general partner's capital is not represented by shares. To provide an alternative view, we also report earnings per share pre, in which the effects of integration expenses, IT expenses for selected projects, restructuring expenses, gains/losses on the divestment of businesses, acquisition expenses, and other adjustments are eliminated. Furthermore, amortization of acquired intangible assets is adjusted. The adjustment excludes impairment losses on intangible assets for acquired research and development (R&D) projects below a threshold value of € 50 million. Income tax is calculated on the basis of the Group's underlying tax rate. The following table presents the reconciliation of net income to net income pre for the calculation of EPS pre.

Reconciliation net income to net income pre[1]

			Change	
€ million	**2024**	2023	€ million	in %
Net income	**2,777**	**2,824**	**-47**	**-1.7%**
Non-controlling interest	9	10	-1	-9.0%
Income tax	751	650	101	15.5%
Amortization of acquired intangible assets	714	783	-69	-8.8%
Adjustments[1]	570	477	93	19.5%
Income tax on the basis of the underlying tax rate[1]	-1,061	-1,044	-17	1.6%
Non-controlling interests to be adjusted	-9	-10	1	-9.0%
Net income pre[1]	**3,751**	**3,691**	**61**	**1.6%**
Earnings per share pre[1] in €	**8.63**	**8.49**	**0.14**	**1.6%**

[1] Not defined by International Financial Reporting Standards (IFRS).

Dividend ratio

We pursue a reliable dividend policy with a target payout ratio based on EPS pre (see definition above) with the aim of ensuring an attractive return for our shareholders.

Credit rating

The rating of our creditworthiness by external agencies is an important indicator of our ability to raise debt capital at attractive market conditions. The capital market makes use of the assessments published by independent rating agencies in order to assist debt providers in estimating the risks associated with a financial instrument. We are currently assessed by Moody's and Standard & Poor's. The key indicators for the credit rating are EBITDA, cash flow, and net/gross financial debt.

Relevant non-financial performance measures

Along with the indicators of the financial performance of the businesses, non-financial measures also play an important role in furthering the success of the company.

High-Impact Culture

Our culture should embody what unites us as well as the way in which we collaborate, lead and work as a team to achieve human progress and drive Merck forward. In making our high-impact culture a lived reality, we measure our ability to attract, develop, and retain the right people.

Sustainability

With our sustainability strategy, we aim to achieve human progress through sustainable innovations and technologies, to comprehensively integrate sustainability within our value chains, and to reduce our resource consumption. We pursue these goals across seven focus areas in which we realize numerous initiatives and projects and measure our progress.

Diversity, equity and inclusion

We know that diversity drives progress. It strengthens our ability to innovate and makes an essential contribution to our success in science and technology. We actively promote and measure diversity among our leaders in order to create an inclusive culture that reflects our values and enables every employee to fulfill their potential.

Research and Development

We are a diversified science and technology company with a leading position in the life science, healthcare and electronics industries. In line with our new vision of "Sparking Discovery. Elevating Humanity", we are striving for innovation in all three business sectors in order to make our growth plans a reality. We conduct research and development (R&D) worldwide to develop new products, services and solutions to improve the quality of life of patients and meet the needs of our customers. Further optimizing the relevance and efficiency of our research and development activities – either on our own or in collaboration with third parties – is one of our top priorities. In addition, we are continuously improving the fulfilment of our sustainability criteria and integrating them into our R&D processes as early as the product development stage (see "**(Group-) Sustainability Statement**").

Around 6,400 employees (2023: approximately 6,500) worked in R&D and related support functions in 2024. They dealt with innovations to address long-term health and technology trends in both established and growth markets.

Expenditure for R&D amounted to € 2.3 billion in 2024 (2023: € 2.4 billion).

The organizational setup of our R&D activities reflects our structure. In the Life Science business sector, we drive scientific breakthroughs with innovative technologies for applications in natural sciences and pharmaceutical research that enable life-saving novel therapies and treatments for diseases such as cancer and diabetes. In the Healthcare business sector, we develop innovative therapies, leveraging internal discoveries and external partnerships. In the Electronics business sector, we are accelerating the development of the next generation of microchips to enable innovations in the semiconductor and display industry that are needed for AI applications and the digital world of the future.

At Group level, we want to create synergies both within and between our business sectors and continuously develop new areas of innovation. One of our key objectives is to continue expanding the scope of our innovation by looking into new technologies, markets and digital business models as well as by leveraging existing assets and capabilities and combining them with data and digital technologies. Our efforts in this area include Syntropy® and Athinia®, which are partnerships with Palantir. Both platforms enable secure AI data flows and data sharing ecosystems that can help increase efficiencies while ensuring that stakeholders maintain control of their intellectual property.

We opened the Merck Digital Hub in Singapore in January 2024. Supported by the Singapore Economic Development Board, the Digital Hub aims to drive progress within the healthcare and semiconductor industries. The Merck Digital Hub is also where the expertise of Syntropy® and Athinia® will converge to help data owners integrate and curate their data across organizations.

In addition, we are continuing to develop opportunities at the intersection of our business sectors and converging technologies to develop solutions that enable our three business sectors to bring value to the industries they serve:

- We are continuing to build our automated design-make-test-analyze platform powered by lab automation and AIDDISON™, our generative AI-powered active ingredient discovery platform. Following its launch by Life Science in 2023, we updated AIDDISON™ in 2024 to meet the needs of our customers even more effectively. In addition to external commercialization, we also use it internally in our Healthcare business sector in early stages of drug discovery. Our AI in Drug Discovery program will accelerate the discovery of new and better drug candidates, making new therapies available to patients faster.
- We are using our capabilities across our sectors in messenger ribonucleic acid (mRNA) synthesis, lipid nanoparticle (LNP) synthesis and formulation, targeted delivery, and AI to enable the development of "smart" LNPs that can more effectively target different tissue types including hard-to-reach biological targets to treat various diseases.

- We contribute to our Healthcare pipeline through a new type of antibody-targeted drug modality capable of selectively delivering PROTACs (PROteolysis TArgeting Chimeras) to tumor cells. The newly developed technology, which is patent pending, has the potential to release two active ingredients in a targeted manner that enable tissue- and target-selective degradation. This “plug-and-play” technology can be applied to multiple therapeutic targets across different therapeutic areas, potentially revolutionizing the fields of both antibody-drug conjugates (ADCs) and PROTACs.

In 2024, we also successfully completed several pilot projects of our “Smartfacturing” program, i.e. highly adaptable, modular smart factories, including the development and implementation of a new automation technology for GMP (good manufacturing practice) production that enables equipment connectivity. This technology uses special software components called module type packages to interlink different production devices and systems based on a common standard. This project was supported with funding from the German Federal Ministry for Economic Affairs and Climate Action.

We are currently utilizing the new automation technology to produce both pharmaceuticals and chemicals, but it can also be applied to various production processes and manufacturing industries. To further advance our initiatives in this area, we have formed a strategic partnership with Siemens, aimed at fostering transformative projects across our three business sectors. By integrating Merck’s expertise in Life Science, Healthcare and Electronics with Siemens’ leadership in advanced hardware and software development, this partnership will facilitate the design of faster, more cost-effective and more sustainable manufacturing processes.

The following table depicts research and development costs of the business units in fiscal 2023 and 2024:

			Change	
€ million	**2024**	2023	€ million	%
Life Science	388	396	-9	-2.2%
Healthcare	1,503	1,657	-154	-9.3%
Electronics	297	297	–	-0.2%
Corporate and Other	92	94	-3	-2.7%
Total	**2,279**	**2,445**	**-166**	**-6.8%**

The ratio of research expenditure to Group sales was 10.8% (2023: 11.6%). It has declined due to positive sales development and the discontinuation of clinical studies in Healthcare.

Life Science

Across our three business units Science & Lab Solutions, Process Solutions and Life Science Services, our R&D teams continue to bring expertise and a diversified and relevant portfolio of products and services to our customers around the world.

The development of preventive and personalized medicine is progressing steadily. It is therefore essential to set standards with robust, scalable and efficient processes for viral vector production, next-generation sequencing, i.e. improved technologies for DNA sequencing, and autologous cell therapies. This in turn will support the expansion of disruptive cell and gene therapies to treat the most challenging and chronic conditions, including cancer, heart disease, diabetes, and muscular dystrophy.

Together, we are having a decisive impact on these scientific developments. To this end, more than 1,700 engineers, chemists and biologists across our twelve global hubs continue to focus on six strategic innovation vectors: building our core portfolio, labs and factories of the future, novel modalities, next-generation biology, Artificial Intelligence (AI) and digital, and sustainability. In 2024, we launched more than 9,200 products and solutions, including those under our “faucet program” for antibodies, reference materials, chemicals, and nanomaterials.

Science & Lab Solutions

In 2024, we launched our M-Trace® software and the associated mobile app for microbiological quality control, a comprehensive data tracking solution to digitalize sterility testing. The software helps ensure overall process safety by automatically documenting data for every step of the testing process. This reduces the risk of deviations, false positive results, and human error.

For more than 50 years, our lab water systems have been an integral part of academic laboratories. In 2024, we continued to evolve our Milli-Q® lab water systems with the launch of Milli-Q® SQ 2Series systems. Installation of these compact systems into laboratory setups can be self-managed by customers and take 30 minutes. It is also what we call a “Greener Alternative Product”, reducing water usage by up to 60% and minimizing power consumption compared with our previous series, thus providing a greener solution for ultrapure water. We also launched enhanced Milli-Q® water purification cartridges with sustainability in mind. For instance, the carbon emissions of these can now be reduced by up to 18% over the water purification system’s lifetime.

Process Solutions

In September, we launched the first scalable single-use mixer specifically designed for manufacturing antibody-drug conjugates (ADCs). ADCs are a rapidly emerging class of therapeutic agents that can target and selectively kill tumor cells while protecting healthy ones. The Mobius® ADC Reactor enables biopharmaceutical companies to produce crucial therapies faster and more safely by offering accelerated turnaround times and fewer cross-contamination risks, all while maintaining high product quality. The new ADC bioreactor is a collaboration between the Process Solutions and Life Science Services business units.

In addition, Process Solutions launched several other products to support the needs of our customers, including: GMP-grade Benzonase® salt tolerant endonuclease, which enables the incorporation of high salt concentrations during the midstream step in bioprocessing; mPredict™ Co-Crystal Prediction Service, a new AI-based tool designed to accelerate drug formulation that achieves results three times faster than random digital screening; RevIT GMP AAV Enhancer, which can be paired with any transfection reagent and delivers higher titers for recombinant adeno-associated virus production; and Cellvento® ModiFeed Gal+, Gal-, and Sial+ COMP feeds, three new chemically defined feeds, enabling customers to easily fine-tune galactosylation or sialylation (crucial product quality attributes) of mAbs, biosimilars or other therapeutic proteins.

Life Science Services

In April, Life Science Services launched a first-of-its-kind, all-in-one, validated genetic stability assay. The Aptegra™ genetic stability platform replaces five different assays and four different technologies with one assay that uses a digital platform with next-generation sequencing technology. This approach reduces testing time by 66% compared with traditional methods. The platform meets all regulatory requirements for genetic stability assurance, including copy number assessment.

Healthcare

Patients are at the center of all our research and development efforts. We are committed to innovation in science to bring more medicines to more patients, faster. We will continue our internal discovery engine, while more than 50% of future launches are expected to result from external co-development partnerships and strategic in-licensing of assets. In 2024, our Healthcare business devoted roughly 17.8% of total sales to R&D activities aimed at discovering and developing new therapies.

Oncology

In Oncology, our scientific curiosity and dedication to patients are at the heart of our efforts to improve the lives of people living with cancer. As a key focus area within our R&D portfolio, we are dedicated to delivering transformative treatments. Translational research is integrated throughout the entire R&D process, with several projects addressing unmet needs in difficult-to-treat cancers through innovative treatment approaches and novel combinations.

Marketed therapies

We are committed to setting new standards of care for multiple tumor types and making the corresponding therapies accessible to as many patients as possible globally. Therefore, in 2024, we continued to explore the impact of our marketed therapies by continuously analyzing data from our pivotal studies and generating real-world evidence. Additionally, we are evaluating these treatments in new clinical settings to allow more cancer patients to partake in their potential benefits.

To date, Bavencio® (avelumab), an anti-PD-L1 antibody, has been approved in over 70 countries as a first-line maintenance treatment for locally advanced or metastatic urothelial carcinoma (UC) in adult patients whose disease has not progressed following platinum-based chemotherapy. New analyses presented at congresses throughout 2024 continued to strengthen the robust evidence supporting its use in this setting. This includes data from the pivotal Phase III JAVELIN Bladder 100 study shared at the 2024 American Society of Clinical Oncology (ASCO®) Annual Meeting, confirming the benefit of Bavencio® in key subgroups of patients with advanced urothelial carcinoma that has not progressed on platinum-based chemotherapy, including those who have low tumor burden and those with mixed histologic subtypes.

In addition, findings from long-term responders in JAVELIN Bladder 100 treated with Bavencio® plus best supportive care for ≥1 year and ≥2 years were presented at the European Society for Medical Oncology (ESMO) Congress. Further analyses from Japan and France presented at the ESMO Congress added to the extensive real-world evidence of Bavencio® as a maintenance treatment, demonstrating that the clinical trial outcomes can be translated into real-world practice across a range of settings and geographies.

In the Phase II JAVELIN Bladder Medley study, we are continuing to evaluate whether optimizing first-line maintenance treatment by combining a novel therapy with avelumab could further improve outcomes for patients with advanced UC whose disease did not progress following first-line platinum-based chemotherapy. Initiated in 2022, this randomized umbrella study assesses avelumab monotherapy versus avelumab in combination with our investigational anti-TIGIT antibody (M6223), avelumab in combination with Nektar Therapeutics' interleukin-15 (IL-15) receptor agonist (NKTR-255) and avelumab in combination with Gilead Sciences' Trodelvy®.

Bavencio® is also approved as a monotherapy for the treatment of metastatic Merkel cell carcinoma (MCC) in 63 countries. Additionally, Bavencio® is approved for the treatment of advanced renal cell carcinoma (RCC) in combination with axitinib in 60 countries.

Tepmetko®

In February 2024, the U.S. Food and Drug Administration (FDA) granted full approval to the oral MET inhibitor Tepmetko® (tepotinib) for adult patients with metastatic METex14-skipping non-small-cell lung cancer (NSCLC). The conversion from accelerated to full approval was based on the VISION study, which encompassed 161 further patients and was presented at the 2024 ASCO® Annual Meeting as well as a follow-up spanning an additional 28 months to assess duration of response.

In 2024, we presented further data on health-related quality of life (HRQoL) in patients treated with Tepmetko®. Data from the Phase II VISION study showed that patients with METex14-skipping NSCLC with brain, liver, adrenal, or bone metastases maintained stable HRQoL during treatment with Tepmetko® with improvements in symptoms, such as coughing, that were consistent with results for the overall population.

In August 2024, the Phase II INSIGHT 2 primary analysis manuscript was published in The Lancet Oncology, showing that tepotinib combined with osimertinib offered promising clinical benefit with a manageable safety profile in patients with EGFR-mutated NSCLC whose disease had progressed on first-line osimertinib and had experienced MET amplification.

Novel medicines

In 2024 we made significant progress in advancing our novel medicines, including our antibody-drug conjugates (ADC) discovered in-house and assets from our portfolio of DNA damage response (DDR) inhibitors.

At the 2024 ASCO® Annual Meeting, we presented first-in-human data for M9140, an investigational ADC targeting carcinoembryonic antigen-related cell adhesion molecule 5 (CEACAM5) that features a novel exatecan payload. This is the first ADC developed in our labs to enter clinical development. Data from 40 patients treated across seven dose levels in Part 1A of the study demonstrated encouraging clinical activity with a manageable and predictable safety profile in this population. Updated results, including biomarker analyses, were presented at the ESMO Congress 2024. M9140 entered the randomized dose optimization part of the study for metastatic colorectal cancer in 2024, with further explorative analyses in patients with CEACAM5-expressing tumors including gastric, pancreatic and NSCLC to start in 2025.

We also advanced M3554, our GD2 (disialoganglioside expressed on tumors)-targeted ADC from our platform, into clinical development, with the first-in-human study beginning in November 2024.

Within our DDR portfolio, we are continuing to advance the development of tuvusertib (M1774), our potent and selective inhibitor of ataxia telangiectasia and Rad3-related (ATR), and M9466, the selective PARP1 (poly ADP-ribose polymerase 1) inhibitor licensed from Jiangsu Hengrui Pharmaceuticals Co. Ltd in 2023, opening new studies in 2024 to explore the potential of these medicines in different tumors. The Phase II DDRiver EOC 302 study evaluates tuvusertib in combination with our ataxia telangiectasia-mutated (ATM) inhibitor, lartesertib, or with niraparib, a PARP inhibitor, in PARP-resistant ovarian cancer. For M9466, we opened the Phase I DDRiver 501 study, exploring M9466 in combination with tuvusertib in solid tumors with relevant mutations and/or prior PARP inhibitor exposure, with a focus on castration-resistant prostate and ovarian cancers. Additionally, the DDRiver 511 study was initiated, combining M9466 with FOLFIRI chemotherapy.

Throughout the year, we have presented several abstracts at congresses that form the foundation of Phase II combination studies of tuvusertib. These included data from the Phase Ib DDRiver Solid Tumors 320 study evaluating tuvusertib in combination with lartesertib or our immune checkpoint inhibitor Bavencio®, which were first presented at the ASCO® Annual Meeting 2024. The findings confirm that both DDRi assets are well positioned for the development of combinations in therapeutic areas in which we have experience. At the 2024 ASCO® Annual Meeting, we shared findings from Part B1 of the Phase I DDRiver Solid Tumors 301 study, which demonstrated a manageable safety profile and preliminary efficacy for different dosing regimens of tuvusertib in combination with niraparib, a PARP inhibitor, in patients with advanced solid tumors. We shared additional data from this study with translational, pharmacokinetic, pharmacodynamic, and immunophenotyping analyses at ESMO 2024.

In June, we announced the discontinuation of the randomized Phase III TrilynX® study evaluating xevinapant plus chemoradiotherapy (CRT) in patients with unresected locally advanced squamous cell carcinoma of the head and neck (LA SCCHN). The decision followed a pre-planned interim analysis performed by the study's Independent Data Monitoring Committee, which found that the trial would be unlikely to meet its primary objective of prolonging event-free survival. The company also discontinued the Phase III XRay Vision® study of xevinapant versus placebo in combination with adjuvant, post-operative radiotherapy in patients with resected LA SCCHN.

In November, our partners at Abbisko Therapeutics Co. Ltd., Shanghai, China, announced that Abbisko's investigational treatment for tenosynovial giant cell tumor (TGCT), pimicotinib, significantly improved objective response rate (ORR) compared to placebo in the Abbisko-led pivotal Phase III MANEUVER study, meeting its primary endpoint. We entered into a licensing agreement with Abbisko in December 2023, granting us an exclusive license to commercialize products comprising or containing pimicotinib for all indications in mainland China, Hong Kong, Macau, and Taiwan, as well as an exclusive option for global commercial rights of pimicotinib.

Building on our expertise in the treatment of colorectal cancer (CRC), in January we announced a licensing agreement with Inspirna, Inc. for the development and commercialization of ompenaclid, a potentially first-in-class oral inhibitor of the creatine transport channel SLC6A8 and SLC6A8-targeting follow-on compounds outside of the United States. Ompenaclid is currently being evaluated by Inspirna in a Phase II study for the second-line treatment of RAS-mutated (RASmut) advanced or metastatic CRC.

Neurology & Immunology

We have been committed to people living with multiple sclerosis (MS) for more than 25 years. Our ongoing dedication to science drives us to continue to push the boundaries of knowledge through our research in neurological and immune-mediated disease areas.

Beyond MS, we are continuing to expand the therapeutic focus areas of our Neurology & Immunology franchise by developing potential first-in-class treatments for conditions with high unmet medical needs. We have a pipeline focusing on discovering new therapies that have potential in other neuroinflammatory and immune-mediated diseases, including systemic lupus erythematosus (SLE), cutaneous lupus erythematosus (CLE) and generalized myasthenia gravis (gMG).

Enpatoran, an investigational highly specific potential first-in-class immune modulator, is being developed as a new investigational oral therapy for SLE and CLE in a Phase II study. It aims to overcome limitations of currently available lupus therapies by providing selective inhibition of Toll-like-receptors (TLR) 7 and 8, that are known as key lupus-relevant disease drivers, which may increase efficacy while preserving immunity against infections. Analysis from the CLE cohort of a Phase II study indicates that enpatoran met the primary endpoint with a good safety profile. We anticipate Phase II results for enpatoran in systemic lupus in early 2025, which would then complete the data.

We are also exploring the potential of cladribine capsules for the treatment of gMG, which affects an estimated 700,000 people worldwide and where a high unmet need remains, particularly with regard to oral treatment options. Cladribine is expected to selectively target B and T lymphocytes, which are thought to be the root cause of gMG. In June 2023, the FDA granted orphan drug designation for cladribine capsules for the treatment of gMG. We began a global Phase III clinical trial program in June 2024.

In 2024, we also presented new data from our portfolio in MS at numerous scientific meetings, including the Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum in February, the Consortium of Multiple Sclerosis Centers (CMSC) Annual Meeting in May and the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS) Congress in September.

At ACTRIMS, we presented two new post-hoc analyses from the M AGNIFY-MS clinical program. The first presentation suggested the potential of Mavenclad® to maintain or improve cognitive function in patients with highly active relapsing multiple sclerosis (RMS). Additionally, the second presentation with interim findings from year three of the M AGNIFY-MS extension trial underscored the continued efficacy and safety profile of Mavenclad® following the completion of the two-year treatment course.

At ECTRIMS, we showcased data on the long-term safety profile, sustained efficacy, and durable effect of Mavenclad® in RMS with 40 abstracts and two oral presentations. Mavenclad® data from several M AGNIFY-MS sub-studies demonstrate the benefits of early treatment and the drug's sustained efficacy across multiple measures of disease activity, such as its impact on both peripheral and central inflammation, on promoting immune cell reconstitution effects and on disability progression, including freedom from progression independent of relapse activity for most patients.

Building on data presented at the 2024 CMSC Annual Meeting, which showed that Mavenclad® can reduce or eliminate oligoclonal bands in the cerebrospinal fluid, additional data presented at ECTRIMS suggested that immune reconstitution following treatment with Mavenclad® may shift the immune system to a less pathogenic state.

Fertility

As a global market leader in fertility drugs and treatments, our Fertility franchise plays a crucial role in our Healthcare business. Infertility is a growing challenge globally due to demographic change and lifestyle adjustments such as delayed childbearing.

According to the latest data, more than six million babies have been born worldwide with the help of Gonal-f®, a leading therapeutic within our Fertility portfolio. It contains the active ingredient follitropin alfa (r-hFSH alfa), which is a recombinant form of the natural hormone FSH and is available in a convenient and ready-to-use pre-filled injection pen. Treatment with Gonal-f® can result in increased follicles, oocytes and embryos compared with urinary gonadotropins, thereby improving the chances of pregnancy and live birth. Recent real-world evidence studies based on key European registries (D.I.R., SNDS) showed increased likelihood of live birth with Gonal-f® compared with urinary gonadotropins and biosimilar preparations of follitropin alfa.

Cardiovascular, Metabolism & Endocrinology

Chronic diseases such as diabetes, prediabetes, hypertension and cardiovascular disease, growth hormone disorders, and thyroid disorders are having a significant and growing impact on health and society in the 21st century. In view of this development, we are committed to helping patients living with these conditions.

The new formulation of Euthyrox® (levothyroxine) for the treatment of hypothyroidism obtained further regulatory approvals in 2024 and is available in more than 90 countries where this incremental innovation is registered. With its characteristics of delivering precise, fine-tuned, and stable natural thyroid hormone thyroxine doses due to the tightened specification, Euthyrox® may help optimize disease management.

Glucophage®, containing the active ingredient metformin, is the most widely prescribed non-insulin diabetes treatment worldwide for first-line treatment of type 2 diabetes. We are continuing to deploy our strategy on the early stages of the diabetes continuum, taking advantage of the fact that Glucophage® is now approved in more than 80 countries.

Our pipeline

As of December 31, 2024

Therapeutic area / Compound	Indication	Status
Neurology & Immunology		
Cladribine capsules (Immune reconstitution[1])	Generalized myasthenia gravis	Phase III
Enpatoran (TLR7/8 antagonist)	Systemic lupus erythematosus[2]	Phase II
Enpatoran (TLR7/8 antagonist)	Cutaneous lupus erythematosus[2]	Phase II
Enpatoran (TLR7/8 antagonist)	Idiopathic inflammatory myopathies (DM and PM)[3]	Phase II
M5542 (CTLA4Ig/anti-OX40L fusion protein)	T cell-mediated autoimmune diseases[4]	Phase I
Oncology		
Pimicotinib (CSF-1R inhibitor)[5]	Tenosynovial giant cell tumor (TGCT)[6]	Phase III
Avelumab (anti-PD-L1 mAb) + Sacituzumab Govitecan/NKTR-255/M6223 (anti-TIGIT mAb)	Locally advanced or metastatic urothelial carcinoma	Phase II
Ompenaclid (SLC6A8 inhibitor)[7]	RAS-mutated advanced or metastatic colorectal cancer	Phase II
Tuvusertib (ATR inhibitor) + lartesertib (ATM inhibitor) or niraparib	Epithelial ovarian cancer[8]	Phase II
Precemtabart tocentecan (M9140, anti-CEACAM5 Antibody drug conjugate)	Colorectal cancer	Phase Ib
M9466 (selective PARP1 inhibitor)[9] + tuvusertib	Solid tumors[10]	Phase Ib
M9466 (selective PARP1 inhibitor) + Topoisomerase 1 inhibitor-based regimens	Colorectal cancer	Phase Ib
M3554 (anti-GD2 Antibody drug conjugate)	Solid tumors[11]	Phase I
Global Health		
Cabamiquine (PeEF2 inhibitor)[12]	Malaria	Phase II

Pipeline products are under clinical investigation and have not been proven to be safe and effective. There is no guarantee any product will be approved in the sought-after indication.

[1] Putative mechanism

[2] Clinical trial passed futility analysis.

[3] Dermatomyositis and Polymyositis

[4] Study in healthy volunteers

[5] We entered into a licensing agreement with Abbisko Therapeutics Co. Ltd, Shanghai, China, granting us an exclusive license to commercialize pimicotinib (ABSK021) in mainland China, Hong Kong, Macau, and Taiwan as well as an exclusive option for global commercial rights of pimicotinib.

[6] Study met the primary endpoint, open-label part ongoing.

[7] We entered into a licensing agreement with Inspirna, Inc., New York, NY, United States, for ompenaclid (RGX-202), which grants an exclusive license to ompenaclid outside of the United States and an option to co-develop and co-promote ompenaclid in the US.

[8] Includes studies (phase I/II) in collaboration with/ sponsored by external partners, e.g. US National Cancer Institute (NCI)

[9] We entered a collaboration with Jiangsu Hengrui Pharmaceuticals Co. Ltd., Lianyungang, Jiangsu, China, including an exclusive license worldwide (ex-China) to develop, manufacture and commercialize M9466/HRS-1167.

[10] As a single agent and in combination with tuvusertib (ATRi); study includes patients with castration-resistant prostate cancer (CRPC) and epithelial ovarian cancer (EOC)

[11] Patients with soft tissue sarcoma (STS) and glioblastoma

[12] In combination with pyronaridine in two studies, either in participants with acute uncomplicated malaria, or as chemoprevention in participants with asymptomatic malaria infection.

ATR: Ataxia telangiectasia and Rad3-related
CEACAM5: Carcinoembryonic antigen-related cell adhesion molecule 5
CSF-1R: Colony stimulating factor 1 receptor
CTLA-4: Cytotoxic T-lymphocyte associated protein 4
EOC: Epithelial ovarian cancer
GD2: Disialoganglioside expressed on tumors
mAb: Monoclonal antibody
OX40L: Ligand for OX40 receptor
PARP1: poly (ADP-ribose) polymerase 1
Phase I: Dose finding
Phase Ib: Dose escalation/expansion and signal seeking
PD-L1: Programmed cell death ligand 1
PeEF2: Plasmodium eukaryotic elongation factor 2
SLC6A8: Creatine transport channel coded by SLC6A8 gene
TIGIT: T cell immunoreceptor with Ig and ITIM domains
TLR7/8: Toll-like receptors 7 and 8

Electronics

Our R&D strategy follows our overall Electronics technology strategy, which aims to enhance and expand our capabilities, drive organic growth and enable new technology platforms. Our Chief Technology Office (CTO) identifies trends and vets technologies that are beyond the time horizon or scope of our business units. As a dedicated technology organization, the CTO manages research partnerships, shapes our technology roadmaps and manages our long-term R&D portfolio. Our Technology Leadership Board reviews and optimizes our technology investment across the business sector.

We are focusing our R&D capabilities on next-generation semiconductor and optical materials to further strengthen our position as one of the leading suppliers to the electronics industry. Our R&D aims to find solutions for the needs that drive our industry: to create smaller, more powerful and more efficient chips and reduce the impact on the environment. Consequently, sustainability and the use of AI and machine learning are both key focus areas of our R&D.

Sustainable technologies and materials

Sustainability is a key innovation area for us. Our sustainability approach is based on three core pillars that drive our activities: collaboration, innovation and operation.

Collaboration

In the interconnected electronics supply chain, collaboration is crucial for developing and scaling sustainable solutions. Joint action benefits the entire value chain, enabling participants to achieve defined sustainability objectives together. One notable example of collaboration is the academic research program we initiated with Intel in Europe in 2023. This three-year initiative comprises six projects with currently eleven universities and institutes across six countries. It aims to develop sustainable semiconductor manufacturing solutions through AI and machine learning, focusing on new materials, efficient processes and waste reduction.

Innovation

Our R&D efforts push the boundaries of innovation to create a safer, smarter and more connected world while protecting the environment. One example of our commitment is the development of materials that do not use PFAS (per- and polyfluoroalkyl substances). They are intended to replace PFAS surfactants in photoresists, solvent-based antireflective coatings and rinse solutions. We already offer alternative products for some applications.

Operation

We recognize that real change begins with us, starting from our own production processes. We are committed to reducing our environmental footprint to meet our sustainability goals. Our efforts to reduce emissions of NF_3 (nitrogen trifluoride) and N_2O (nitrous oxide) from our own processes are one such example of our ambition in this area.

R&D activities in the business units

Semiconductor Solutions

Our R&D team works to ensure that we can supply the materials needed for every key step in wafer processing. To this end, we collaborate with original equipment manufacturers and device makers to shape the future of digital living, providing material solutions for advanced microchips with complex architectures, improved performance, enhanced thermal control, and greater energy efficiency.

The main R&D programs for our Semiconductor Solutions business units include the following:

Thin Films

In Thin Films, we are continuously expanding our product portfolio for both memory and logic chip customers, placing a key focus on unlocking new R&D opportunities as we move to smaller node sizes, including gate-all-around transistor architecture and advanced packaging. We are actively tackling the challenges associated with these innovative technologies. In our view, technologies that enable lower power consumption and higher performance are essential in the rapidly evolving AI landscape.

We are committed to enhancing our offerings by developing cutting-edge material solutions, including molybdenum, ruthenium and cobalt precursors for selective metallization, highly conformal silicon-containing films on complex 3D structures with precise thickness control and enhanced performance, gap filling materials with low dielectric constants, metal oxide precursors, spin-on dielectric films, and more.

Formulations (Patterning and Planarization)

In Patterning, we are continuing to develop non-PFAS materials and have moved closer toward finalizing our new non-PFAS i-Line (365 nm) and KrF (248 nm) photoresists, which we are sampling with customers. Additionally, we are driving innovation in next-generation EUV photoresists.

Our long-term focus on directed self-assembly (DSA) is ongoing, leading to investments in new facilities in Darmstadt to prepare for high-volume manufacturing. The industry’s response to DSA has been encouraging, as this technology helps reduce random defects and lowers expenses for manufacturers.

In Planarization, some of our back-end-of-line products are now in the advanced stages of qualification for use in heterogeneous integration, thus paving the way for further AI-driven chip developments. We gained the first customer for our tungsten slurries in 2023, which is driving forward the use of our products in memory applications.

Specialty Gases

With one of the broadest specialty gases portfolios in the market, covering etching, cleaning, deposition, and dopant gases, we always have sustainability in focus and aim to develop material solutions to achieve both performance and emissions targets.

We are continuing our efforts to develop new, more climate-conscious low-emission etching and cleaning gases, including new low-GWP (global warming potential) materials, and expand the range of applications for which we are developing these sustainable solutions.

Display Solutions

Display Solutions (since January 1, 2025, Optronics) supports customers in developing advanced display technologies for various applications, including TV-, IT- and mobile devices, automotive displays, and gaming. In collaboration with partners, we are advancing augmented reality (AR) and virtual reality (VR), expanding the application of display materials and enhancing user experiences for future immersive devices.

We maintain partnerships with leading panel manufacturers to develop next-generation display products and technologies, focusing on innovative barrier materials that offer superior flexibility, higher reliability and extended lifespans for flexible OLED devices. Our OLED and photoresist materials are integral components in numerous free-form displays, aiding customers in creating sustainable OLED structures for emerging IT applications.

Alongside our focus on new technologies, we are working on advancing LCD technology through collaborations with industry-leading panel makers. Additionally, we are developing both liquid crystal-on-silicon and OLED-on-silicon solutions for AR/VR displays and advancing materials for waveguides and gratings – essential components in new augmented reality devices.

The acquisition of Unity-SC enables us to develop cutting-edge metrology devices for heterogenous integration and high-bandwidth memory, as well as for advanced packaging in microchips.

Surface Solutions

In July 2024, we signed an agreement to divest the Surface Solutions business unit to Global New Material International Holdings Ltd. (GNMI), a leading pigment producer in China. R&D will continue within Surface Solutions until the sale is closed, after which the business unit will be transferred to GNMI.

In 2024, Surface Solutions continued to meet specific customer requirements by developing new formulations that, combined with existing products, provide customized solutions across various industries.

Report on economic position

Macroeconomic and Sector-Specific Environment

In its latest World Economic Outlook published on January 17, 2025, the International Monetary Fund (IMF) projected that global gross domestic product growth would remain approximately stable at 3.2% for 2024. Economic growth was driven mainly by declining global inflation rates, which are projected to fall from an annual average of 6.7% in 2023 to 5.8% in 2024 and decline even further in 2025. Major central banks in advanced economies started to cut interest rates despite high inflation rates for services prices. Increased demand for semiconductors and significant investments in artificial intelligence in emerging Asian markets contributed to economic growth. This economic recovery was partially offset by ongoing supply disruptions due to armed conflict, civil unrest and extreme weather events impacting emerging markets and developing economies in particular.

The IMF highlighted significant risks to the 2024 global outlook, including potential regional conflicts, a further slowdown in China's property sector and financial market volatility and the associated impact on national debt. Geoeconomic fragmentation would also pose challenges to global stability. Despite these risks, the IMF pointed to key opportunities, such as recalibrating fiscal policies to make public debt sustainable, restoring fiscal buffers and enhancing growth through structural reforms. The IMF also stressed that increased international cooperation could accelerate the green transition, support debt restructuring and strengthen multilateral frameworks, promoting long-term global stability and shared growth.

The development of GDP in selected countries and regions was as follows:

Annual change in %	**2024[1]**	2023
World	3.2	3.3
Advanced economies	1.7	1.7
USA	2.8	2.9
Euro area	0.8	0.4
Japan	-0.2	1.5
Emerging markets and developing economies	4.2	4.4
Emerging markets and developing economies Asia	5.2	5.7
India	6.5	8.2
China	4.8	5.2

[1] Figures for fiscal 2024 estimated

The development of selected sector specific environments was as follows:

	Change 2024[1]	Change 2023
Life Science		
Growth in market for laboratory products[2]	-1.5%	-5.0%
Growth in global sales of biopharmaceuticals[3]	12.8%	17.5%
Sales share of biopharmaceuticals in the global pharmaceutical market[3]	39.5%	38.3%
Early clinical monoclonal antibody (mAb) pipeline growth[4]	6.5%	17.4%
Healthcare		
Global pharmaceutical market	8.8%	10.3%
Market for multiple sclerosis therapies[5]	-2.4%	-1.5%
Market for type 2 diabetes therapies[5]	17.6%	18.8%
Market for fertility treatment[5]	9.0%	11.5%
Market for the treatment of colorectal cancer[6]	2.8%	1.0%
Electronics		
Growth of wafer area for semiconductor chips	-2.5%	-14.3%
Growth of display surface area[7]	6.0%	-1.0%
Global sales of cosmetics and care products	3.8%	3.1%
Global number of produced light vehicles	-0.4%	10.3%

[1] Predicted development. Final development rates for 2024 were not available for all industries when this report was prepared.

[2] Global Market for Laboratory Products, October 2024, Frost & Sullivan.

[3] Global pharmaceuticals spending at a constant exchange rate. IQVIA market data based on the past 12 months as of the third quarter 2024.

[4] Number of programs in Phase I or Phase II clinical trials, Cortellis.

[5] Growth rates based on market data in local currency, translated at a constant euro exchange rate. The IQVIA market data on the growth of indications are based on current figures, including the third quarter of 2024. Annual growth based on the values for the past twelve months. The type 2 diabetes market excludes the United States since this market is insignificant to Merck.

[6] Growth rates based on market data stated in US dollars. Market data from EvaluatePharma on the growth of indications are based on published company reports and are subject to exchange rate fluctuations.

[7] Growth of display area is a pure volume indicator.

Life Science

Our Life Science business sector is one of the leading global suppliers of products, tools and services for research laboratories, pharmaceutical and biopharmaceutical production as well as industrial and testing laboratories. While the direct impacts of the Covid-19 pandemic were resolved, capital constraints and persistent high inventory levels at many customers challenged the growth of life science companies compared with previous years.

Accordingly, the markets in which Life Science operates remained below historic steady-state growth levels. According to the market research firm Frost & Sullivan, the market for laboratory products, relevant to our Science & Lab Solutions business unit, decreased by 1.5% in 2024 (2023: -5.0%). This decrease was below typical growth in the mid-single-digit range. Decisive factors such as high interest rates and a challenging macroeconomic outlook suppressed investment in early-stage biotech companies (venture capital and IPOs), resulting in lower demand for laboratory products. Once the underlying macroeconomic factors normalize, spending on laboratory products is likely to increase again.

In the pharma and biotech production market, in which our Process Solutions and Life Science Services business units are active, demand was driven by the development and manufacture of therapeutic drugs and vaccines. According to the pharmaceutical market research firm IQVIA, the end market for biopharmaceuticals grew by 12.8% in 2024 (2023: 17.5%) to € 555 billion (or 39.5% of the global pharmaceutical market). The number of monoclonal antibodies (mAbs) being investigated in phase I or II development grew by 6.5% (2023: 17.4%). Although the biopharmaceutical market grew in 2024, inventory destocking remained a headwind to growth across the industry in 2024.

Healthcare

In its latest study from September, IQVIA forecasts growth of 8.8% in 2024 (2023: 10.3%) for the global overall pharmaceutical market. The pharmaceutical market growth rates benefit from new product launches, demographic and epidemiological trends as well as improved access to care. This is balanced by generic and biosimilar product uptake together with stricter price policies.

EMEA (Europe, Middle East and Africa) grew by 8.4% in fiscal 2024 (2023: 8.6%) with the EU4 (Germany, France, Italy, and Spain) plus the UK growing by 6.8% (2023: 8.2%). North America grew by 10.0% (2023: 13.7%) with the United States growing at a rate of 10.1% (2023: 13.8%). The United States remains the biggest and most important pharmaceutical market by far. Latin America achieved double-digit growth of 24.7% (2023: 11.9%) impacted by high inflation. The Asia-Pacific region (excluding China and Japan) has 6.2% growth (2023: 6.7%). China has increased investment in healthcare infrastructure and access to innovative medicines as well as extended price regulations (for example, “National Volume-based Procurement“ directive), lowering growth to 1.5% in 2024 (2023: 4.0%).

Not only the growth of the pharmaceutical sector as a whole, but also the market development for biotechnologically produced active ingredients is relevant to our business. According to IQVIA, these products accounted globally for 39.5% of the pharmaceutical market value (2023: 38.3%). The US remains the most important market with 64.5% share.

The developments in the therapeutic areas of relevance to Merck were characterized by different trends in the reporting year. The global market for type 2 diabetes, excluding the United States, followed the high growth trend of previous years achieving 17.6% in 2024 (2023: 18.8%). The therapeutic area of infertility grew 9.0% in the reporting year (2023: 11.5%) and colorectal cancer continued growing by 2.8% in 2024 (2023: increase of 1.0%) with stronger usage of branded products despite biosimilar market penetration. The market for multiple sclerosis therapies declined by -2.4% (2023: -1.5%), driven by competition from generics.

Electronics

The semiconductor industry is the most important market for our business with materials, solutions and services for integrated circuits production (Semiconductor Solutions). Demand for semiconductor materials primarily depends on the wafer area produced for semiconductors, with silicon wafers serving as an indicator for overall semiconductor materials demand.

According to the global industry association SEMI (October 2024 forecast), the delivered silicon wafer area experienced a -2.5% decline in 2024 (-14.3% in 2023). The industry moved past the 2023 cyclical downturn and began to recover in 2024. However, macroeconomic challenges such as high inflation, high interest rates and changing consumer preferences for services tempered the upswing. Semiconductor manufacturers raised capacity utilization rates despite continued high inventory levels and sluggish end-device demand; nevertheless, demand for materials and related services has increased compared with 2023. However, silicon wafers faced significant excess inventory in 2024, decoupling from actual semiconductor production.

We expect a positive development for the Electronics business sector with continued growth in the semiconductor market in 2025, driven by AI solutions, the Internet of Things and rising data volumes from big data.

With our Display Solutions business (named Optronics since January 1, 2025), we are a significant producer of liquid crystal mixtures, photoresists and OLED materials for the display industry. Following the Covid-19 pandemic´s “lock-down boom”, the display industry experienced demand normalization and signs of gradual recovery in 2023. However, sluggish demand in the fourth quarter of 2023 led to a slight decline in annual growth. In 2024, OMDIA forecasts a 6.0% growth in display area, driven by increased demand for larger TV sizes, replacement demand for IT devices and steady growth in automotive displays. Liquid crystals will remain vital in the display industry, while OLED technology is increasingly important in high-end applications. Additionally, there is growing interest in reactive mesogens for anti-reflective films and barrier materials, which could enhance the flexibility, reliability and longevity of OLED devices.

The automotive coatings and cosmetics markets are crucial to our Surface Solutions business. According to GlobalData´s September 2024 report, global automobile production is expected to decline slightly by -0.4% in 2024 (compared with 10.3% increase in 2023) due to de-stocking after a strong production year and slowing global growth, except in China and India. Euromonitor´s November 2024 report indicates that the beauty and care products market is continuing to grow in the low- to mid-single digits in 2024.

Review of Forecast against Actual Business Developments

The forecast of the Merck Group for fiscal 2024 published in the Annual Report for fiscal 2023 comprised the forecast for the Group as well as the forecast for the three business sectors: Life Science, Healthcare and Electronics.

Net sales

We forecast slight to moderate organic net sales growth for the Group in fiscal 2024. As expected, the Healthcare business sector was once again the strongest growth driver compared with the previous year, with Mavenclad® and products from the Oncology and Cardiovascular, Metabolism & Endocrinology franchises making the main contributions. For Life Science, we reported a gradual recovery in organic net sales growth over the course of the year in comparison with the previous year. There were no longer any significant contributions from demand for products in connection with Covid-19. In the Electronics business sector, we witnessed a turnaround in parts of the semiconductor market, although a comprehensive market recovery did not emerge by the end of fiscal 2024. The anticipated decline in Display Solutions business also had a negative impact, as did project business in the Semiconductor Solutions business unit, which is typically subject to stronger fluctuations owing to its dependency on major individual orders. Overall, we recorded organic net sales growth of 2.0% in fiscal 2024, thereby falling within the forecast range of +2% to +5% that we most recently specified in the second quarter and confirmed in the third quarter. At the start of the year, we forecast overall exchange rate effects of between -3% and 0%. This was based in particular on the expected development of the US dollar and some Asian currencies. At -1.3%, exchange rate effects in fiscal 2024 fell within this range, which we subsequently confirmed in the second and third quarters. The slightly positive portfolio effect was negligible at 0.1%. All in all, net sales amounted to € 21,156 million (2023: € 20,993 million), representing a year-on-year increase of 0.8%. This was below the mid-point of the forecast range of € 20,700 million to € 22,100 million and thus was consistent with the more specific forecast issued together with the figures for the third quarter (trending in the lower half of the range).

Life Science

In our Life Science business sector, the expected recovery began in the second half of 2024, after sales in the first half of the year were initially still affected by the reduction of increased inventories on the customer side. However, this recovery was slower than originally anticipated and will continue in some areas in 2025. Accordingly, Life Science reported an organic decline in net sales of -3.3% in fiscal 2024. This was below the forecast range of between -2% and +2% that we specified in the second and confirmed in third quarters and it was also below our original forecast of a slight organic decline to slight organic growth. While the Process Solutions and Life Science Services business units recorded a downturn in organic net sales, the Science & Lab Solutions Business unit recorded a slight organic sales growth. All in all, net sales in the Life Science business sector fell by -3.9%, to € 8,916 million (2023: € 9,281 million), including a negative exchange rate effect of -0.7% and a positive portfolio effect of 0.1%. This was slightly above the lower end of the forecast range of € 8,800 million to € 9,500 million and consistent with the more specific forecast issued at the end of the third quarter (trending slightly above the lower end of the range).

Healthcare

We originally forecast moderate to solid organic sales growth for our Healthcare business sector compared with the previous year. We then quantified this organic net sales growth forecast at between +4% and +7% with the publication of the quarterly statement for the first quarter. We raised this forecast to between +6% and +9% with the publication of the interim report on the second quarter and confirmed it with the figures for the third quarter. The business sector achieved this forecast with organic growth of 7.0% in fiscal 2024. This development was driven in particular by products from the areas of Oncology as well as Neurology & Immunology, especially our recently approved product Mavenclad®, as well as Cardiovascular, Metabolism and Endocrinology products. Taking into account a negative exchange rate effect of-2.0%, net sales in the Healthcare business sector increased by 5.0%, to € 8,455 million (2023: € 8,053 million) in fiscal 2024. This was slightly below the mid-point of the forecast range of € 8,200 million to € 8,750 million and in line with the more specific forecast issued together with the figures for the third quarter (trending slightly below the mid-point of the range).

Electronics

With the turnaround in the market for semiconductor materials originally expected to occur at the start of the second half of the year and an expected decline in the Display Solutions business and project business in the Semiconductor Solutions business unit, we forecast around stable to moderate organic net sales growth for the Electronics business sector at the start of the year. With the publication of the figures for the first quarter, we quantified this forecast at between 0% and +4%. We raised this forecast to between +4% and +8% in the interim report on the second quarter, having already observed a trend reversal in sub-segments of the semiconductor materials market in the second quarter that was expected to lead to further organic net sales growth in semiconductor materials. We confirmed this forecast together with the figures for the third quarter. With organic growth of 4.6%, net sales were in line with this forecast. Taking into account a negative exchange rate effect of -1.4%, net sales in the Electronics business sector increased by 3.4% year-on-year to € 3,785 million (2023: € 3,659 million). This was in the lower half of the forecast range of € 3,650 million to € 3,950 million and in line with the more specific forecast issued together with the figures for the third quarter (trending in the lower half of the range).

EBITDA pre

Our original forecast for the Merck Group's EBITDA pre for fiscal 2024 ranged from slight to moderate organic growth compared with the previous year. This assumption was based on the expectation of a moderate organic decline to slight organic growth in Life Science, low single-digit percentage organic growth in Healthcare and a moderate organic decline to moderate organic growth in Electronics. We originally expected negative exchange rate effects to impact EBITDA pre by between -1% and -4% compared with the previous year. With the publication of the figures for the first quarter, we quantified our EBITDA pre forecast at organic growth of between +1% and +7%, again under the assumption that negative exchange rate effects would impact EBITDA pre by between -1% and -4% compared with the previous year. Due to the net sales growth in the Healthcare and Electronics business sectors and, in particular, the expected development of EBITDA pre in the Healthcare business sector, thanks to the positive impact of the termination of the strategic alliance with Pfizer Inc., United States (Pfizer), effective June 30, 2023, and the subsequent regain of the exclusive global rights to develop, manufacture and commercialize Bavencio® as well as lower costs, especially in research and development, we raised our EBITDA pre forecast to between +4% and +10% with the publication of the interim report on the second quarter and confirmed this forecast together with the figures for the third quarter. Due to negative exchange rate developments, we adjusted our forecast for the impact of exchange rate effects to between -5% and -1% in the second quarter and confirmed this together with the figures for the third quarter. EBITDA pre amounted to € 6,072 million in fiscal 2024 (2023: € 5,879 million), representing a total increase of 3.3% compared with the previous year. This was slightly below the mid-point of our forecast range of between € 5,800 million and € 6,400 million, and hence in line with the more specific range (trending around the mid-point). At 6.9%, organic EBITDA pre growth also fell within our forecast range of between +4% and +10%. Exchange rate effects came in at the lower end of our forecast range at -3.6%. The slightly negative portfolio effect was negligible at -0.1%.

Life Science

In line with the expected organic net sales development (slight organic decline in net sales to slight organic growth in net sales), we forecast a moderate organic decline to slight organic growth in EBITDA pre in the Life Science business sector. We quantified our forecast for organic EBITDA pre at between -6% and +1% in the first quarter and confirmed this forecast with the publication of the figures for the second and third quarter. We expected earnings to be adversely affected by negative mix effects, which we intended to mitigate as far as possible through corresponding cost savings. Combined with the most recent forecast of a negative exchange rate effect of between -4% and 0% (originally: roughly stable to slightly negative exchange rate effect), the forecast range for EBITDA pre was between € 2,550 million and € 2,800 million. EBITDA pre in fiscal 2024 fell within this range, at € 2,589 million (2023: € 2,820 million). This represented a year-on-year decline of -8.2% (-6.3% organic, -1.7% due to exchange rate effects, -0.2% due to portfolio effects). EBITDA pre was therefore also in line with the more specific forecast issued in the report on the third quarter (trending slightly above the lower end of the range).

Healthcare

We originally forecast organic EBITDA pre growth in the low single-digit percentage range for our Healthcare business sector. This original forecast was higher than the forecast moderate to solid organic net sales growth. This was due to the termination of the strategic alliance with Pfizer effective June 30, 2023, and the subsequent regain of the exclusive global rights to develop, manufacture and commercialize Bavencio®, as well as lower costs, especially in research and development, as a result of the failure of evobrutinib to meet its primary endpoint, as demonstrated by the results of the clinical trials published on December 6, 2023. With the publication of the figures for the first quarter, we increased this forecast range to organic EBITDA pre growth of between +13% and +18%. We then raised it further to between +18% and +23% in the interim report on the second quarter, in response to stronger operating performance and lower costs, especially in research and development. We retained this forecast with the publication of the figures for the third quarter. Combined with the most recent forecast of an exchange rate effect of between -6% and -2% (originally: slight to significant

negative exchange rate effect), this resulted in a forecast range for EBITDA pre in the Healthcare business sector of € 2,850 million to € 3,050 million. At € 2,995 million in fiscal 2024 (2023: € 2,543 million), EBITDA pre fell within the upper half of this range and hence in line with the more specific forecast issued in the report on the third quarter (trending in the upper half of the range). This represented a year-on-year increase of 17.8% (22.7% organic, -5.0% due to exchange rate effects).

Electronics

For the Electronics business sector, we originally forecast a moderate organic decline to moderate organic growth in EBITDA pre in fiscal 2024. In addition to the expected growth in net sales, we anticipated a favorable mix effect in net sales, as well as positive effects from active cost management, but we expected the sale of a portfolio of licenses and patents in fiscal 2023 to have an opposing effect. With the presentation of the figures for the first quarter, we quantified our forecast range for the organic development of EBITDA pre at between -3% and +4%. We raised this forecast to between +5% and +11% with the publication of the interim report on the second quarter and retained it with the figures for the third quarter. This largely reflected the growth in net sales in the Electronics business sector after we already observed a trend reversal in sub-segments of the semiconductor materials market in the second quarter. Combined with the most recent forecast of an exchange rate effect of between -2% and +1% (originally: roughly stable to moderate negative exchange rate effect), this resulted in a forecast range for EBITDA pre in the Electronics business sector of € 950 million to € 1,020 million. At € 970 million in fiscal 2024 (2023: € 913 million), EBITDA pre was slightly above the lower end of this range and hence was in line with the more specific forecast issued in the report on the third quarter (trending slightly above the lower end of the range). This represented a year-on-year increase of 6.2% (6.9% organic, -1.0% due to exchange rate effects, 0.2% due to portfolio effects).

Corporate and Other

The expenses for Corporate and Other in EBITDA pre amounted to €-482 million in fiscal 2024. This was slightly below the mid-point of the published forecast range of between € -450 million and € -520 million and hence in line with the more specific forecast issued in the report on the third quarter (trending around the mid-point). The original forecast for fiscal 2024 provided for higher expenses due to lower foreign currency hedging gains. Expenses increased by 21.4% compared with the prior-year figure of € -397 million.

Operating cash flow

We originally anticipated moderate to strong growth in the Merck Group’s operating cash flow in fiscal 2024 (2023: € 3,784 million). We quantified this forecast at between € 3,900 million and € 4,500 million with the publication of the figures for the first quarter. As we expected the development of the operating cash flow to be largely in line with operating performance, we raised the forecast range to between € 4,000 million and € 4,600 million in the interim report on the second quarter and confirmed this in the report on the third quarter. The operating cash flow amounted to € 4,586 million in fiscal 2024, which was in the upper half of the forecast range. This corresponded to the more specific forecast issued together with the figures for the third quarter (trending in the upper half of the range). The increase of 21.2% was primarily due to the positive development of EBITDA pre and changes in other assets and liabilities.

Course of Business and Economic Position

Merck Group

Merck Group

Key figures

			Change	
€ million	**2024**	2023	€ million	%
Net sales	21,156	20,993	163	0.8%
Operating result (EBIT)[1]	3,645	3,609	36	1.0%
Margin (% of net sales)[1]	17.2%	17.2%		
EBITDA[2]	5,779	5,489	290	5.3%
Margin (% of net sales)[1]	27.3%	26.1%		
EBITDA pre[1]	6,072	5,879	193	3.3%
Margin (% of net sales)[1]	28.7%	28.0%		
Profit after tax	2,786	2,834	-48	-1.7%
Earnings per share (€)	6.39	6.49	-0.10	-1.5%
Earnings per share pre (€)[1]	8.63	8.49	0.14	1.6%
Operating cash flow	4,586	3,784	802	21.2%

[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

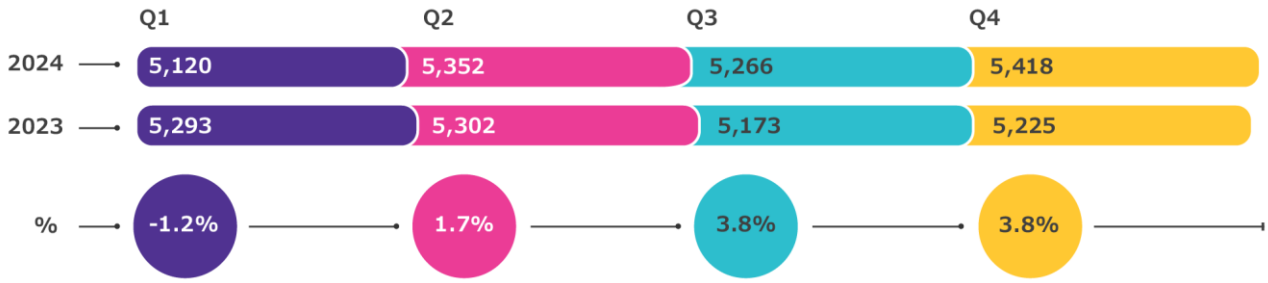
Development of sales and results of operations

The net sales in the individual quarters and the respective organic growth rates in 2024 are presented in the following graph:

Merck Group

Net sales and organic growth[1] by quarter[2]

€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

In fiscal 2024, the net sales by business sector developed as follows:

Merck Group

Net sales by business sector

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Acquisitions/ divestments[1]	Total change	2023	Share
Life Science	8,916	42%	-3.3%	-0.7%	0.1%	-3.9%	9,281	44%
Healthcare	8,455	40%	7.0%	-2.0%	–	5.0%	8,053	38%
Electronics	3,785	18%	4.6%	-1.4%	0.2%	3.4%	3,659	18%
Merck Group	**21,156**	**100%**	**2.0%**	**-1.3%**	**0.1%**	**0.8%**	**20,993**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).

In fiscal 2024, the Merck Group recorded the following regional sales performance:

Merck Group

Net sales by region

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Acquisitions/ divestments[1]	Total change	2023	Share
Europe	6,171	29%	2.5%	-0.3%	0.0%	2.2%	6,037	29%
North America	5,710	27%	-4.1%	-0.1%	0.1%	-4.1%	5,952	28%
Asia-Pacific (APAC)	7,017	33%	3.6%	-2.5%	–	1.2%	6,936	33%
Latin America	1,477	7%	16.5%	-5.6%	–	10.9%	1,331	6%
Middle East and Africa (MEA)	781	4%	6.6%	-1.6%	0.9%	6.0%	737	4%
Merck Group	**21,156**	**100%**	**2.0%**	**-1.3%**	**0.1%**	**0.8%**	**20,993**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).

- In fiscal 2024, the Merck Group generated net sales of € 21,156 million (2023: € 20,993 million), representing a year-on-year increase of € 163 million or 0.8%. Net sales grew organically by € 424 million or 2.0%. Net sales of the Healthcare and Electronics business sectors increased while the Life Science business sector reported an organic sales decline. Negative foreign exchange effects led to a reduction of net sales by € 277 million or -1.3%. These effects largely resulted from the exchange rate development of several Asian currencies, as well as the Brazilian real. Portfolio-related changes in net sales from acquisition were negligible, amounting to € 15 million.

- Net sales of the Life Science business sector decreased by € 365 million or -3.9% year on year, to € 8,916 million (2023: € 9,281 million). This development was mainly due to organic effects, which amounted to € 310 million or -3.3%. Foreign exchange effects also contributed € 61 million or -0.7%, to the sales decline. The acquisition of Mirus Bio LLC, USA, had an overall immaterial effect of 0.1%. At 42% (2023: 44%), Life Science again accounted for the largest share of Group net sales in fiscal 2024, followed by Healthcare at 40% (2023: 38%). Net sales of the Healthcare business sector increased by € 401 million or 5.0% year on year to € 8,455 million (2023: € 8,053 million). Organic growth of 7.0% was dampened by negative foreign exchange effects of -2.0%. The € 126 million or 3.4% increase in net sales in the Electronics business sector to € 3,785 million (2023: € 3,659 million) resulted from organic growth of 4.6% and an acquisition effect of 0.2%. This was offset by foreign exchange effects of -1.4%. The percentage contribution of Electronics to Group net sales was unchanged year on year at 18%.

- Orders already received by the reporting date to result in net sales in future periods amounted to around € 4 billion on December 31, 2024 (December 31, 2023: around € 4 billion), of which around € 3 billion related to the Life Science business sector (December 31, 2023: around € 3 billion).

The Consolidated Income Statement of the Merck Group is as follows:

Merck Group

Consolidated Income Statement

					Change	
€ million	**2024**	**%**	2023	%	€ million	%
Net sales	**21,156**	**100.0%**	**20,993**	**100.0%**	**163**	**0.8%**
Cost of sales	-8,671	-41.0%	-8,600	-41.0%	-71	0.8%
Gross profit	**12,485**	**59.0%**	**12,392**	**59.0%**	**92**	**0.7%**
Marketing and selling expenses	-4,536	-21.4%	-4,510	-21.5%	-26	0.6%
Administration expenses	-1,370	-6.5%	-1,392	-6.6%	23	-1.6%
Research and development costs	-2,279	-10.8%	-2,445	-11.6%	166	-6.8%
Impairment losses and reversals of impairment losses on financial assets (net)	-8	0.0%	-51	-0.2%	42	-83.4%
Other operating income and expenses	-646	-3.1%	-385	-1.8%	-261	67.9%
Operating result (EBIT)[1]	**3,645**	**17.2%**	**3,609**	**17.2%**	**36**	**1.0%**
Financial result	-108	-0.5%	-125	-0.6%	17	-13.4%
Profit before income tax	**3,536**	**16.7%**	**3,484**	**16.6%**	**53**	**1.5%**
Income tax	-751	-3.5%	-650	-3.1%	-101	15.5%
Profit after tax	**2,786**	**13.2%**	**2,834**	**13.5%**	**-48**	**-1.7%**
Non-controlling interests	-9	0.0%	-10	0.0%	1	-9.0%
Net income	**2,777**	**13.1%**	**2,824**	**13.5%**	**-47**	**-1.7%**

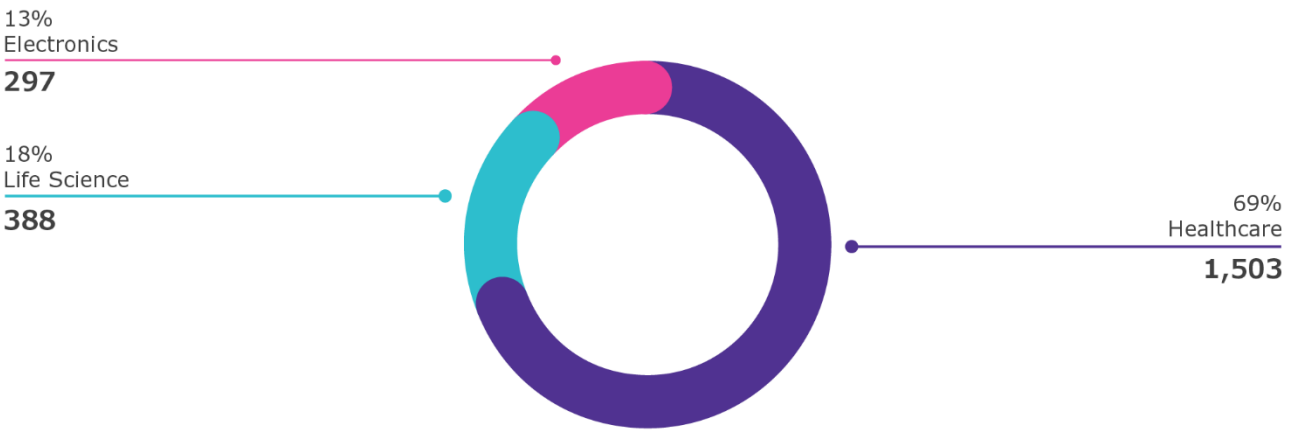
[1] Not defined by International Financial Reporting Standards (IFRS).

The breakdown of research and development costs by business sector is as follows:

Merck Group

Research and development costs by business sector[1] – 2024

€ million/%



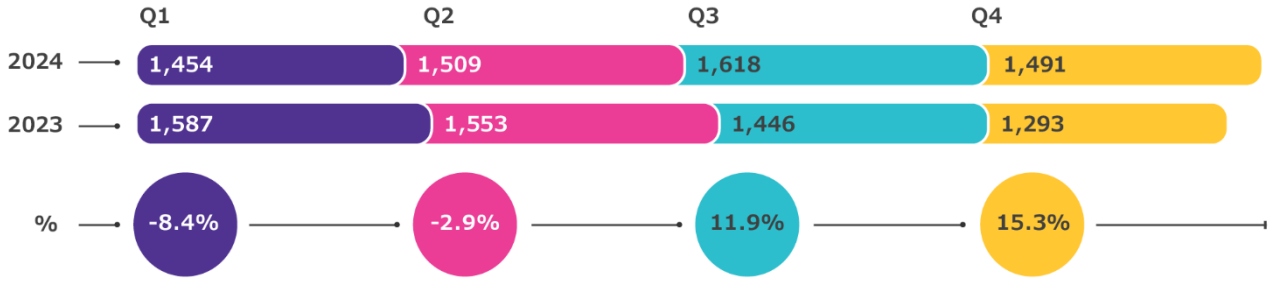
[1] Not presented: research and development costs of € 92 million allocated to Corporate and Other.

- In fiscal 2024, the operating result (EBIT) was around stable compared with the previous year. This was attributable to the around stable development of gross profit and operating expenses. The moderate organic sales decline in the Life Science business sector was offset by the organic sales growth in Healthcare and Electronics.
- Marketing and selling expenses remained around stable, as did administration expenses.
- Accounting for 69% (2023: 70%) of Group research and development costs (excluding research and development costs allocated to Corporate and Other), Healthcare was the most research-intensive business sector of the Merck Group. The decrease in research and development costs was mainly due to reduced development activity following the termination of the xevinapant development program in the second quarter of 2024 and the evobrutinib development program in the fourth quarter of 2023. Further information can be found in the "**Research and Development**" chapter.
- The negative net balance of other operating expenses and income increased compared with the previous year due to higher impairment losses on non-financial assets in particular (further information can be found in Note (19) "**Other Intangible Assets**" in the Notes to the Consolidated Financial Statements). In addition, other operating income from asset disposals was lower compared with the previous year.
- Overall, the aforementioned developments led to the EBIT margin remaining stable year on year at 17.2%.
- Compared with the previous year, EBITDA pre, the key financial indicator used to steer operating business, increased by € 193 million or 3.3% to € 6,072 million (2023: € 5,879 million).
- The financial result improved to € -108 million (2023: € -125 million), largely as a result of the favorable development of net interest income. Details about financial income and expenses can be found in Note (40) "**Finance Income and Expenses/Net Gains and Losses from Financial Instruments"** in the Notes to the Consolidated Financial Statements.
- Income tax expense amounted to € -751 million (2023: € -650 million) and resulted in a tax rate of 21.2% (2023: 18.7%). The tax rate in fiscal 2023 was lower due to a non-recurring tax effect in the form of deferred tax income.
- The net income attributable to Merck KGaA shareholders declined by -1.7% to € 2,777 million (2023: € 2,824 million) and resulted in a reduction in earnings per share to € 6.39 (2023: € 6.49).

The development of EBITDA pre in the individual quarters as well as the respective growth rates in comparison with 2023 and its distribution by business sector are presented in the following overview:

Merck Group

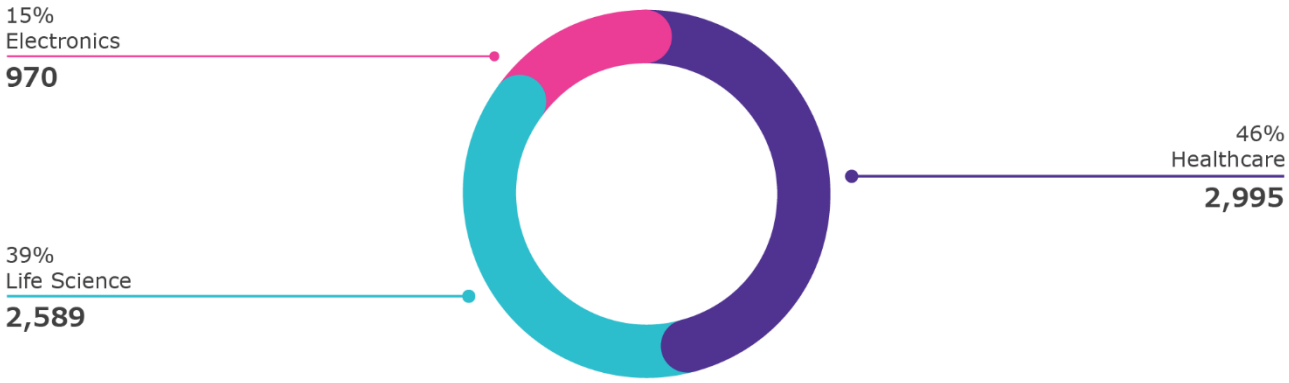
EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Merck Group

EBITDA pre[1] by business sector[2] – 2024
€ million/%



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not presented: decline in Group EBITDA pre by € -482 million due to Corporate and Other.

Net assets and financial position

Merck Group

Balance sheet structure

	Dec. 31, 2024		Dec. 31, 2023		Change	
	€ million	**%**	€ million	%	€ million	%
Non-current assets	**38,116**	**73.9%**	**36,102**	**74.4%**	**2,014**	**5.6%**
thereof:						
Goodwill	19,152		17,845		1,307	
Other intangible assets	6,282		6,551		-269	
Property, plant and equipment	10,025		9,056		969	
Other non-current assets	2,657		2,650		7	
Current assets	**13,450**	**26.1%**	**12,393**	**25.6%**	**1,057**	**8.5%**
thereof:						
Inventories	4,484		4,637		-153	
Trade and other current receivables	3,947		4,004		-57	
Other current financial assets	642		499		142	
Other current assets	1,861		1,271		590	
Cash and cash equivalents	2,517		1,982		535	
Total assets	**51,567**	**100.0%**	**48,495**	**100.0%**	**3,071**	**6.3%**
Equity	**29,988**	**58.2%**	**26,754**	**55.2%**	**3,233**	**12.1%**
Non-current liabilities	**10,285**	**19.9%**	**13,042**	**26.9%**	**-2,757**	**-21.1%**
thereof:						
Non-current provisions for employee benefits	1,956		2,192		-236	
Other non-current provisions	257		277		-21	
Non-current financial debt	6,997		9,239		-2,242	
Other non-current liabilities	1,075		1,333		-257	
Current liabilities	**11,294**	**21.9%**	**8,699**	**17.9%**	**2,595**	**29.8%**
thereof:						
Current provisions	570		658		-88	
Current financial debt	3,304		702		2,602	
Trade and other current payables/ refund liabilities	3,143		3,422		-279	
Other current liabilities	4,276		3,918		359	
Total equity and liabilities	**51,567**	**100.0%**	**48,495**	**100.0%**	**3,071**	**6.3%**

- The total assets of the Merck Group amounted to € 51,567 million as of December 31, 2024 (December 31, 2023: € 48,495 million), an increase of 6.3%.
- Goodwill increased compared with the previous year, in particular as a result of currency translation differences as well as the acquisition of Mirus Bio LLC, USA, Unity-SC SAS, France, and Hub Organoids Holding B.V., Netherlands (further information can be found in Note (6) "**Acquisitions and Divestments**" in the Notes to the Consolidated Financial Statements).
- Other intangible assets declined due to amortization effects in particular. Impairment losses were primarily attributable to the Healthcare business sector and mainly resulted from discontinued development projects, especially the termination of the xevinapant program (further information can be found in Note (7) "**Collaboration and licensing agreements**" in the Notes to the Consolidated Financial Statements). The increase of additions from investments and the completed acquisitions was not sufficient to offset this development.
- The year-on-year increase in property, plant and equipment was attributable to additions of € 2,088 million (2023: € 1,981 million), which once again significantly exceeded depreciation and disposals in the reporting period.
- Of the additions to property, plant and equipment in fiscal 2024, € 387 million (2023: € 391 million) related to strategic investments in Germany, including € 372 million (2023: € 329 million) for the expansion of the Darmstadt site. Significant projects include investments in the Healthcare business sector of € 81 million in a new laboratory building and € 56 million in a production facility for transitioning research and development projects to commercial production. Moreover, Life Science invested € 46 million in a new research center and € 19 million in a new membrane production plant. Outside Germany, high levels of investment were made in strategic projects in the United States (€ 314 million), Ireland (€ 145 million) and Taiwan (€ 92 million) in particular. In the United States, Life Science invested € 82 million in expanding its capacities for biosafety testing and analytical development services in Rockville, Maryland, while Electronics invested € 29 million in a new production facility for specialty gases for the semiconductor industry in Hometown, Pennsylvania. In Ireland, Life Science invested € 141 million in the expansion of membrane production capacities and the construction of a new filtration plant in Cork. In Taiwan, Electronics invested € 73 million in a new production facility for semiconductor materials and specialty gases in Kaohsiung.
- Trade and other current receivables declined slightly.
- In fiscal 2024, the equity of the Merck Group rose by 12.1% to € 29,988 million (December 31, 2023: € 26,754 million). This increase was attributable to profit after tax (€ 2,786 million) as well as a positive currency translation difference (€ 1,444 million) resulting primarily from the development of the U.S. dollar, which counteracted dividend payments and profit withdrawals in the reporting year (see "**Consolidated Statement of Changes in Net Equity**" in the Consolidated Financial Statements). The equity ratio improved by three percentage points to 58.2% (December 31, 2023: 55.2%), partially as a result of the ongoing reduction in net financial debt,
- The decrease in non-current provisions for employee benefits particularly resulted from actuarial gains in connection with the applied discount rate.
- Current provisions decreased mainly as a result of utilizations in relation to ongoing restructuring programs (further information can be found in Note (27) "**Other Provisions**" in the Notes to the Consolidated Financial Statements).
- The higher level of financial debt was due to the increase in lease liabilities as well as financial liabilities to related parties in particular. Non-current financial liabilities declined mainly as a result of the reclassification of a U.S. dollar bond with a nominal value of € 1,537 million that was issued in 2015 and due to mature in March 2025, as well as the reclassification of a euro bond with a nominal value of € 750 million that was issued in 2020 and due to mature in July 2025 to current financial assets, which increased by the corresponding amount.

The composition and the development of net financial debt were as follows:

Merck Group

Net financial debt[1]

			Change	
€ million	**Dec. 31, 2024**	Dec. 31, 2023	€ million	%
Bonds	7,693	7,802	-109	-1.4%
Bank loans	327	283	44	15.5%
Liabilities to related parties	1,429	1,196	233	19.5%
Loans from third parties and other financial debt	59	68	-8	-12.4%
Liabilities from derivatives (financial transactions)	31	77	-45	-58.9%
Lease liabilities	761	515	246	47.8%
Financial debt	**10,301**	**9,941**	**360**	**3.6%**
less:				
Cash and cash equivalents	2,517	1,982	535	27.0%
Other current financial assets[2]	629	459	170	37.0%
Net financial debt[1]	**7,155**	**7,500**	**-345**	**-4.6%**

[1] Not defined by International Financial Reporting Standards (IFRSs).

[2] Excluding current derivatives (operational) and contingent considerations, which are recognized in the context of business combinations according to IFRS 3.

- Bonds were reduced by the early repayment of a hybrid bond issued in 2014 with a nominal volume of € 500 million and a hybrid bond issued in 2019 with a nominal volume of € 500 million. This was partly offset by a hybrid bond issued in August 2024 with a nominal volume of € 800 million.

Merck Group

Reconciliation of net financial debt[1]

€ million	**2024**	2023
January 1	**7,500**	**8,328**
Operating cash flow	-4,586	-3,784
Payments for investments in intangible assets[2]	482	216
Payments from the disposal of intangible assets[2]	-18	-136
Payments for investments in property, plant and equipment[2]	1,702	1,807
Payments from the disposal of property, plant and equipment[2]	-27	-19
Acquisitions[2]	774	12
Payments from divestments[2]	-7	–
Change in lease liabilities	383	201
Dividend payments/profit withdrawals[2]	1,040	1,164
Currency translation difference	137	-30
Other	-225	-258
December 31	**7,155**	**7,500**

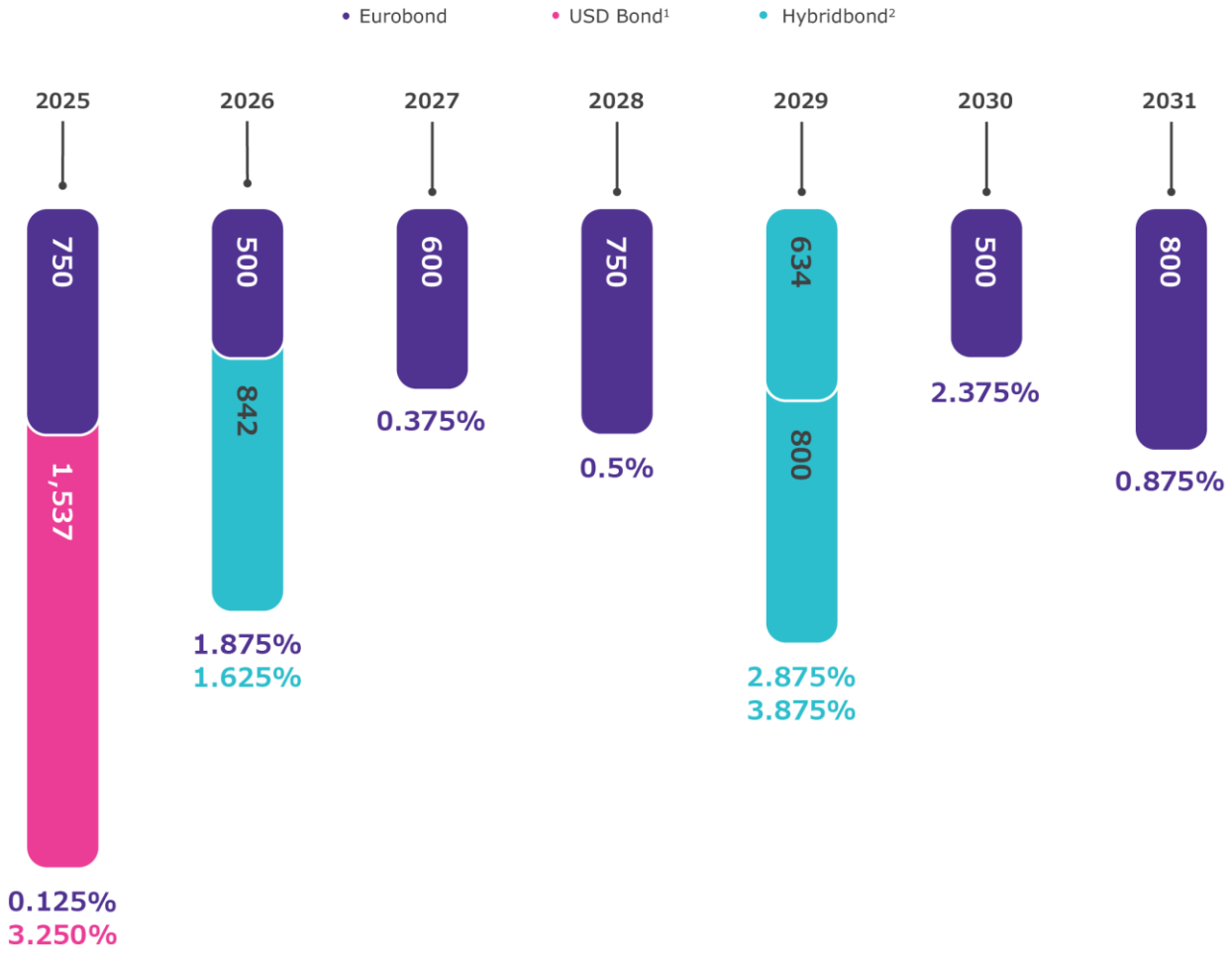
[1] Not defined by International Financial Reporting Standards (IFRS).

[2] As reported in the Consolidated Cash Flow Statement.

- Traditionally, the capital market represents a major source of financing for Merck, for instance, via bond issues. As of December 31, 2024, there were liabilities with a nominal volume of € 3.9 billion from the debt issuance program, under which all euro bonds are issued (December 31, 2023: € 3.9 billion).

- Loan agreements represent a further significant source of financing for Merck. A € 2.5 billion syndicated loan facility is in place until 2029 to cover unexpected cash needs. This credit line is a backup facility that is intended to be used in exceptional circumstances only. Merck also agreed upon several bilateral loan facilities.

- In addition, Merck has a commercial paper program with a volume of € 2.5 billion at its disposal. Within the scope of this program, Merck can issue short-term commercial papers with a maturity of up to one year. As in the previous year, the program was not made use of in fiscal 2024.
- The maturities of our financial liabilities are aligned with our planned free cash flow. The repayment profile of the issued bonds was as follows:



[1] The nominal amounts of bonds denominated in U.S. dollars were converted into euros at the closing rate on December 31, 2024.
[2] For the hybrid bonds, repayment is assumed at the earliest possible date.

- The capital market uses the assessments published by rating agencies to help lenders assess the risks of a financial instrument used by Merck. Merck is currently rated by Standard & Poor's and Moody's. Standard & Poor's has issued a long-term credit rating of A with a stable outlook, while Moody's has issued a rating of A3 with a stable outlook. An overview of the development of our rating in recent years is presented in the "**Report on Risks and Opportunities**".
- The financial debt was not secured by liens or similar forms of collateral. The loan agreements do not contain any financial covenants. There were no indications that the availability of extended credit lines was restricted. Cash and cash equivalents included restricted cash amounting to € 368 million (December 31, 2023: € 404 million). We pursue a sustainable dividend policy and aim for a target corridor of 20% to 25% of earnings per share pre when determining the amount of the dividend. The average borrowing cost on December 31, 2024, was 2.2% (December 31, 2023: 2.1%).

The development of key balance sheet figures was as follows:

Merck Group

Key balance sheet figures

%		Dec. 31, 2024	Dec. 31, 2023	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2020
Equity ratio[1]	Total equity / Total assets	58.2%	55.2%	53.6%	47.2%	40.7%
Asset ratio[1]	Non-current assets / Total assets	73.9%	74.4%	74.9%	75.8%	77.8%
Asset coverage[1]	Total equity / Non-current assets	78.7%	74.1%	71.6%	62.3%	52.3%
Finance structure[1]	Current liabilities / Liabilities (total)	52.3%	40.0%	42.2%	43.6%	37.3%

[1] Not defined by International Financial Reporting Standards (IFRS).

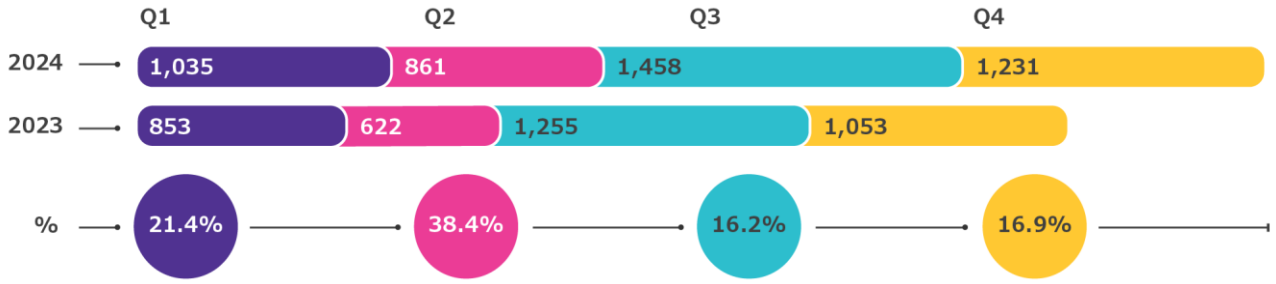
In the area of financial risks and opportunities, Merck uses an active management strategy to reduce the effects of fluctuations in exchange and interest rates. This also includes the use of derivative financial instruments. Further details on liquidity and counterparty market risks and opportunities are presented in the "**Report on Risks and Opportunities**" in the "**Financial Risks and Opportunities**" section.

In fiscal 2024, operating cash flow, which is one of the three most important key performance indicators alongside net sales and EBITDA pre, increased by € 802 million to € 4,586 million (2023: € 3,784 million). This was mainly due to the favorable development of EBITDA pre and changes in other assets and liabilities. Changes in provisions and higher tax payments had an opposing effect. Further information about the development of the operating cash flow can be found in the "**Internal Management System**" chapter in this Combined Management Report, under "**Consolidated Cash Flow Statement**" in the Consolidated Financial Statements and in Note (16) "**Operating Cash Flow**" in the Notes to the Consolidated Financial Statements.

The distribution of operating cash flow across the individual quarters and the percentage changes in comparison with 2023 were as follows:

Merck Group

Operating cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Overall assessment of business performance and economic situation

- Despite continued challenging macroeconomic developments and headwinds in individual markets, Merck can look back on a largely positive fiscal 2024, thanks to the diversified nature of its business sectors. The expected ongoing inventory destocking by customers in the Process Solutions business unit in parts of the fiscal year led to a decline in net sales in the Life Science business sector. However, this development was more than offset by the Healthcare and Electronics business sectors. All of the franchises in the Healthcare business sector contributed to the strong overall organic net sales growth. In the Electronics business sector, the Semiconductor Solutions business unit made a particular contribution to the overall positive development in net sales.

- All in all, net sales of the Merck Group increased by 0.8% or € 163 million to € 21,156 million in fiscal 2024. Our most important key performance indicator, EBITDA pre, rose by 3.3% to € 6,072 million. Organic growth through market opportunities (+6.9%) outweighed the impact of negative foreign exchange effects on earnings (-3.6%). We will propose to the Annual General Meeting an unchanged dividend payment of € 2.20 per share for fiscal 2024.

- The solid financing policies of the Merck Group were reflected in improved key balance sheet figures. The equity ratio remained at a high level of 58.2% as of December 31, 2024 (December 31, 2023: 55.2%). Net financial debt was reduced further, amounting to € 7.2 billion at the end of the fiscal year (2023: € 7.5 billion).

- Based on our solid net assets and financial position as well as our diversified operations, we view the economic situation of the Merck Group as positive overall. Thanks to our resilient business model and our clear positioning as a science and technology company, we are well positioned even in economically challenging times. The early decision to build up our on-site production capacities for key markets benefits us in today’s global macroeconomic environment.

Life Science

Life Science

Key figures

			Change	
€ million	**2024**	2023	€ million	%
Net sales	8,916	9,281	-365	-3.9%
Operating result (EBIT)[1]	1,507	1,850	-343	-18.6%
Margin (% of net sales)[1]	16.9%	19.9%		
EBITDA[2]	2,455	2,731	-276	-10.1%
Margin (% of net sales)[1]	27.5%	29.4%		
EBITDA pre[1]	2,589	2,820	-230	-8.2%
Margin (% of net sales)[1]	29.0%	30.4%		

[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

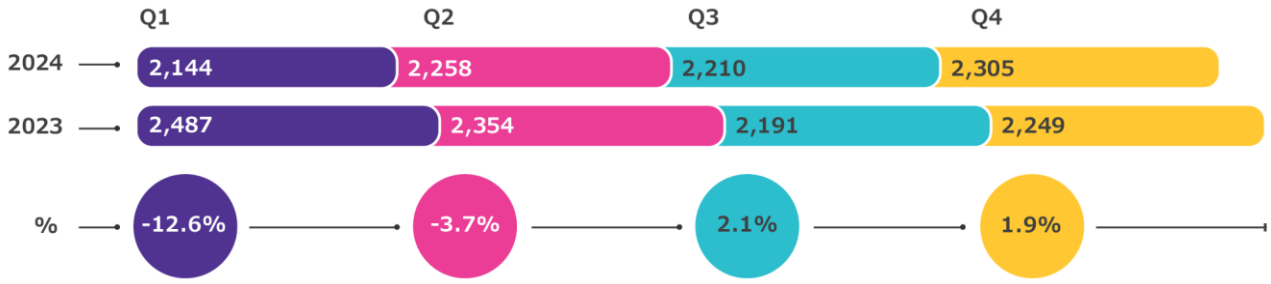
Development of sales and results of operations

The development of net sales in the individual quarters in comparison with 2023 as well as the respective organic growth rates are presented in the following graph:

Life Science

Net sales and organic growth[1] by quarter[2]

€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Life Science

Net sales by business unit

€ million	**2024**	**Share**	**Organic growth[1]**	**Exchange rate effects[1]**	**Acquisitions / divestments[1]**	**Total change**	2023	Share
Science & Lab Solutions	4,671	52%	0.2%	-0.9%	–	-0.7%	4,706	51%
Process Solutions	3,523	40%	-6.4%	-0.6%	0.2%	-6.9%	3,782	41%
Life Science Services	722	8%	-9.4%	0.6%	–	-8.9%	792	8%
Life Science	**8,916**	**100%**	**-3.3%**	**-0.7%**	**0.1%**	**-3.9%**	**9,281**	**100%**

[1] Not defined by International Financial Accounting Standards (IFRS).

- The Science & Lab Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology and academic research laboratories and researchers as well as scientific and industrial laboratories, saw organic growth of 0.2% in fiscal 2024. In general, the year-on-year comparison is impacted by a base effect, as the first half of 2023 was still driven by higher Covid-19-related sales and a more favorable economic environment, leading to an overall organic sales decline in the first half of 2024. However, the second half of 2024 showed an organic increase impacted by, among other things, a base effect in the year-earlier period that was driven by the roll-out of an ERP system. The Latin America region made the strongest organic growth contribution. However, unfavorable foreign exchange effects led to a sales decrease to € 4,671 million (2023: € 4,706 million).

- The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, saw an organic decrease of -6.4% in 2024 due to the continued presence of pandemic-related sales in the year-earlier period as well as the ongoing effects of destocking by key customers. These factors contributed to the organic decline in sales in the first half of 2024. After the phasing out of these factors, Process Solutions saw a recovery in the second half of 2024 and made a favorable contribution in this period. The decline in net sales impacted all core regions (North America, Europe, Asia-Pacific).

- The Life Science Services business unit, which offers services for fully integrated contract development and manufacturing as well as contract testing services, recorded an organic sales decline of -9.4% in fiscal 2024. This was mainly driven by one of the customers of our contract development and manufacturing organization (CDMO) adjusting its supply chain. In addition, sales from our CDMO activities declined organically due to the loss of pandemic-related sales that still positively affected the previous year. Including a favorable foreign exchange effect, sales decreased to € 722 million in fiscal 2024 (2023: € 792 million). The decrease in sales was mainly attributable to Europe and North America.

Net sales of the business sector by region developed as follows:

Life Science

Net sales by region

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Acquisitions/ divestments[1]	Total change	2023	Share
Europe	3,136	35%	-1.8%	0.5%	–	-1.3%	3,178	34%
North America	3,146	35%	-6.8%	0.0%	0.2%	-6.7%	3,372	36%
Asia-Pacific (APAC)	2,143	24%	-2.8%	-2.5%	–	-5.3%	2,263	25%
Latin America	382	4%	13.5%	-5.0%	–	8.6%	352	4%
Middle East and Africa (MEA)	109	1%	-6.1%	-0.1%	–	-6.2%	116	1%
Life Science	**8,916**	**100%**	**-3.3%**	**-0.7%**	**0.1%**	**-3.9%**	**9,281**	**100%**

[1] Not defined by International Financial Accounting Standards (IFRS).

The following table presents the composition of EBITDA pre for 2024 in comparison with 2023. The International Financial Reporting Standards (IFRS) figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Life Science

Reconciliation EBITDA pre[1]

	2024			2023			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**8,916**	**–**	**8,916**	**9,281**	**–**	**9,281**	**-3.9%**
Cost of sales	-4,150	25	-4,125	-4,236	6	-4,230	-2.5%
Gross profit	**4,766**	**25**	**4,791**	**5,044**	**6**	**5,050**	**-5.1%**
Marketing and selling expenses	-2,238	25	-2,213	-2,245	12	-2,232	-0.9%
Administration expenses	-441	58	-382	-425	53	-372	2.7%
Research and development costs	-388	1	-387	-396	3	-393	-1.6%
Impairment losses and reversals of impairment losses on financial assets (net)	-7	–	-7	-2	–	-2	>100.0%
Other operating income and expenses	-186	111	-75	-126	48	-78	-4.5%
Operating result (EBIT)[1]	**1,507**			**1,850**			
Depreciation/amortization/ impairment losses/reversals of impairment losses	948	-86	863	881	-34	848	1.8%
EBITDA[2]	**2,455**			**2,731**			
Restructuring expenses	73	-73	–	30	-30	–	
Integration expenses/IT expenses	46	-46	–	53	-53	–	
Gains (-)/losses (+) on the divestment of businesses	1	-1	–	–	–	–	
Acquisition-related adjustments	14	-14	–	6	-6	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[2]	**2,589**	**–**	**2,589**	**2,820**	**–**	**2,820**	**-8.2%**
of which: organic growth[1]							-6.3%
of which: exchange rate effects							-1.7%
of which: acquisitions/ divestments							-0.2%

[1] Not defined by International Financial Reporting Standards (IFRS).

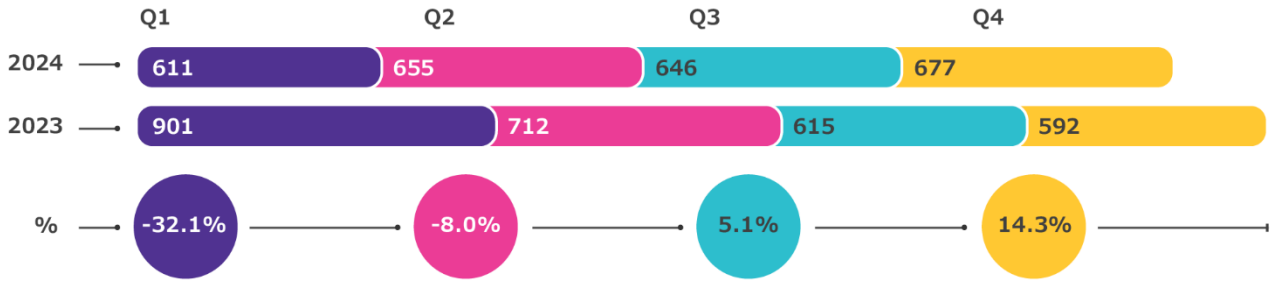
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

- The adjusted gross profit for the Life Science business sector was lower in 2024 in comparison with fiscal 2023. This was mainly attributable to the sales decline due to the effects of destocking by key customers in Process Solutions and the decrease in both pandemic-related sales and fixed plant costs. At 53.7%, the adjusted gross margin in fiscal 2024 was slightly below the previous year (2023: 54.4%).
- The reduction in gross profit was partly offset by slightly lower adjusted operational expenses. The decrease in marketing and selling expenses in 2024 was mainly driven by cost saving and efficiency programs as well as lower logistics costs resulting from the lower sales volume and efficiencies.
- Administration expenses increased as a result of higher personnel costs, especially as a result of regular annual salary increases; however, these were partially offset by saving measures. Research and development costs after eliminating adjustments and the net position of other operating income and expenses remained largely stable in 2024 compared with fiscal 2023; this also was due to saving measures offsetting regular annual salary increases.
- In 2024, EBITDA pre declined organically compared with fiscal 2023, resulting in an EBITDA pre margin of 29.0% (2023: 30.4%).

The development of EBITDA pre in the individual quarters in comparison with 2023 is presented in the following overview:

Life Science

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Healthcare

Healthcare

Key figures

			Change	
€ million	**2024**	2023	€ million	%
Net sales	8,455	8,053	401	5.0%
Operating result (EBIT)[1]	2,481	2,225	256	11.5%
Margin (% of net sales)[1]	29.3%	27.6%		
EBITDA[2]	3,021	2,545	476	18.7%
Margin (% of net sales)[1]	35.7%	31.6%		
EBITDA pre[1]	2,995	2,543	452	17.8%
Margin (% of net sales)[1]	35.4%	31.6%		

[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

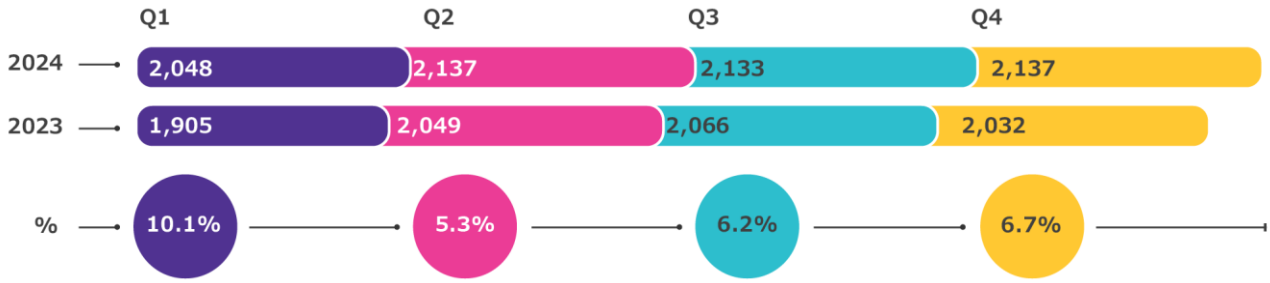
Development of sales and results of operations

The development of net sales in the individual quarters in comparison with 2023 as well as the respective organic growth rates are presented in the following graph:

Healthcare

Net sales and organic growth[1] by quarter[2]

€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Net sales of the key product lines and products developed as follows in 2024:

Healthcare

Net sales by major product lines/products

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Total change[1]	2023	Share
Oncology	**2,009**	**24%**	**12.7%**	**-2.2%**	**10.5%**	**1,819**	**22%**
thereof: Erbitux®	1,162	14%	15.7%	-2.4%	13.3%	1,025	13%
thereof: Bavencio®	735	9%	5.0%	-1.9%	3.0%	713	9%
Neurology & Immunology	**1,688**	**20%**	**2.3%**	**-0.9%**	**1.4%**	**1,665**	**21%**
thereof: Mavenclad®	1,062	13%	12.3%	-1.2%	11.1%	956	12%
thereof: Rebif®	626	7%	-11.1%	-0.5%	-11.6%	709	9%
Fertility	**1,528**	**18%**	**0.8%**	**-2.1%**	**-1.3%**	**1,547**	**19%**
thereof: Gonal-f®	833	10%	0.9%	-2.6%	-1.7%	847	11%
Cardiovascular, Metabolism & Endocrinology	**2,949**	**35%**	**8.5%**	**-2.7%**	**5.8%**	**2,786**	**35%**
thereof: Glucophage®	954	11%	11.1%	-3.0%	8.1%	882	11%
thereof: Concor®	611	7%	9.4%	-2.4%	7.0%	571	7%
thereof: Euthyrox®	619	7%	11.8%	-2.3%	9.5%	565	7%
thereof: Saizen®	366	4%	12.5%	-2.4%	10.1%	332	4%
Other	**280**	**3%**				**235**	**3%**
Healthcare	**8,455**	**100%**	**7.0%**	**-2.0%**	**5.0%**	**8,053**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).

- In fiscal 2024, the oncology drug Erbitux® (cetuximab) saw organic net sales growth in the mid-teen percentage range, driven by all regions. This was attributable to factors including weaker pandemic-related sales in China in 2023 as well as its inclusion in reimbursement programs for pharmaceuticals in several countries.
- In immuno-oncology, the oncology drug Bavencio® (avelumab) recorded solid year-on-year organic net sales growth in the reporting period. A sales decrease in the high-teen percentage range in the North America region was driven by lower demand due to alternative treatments for patients with locally advanced or metastatic urothelial carcinoma. This decline was more than offset by growth in the other regions.
- Mavenclad® for the oral short-course treatment of highly active relapsing multiple sclerosis (MS) recorded organic net sales growth in the region of 12% in fiscal 2024, thus achieving blockbuster status with total net sales of more than US$ 1 billion for the second year in succession. This favorable sales growth was driven by all regions, but especially by higher demand in the North America, Europe and Latin America regions.
- Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw an organic net sales decline in the region of 11% in fiscal 2024. This was attributable to the ongoing difficult competitive situation in the interferon market due to competition from oral dosage forms and high-efficacy MS therapies, which are expected to cause further declines in sales in the future.
- Net sales in the Fertility product line in the reporting period were broadly unchanged year on year. Gonal-f®, the leading recombinant hormone used in the treatment of infertility, also recorded largely stable organic net sales performance compared with the previous year. Similarly, other Fertility products remained essentially unchanged year-on-year overall.
- The Cardiovascular, Metabolism & Endocrinology franchise, which includes drugs for the treatment of cardiovascular, thyroid, diabetes and growth disorders as well as diabetes, generated strong organic net sales growth in fiscal 2024, thanks to higher demand. Net sales of the diabetes drug Glucophage® saw growth of around 11%, driven by all regions. The beta-blocker Concor® also recorded strong organic sales growth, while the thyroid product Euthyrox® achieved year-on-year organic sales growth of around 12%. Saizen®, a medication for treating various growth hormone deficiencies, saw organic sales growth in the low-teen

percentage range compared with the previous year as a result of higher demand as well as stock-outs of a competing product.

Healthcare

Product sales and organic growth[1] of Erbitux®, Glucophage® and Mavenclad® by region – 2024

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
	€ million	1,162	461	–	502	134	66
Erbitux®	Organic growth[1]	15.7%	10.9%	–	10.9%	61.6%	19.7%
	Share	100%	40%	–	43%	11%	6%
	€ million	1,062	376	563	21	58	44
Mavenclad®	Organic growth[1]	12.3%	6.0%	15.0%	6.3%	39.3%	8.8%
	Share	100%	35%	53%	2%	6%	4%
	€ million	954	136	–	502	214	102
Glucophage®	Organic growth[1]	11.1%	7.7%	–	9.7%	12.5%	20.7%
	Share	100%	14%	–	53%	22%	11%

[1] Not defined by International Financial Reporting Standards (IFRS).

Net sales in the Healthcare business sector by region in 2024 developed as follows:

Healthcare

Net sales by region

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Acquisitions/ divestments[1]	Total change	2023	Share
Europe	2,720	32%	8.2%	-1.2%	–	7.0%	2,541	31%
North America	1,778	21%	-0.6%	-0.2%	–	-0.8%	1,793	22%
Asia-Pacific (APAC)	2,305	27%	6.1%	-2.8%	–	3.3%	2,232	28%
Latin America	1,056	13%	18.3%	-5.9%	–	12.3%	941	12%
Middle East and Africa (MEA)	595	7%	11.0%	-2.1%	–	8.9%	546	7%
Healthcare	**8,455**	**100%**	**7.0%**	**-2.0%**	**–**	**5.0%**	**8,053**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The following table presents the composition of EBITDA pre in fiscal 2024 in comparison with 2023. The IFRS figures have been modified to reflect the elimination of adjustments included in the functional costs.

Healthcare

Reconciliation EBITDA pre[1]

	2024			2023			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**8,455**	**–**	**8,455**	**8,053**	**–**	**8,053**	**5.0%**
Cost of sales	-2,201	–	-2,201	-2,029	-1	-2,030	8.4%
Gross profit	**6,254**	**–**	**6,254**	**6,024**	**-1**	**6,023**	**3.8%**
Marketing and selling expenses	-1,713	3	-1,710	-1,668	29	-1,639	4.3%
Administration expenses	-313	12	-301	-314	20	-294	2.6%
Research and development costs	-1,503	9	-1,493	-1,657	2	-1,655	-9.8%
Impairment losses and reversals of impairment losses on financial assets (net)	2	–	2	-41	–	-41	>100.0%
Other operating income and expenses	-247	110	-137	-120	-41	-161	-15.4%
Operating result (EBIT)[1]	**2,481**			**2,225**			
Depreciation/amortization/ impairment losses/reversals of impairment losses	540	-160	380	320	-10	310	22.5%
EBITDA[2]	**3,021**			**2,545**			
Restructuring expenses	8	-8	–	32	-32	–	
Integration expenses/IT expenses	11	-11	–	20	-20	–	
Gains (-)/losses (+) on the divestment of businesses	-45	45	–	-53	53	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**2,995**	**–**	**2,995**	**2,543**	**–**	**2,543**	**17.8%**
of which: organic growth[1]							22.7%
of which: exchange rate effects							-5.0%
of which: acquisitions/ divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).

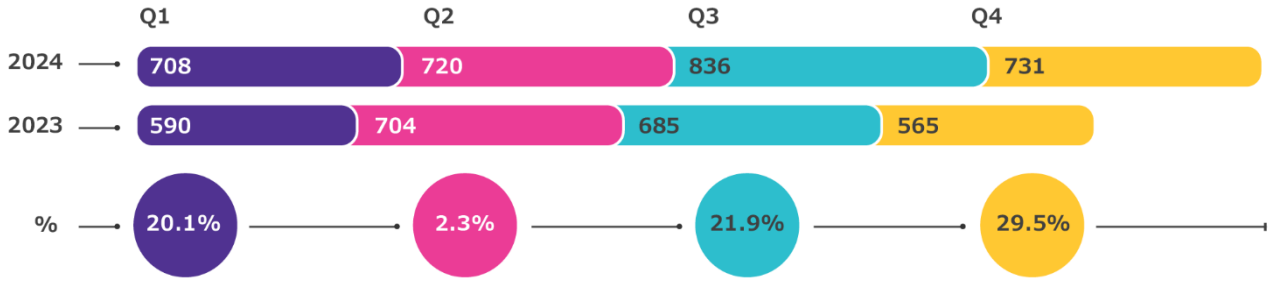
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

- In fiscal 2024, gross profit after the elimination of adjustments saw a moderate increase, whereas the gross margin, at 74.0% (2023: 74.8%), decreased slightly year on year.
- Marketing and selling expenses moderately increased in the reporting period. Among other things, this was due to the termination of the strategic alliance with Pfizer Inc., USA (Pfizer), to co-develop and co-commercialize the oncology medicine Bavencio® with effect from June 30, 2023, which has resulted in increased selling activities at Merck since the second half of 2023.
- Administrative expenses after eliminating adjustments saw a moderate year-on-year increase in fiscal 2024, whereas research and development costs after eliminating adjustments declined strongly in the reporting period. This was mainly due to reduced development activity following the termination of the xevinapant development program in the second quarter of 2024 and the evobrutinib development program in the fourth quarter of 2023.
- In fiscal 2024, the negative net balance of other operating expenses and income after eliminating adjustments declined compared with the previous year. This positive development was mainly due to effects from the termination of the strategic alliance with Pfizer to co-develop and co-commercialize the oncology medicine Bavencio®. The royalty payments to Pfizer that replaced the profit share payments for Bavencio® in other operating expenses have since been included in cost of sales, which led to a corresponding decrease in other operating expenses. This effect more than offset the absence of income from the disposal of a non-strategic brand in the previous year.
- EBITDA pre saw growth in the high-teen percentage range in fiscal 2024, resulting in an EBITDA pre margin of 35.4% (2023: 31.6%).

The development of EBITDA pre in the individual quarters in comparison with 2023 is presented in the following overview:

Healthcare

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Electronics

Electronics

Key figures

€ million	2024	2023	Change € million	Change %
Net sales	3,785	3,659	126	3.4%
Operating result (EBIT)[1]	360	248	112	45.3%
Margin (% of net sales)[1]	9.5%	6.8%		
EBITDA[2]	887	816	71	8.7%
Margin (% of net sales)[1]	23.4%	22.3%		
EBITDA pre[1]	970	913	57	6.2%
Margin (% of net sales)[1]	25.6%	25.0%		

[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

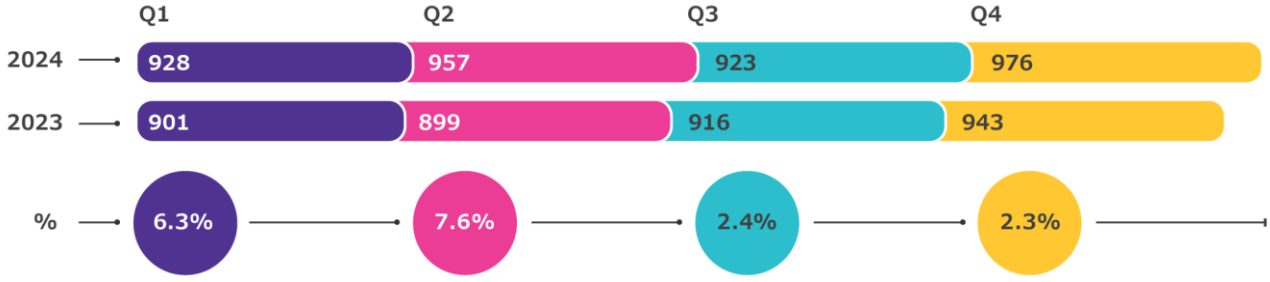
Development of net sales and results of operations

The development of net sales in the individual quarters in comparison with 2023 as well as the respective organic growth rates are presented in the following graph:

Electronics

Net sales and organic growth[1] by quarter[2]

€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Quarterly breakdown unaudited.

Electronics

Net sales by business unit

€ million	2024	Share	Organic growth[1]	Exchange rate effects[1]	Acquisitions /divestments[1]	Total change	2023	Share
Semiconductor Solutions	2,631	69%	7.8%	-1.4%	-0.3%	6.1%	2,479	68%
Display Solutions	748	20%	-3.4%	-1.4%	2.0%	-2.8%	770	21%
Surface Solutions	406	11%	0.2%	-1.3%	–	-1.1%	411	11%
Electronics	**3,785**	**100%**	**4.6%**	**-1.4%**	**0.2%**	**3.4%**	**3,659**	**100%**

[1] Not defined by International Financial Accounting Standards (IFRS).

- The Semiconductor Solutions business unit, which comprises the Semiconductor Materials and Delivery Systems & Services (DS&S) businesses, demonstrated strong organic sales growth in fiscal 2024. With organic growth in the mid-teen percentage range, Semiconductor Materials was the main driver for the business unit. Increased demand for advanced nodes enabling artificial intelligence (AI) applications also helped propel the business as the overall market cycle recovered from a weak financial year 2023. The development in DS&S tempered the growth of Semiconductor Solutions with lower sales from large projects than in the previous year, when it generated record sales and partly offset declines in the Semiconductor Materials business.

- Net sales of the Display Solutions business unit (named Optronics since January 1, 2025), consisting mainly of the business with liquid crystals, photoresists for display applications, OLED materials and metrology solutions, recorded a moderate organic decline in fiscal 2024. Continued price declines, especially in liquid crystals, were partially offset by additional volume growth in liquid crystals and OLED solutions. The portfolio effect was due to the acquisition of Unity-SC SAS, France, a company specializing in metrology solutions, with the transaction closing in the fourth quarter of 2024.

- The Surface Solutions business was organically stable in fiscal 2024, as softer demand in cosmetics offset moderate gains in industrials and coatings.

Net sales of the Electronics business sector by region developed as follows:

Electronics

Net sales by region

€ million	**2024**	**Share**	**Organic growth[1]**	**Exchange rate effects[1]**	**Acquisitions/ divestments[1]**	**Total change**	2023	Share
Europe	316	8%	-1.2%	0.0%	0.3%	-0.8%	318	9%
North America	785	21%	-0.3%	-0.0%	–	-0.3%	787	21%
Asia-Pacific (APAC)	2,569	68%	7.3%	-2.0%	0.0%	5.3%	2,440	67%
Latin America	38	1%	1.8%	-3.3%	–	-1.4%	39	1%
Middle East and Africa (MEA)	77	2%	-5.3%	-0.3%	9.2%	3.6%	75	2%
Electronics	**3,785**	**100%**	**4.6%**	**-1.4%**	**0.2%**	**3.4%**	**3,659**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The following table presents the composition of EBITDA pre for 2024 in comparison with 2023. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Electronics

Reconciliation EBITDA pre[1]

	2024			2023			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,785**	**–**	**3,785**	**3,659**	**–**	**3,659**	**3.4%**
Cost of sales	-2,319	16	-2,303	-2,332	37	-2,295	0.3%
Gross profit	**1,466**	**16**	**1,483**	**1,327**	**37**	**1,364**	**8.7%**
Marketing and selling expenses	-568	2	-566	-591	3	-588	-3.7%
Administration expenses	-166	33	-133	-147	29	-118	12.1%
Research and development costs	-297	1	-296	-297	1	-297	-0.2%
Impairment losses and reversals of impairment losses on financial assets(net)	-2	2	–	–	–	–	>100.0%
Other operating income and expenses	-75	58	-16	-44	70	26	>100.0%
Operating result (EBIT)[1]	**360**			**248**			
Depreciation/amortization/ impairment losses/reversals of impairment losses	527	-29	498	568	-42	526	-5.3%
EBITDA[2]	**887**			**816**			
Restructuring expenses	22	-22	–	60	-60	–	
Integration expenses/IT expenses	32	-32	–	24	-24	–	
Gains (-)/losses (+) on the divestment of businesses	17	-17	–	–	–	–	
Acquisition-related adjustments	12	-12	–	13	-13	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**970**	**–**	**970**	**913**	**–**	**913**	**6.2%**
of which: organic growth[1]							6.9%
of which: exchange rate effects							-1.0%
of which: acquisitions/ divestments							0.2%

[1] Not defined by International Financial Reporting Standards (IFRS).

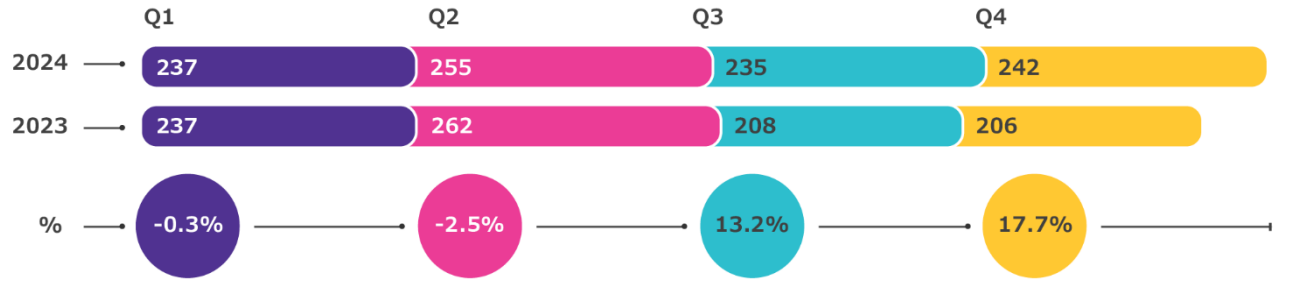
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

- The adjusted gross profit for the Electronics business sector increased strongly in 2024, driven by the aforementioned sales growth. At 39.2%, the adjusted gross margin increased compared with the previous year (2023: 37.3%), benefitting from higher volumes, positive mix effects and hence improved fixed costs coverage.
- Marketing and selling expenses decreased compared with the previous year as the business benefitted from initiatives that addressed costs and efficiency across marketing and selling expenses, including logistics. Administration expenses mainly increased due to higher personnel costs due to regular annual salary increases, as well as rising IT costs and unfavorable foreign exchange effects. Furthermore, the net position of other operating income and expenses declined. This was mainly due to the one-time income effect from the disposal of OLED patents and licenses to the Universal Display Corporation, USA, in fiscal 2023.
- As a result, EBITDA pre increased year-on-year in fiscal 2024. The EBITDA pre margin increased to 25.6% in fiscal 2024 (2023: 25.0%).

The development of EBITDA pre in the individual quarters in comparison with 2023 is presented in the following overview:

Electronics

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Corporate and Other

Corporate and Other comprises administrative expenses for central Group functions that cannot be directly allocated to the business sectors.

Corporate and other

Key figures

			Change	
€ million	**2024**	2023	€ million	%
Operating result (EBIT)[1]	-702	-713	11	-1.5%
EBITDA[2]	-584	-603	19	-3.2%
EBITDA pre[1]	-482	-397	-85	21.4%

[1] Not defined by International Financial Reporting Standards (IFRS).

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

The improvement in the operating result and EBITDA in fiscal 2024 in comparison with the previous year resulted in particular from a reduction in expenses in connection with a program to continuously improve processes and align the enabling Group functions more closely with the businesses. This decrease was partly offset by higher ongoing administrative expenses, which led to a decline in EBITDA pre. Cross-business research and development costs amounting to € 92 million (2023: € 94 million) were allocated to Corporate and Other.

Report on risks and opportunities

As a global science and technology enterprise, identifying risks and opportunities is an intrinsic part of making our businesses resilient and generating value. We operate in a highly complex, global and interconnected business environment that further necessitates the competent management of risks and opportunities. Therefore, managing risks and opportunities is an imperative and a core component of our internal business planning and forecasting. We have processes, tools and responsibilities in place to enable the early identification of risks and to supply effective and efficient mitigation strategies.

In our internal risk reporting framework, we define risks as potential future events or developments that could result in unfavorable deviations from our financial and non-financial targets. Risk parameters in this context are the probability of financial (quantitative) impact (EBITDA pre/operating cash flow) or non-financial (qualitative) impact (reputation/brand; strategy; operations; and, environment, social and governance (ESG) in relation to workforce, ethics and other factors).

Opportunities imply favorable deviations from targets. Future events and expected developments are considered in internal planning if a likely occurrence can be assumed within the planning period. The following section presents the risks and opportunities that could result in favorable and unfavorable deviations from existing plans and targets.

The following report is relevant from the perspective of both Merck KGaA and the overarching Merck Group. For additional information and details regarding the non-financial topics, please refer to the **Non-Financial Statement**.

Three Lines of Defense

To organize risk management and controls, we use the well-established “Three Lines of Defense Model”, which was developed by the Federation of European Risk Management Associations (FERMA), the European Confederation of Institutes of Internal Auditing (ECIIA) and the Institute of Internal Auditors (IIA). The model divides our company functions for controlling risks properly and effectively into three areas, the so-called lines of defense:

The first line of defense consists of all functions that are responsible for the operational business and whose day-to-day business risks can have an impact. Risk owners (i.e. the heads of the business units, enabling Group functions and local Managing Directors) establish processes in accordance with the requirements set by the second line of defense to identify, assess and monitor risks and to develop measures for proper risk mitigation. Results of these assessments are regularly communicated to the Executive Board.

The second line of defense includes enabling functions at both Group and local level that control and monitor the operational business (first line of defense). This includes, among other things, the design and implementation of methods and procedures for risk management and the internal control system (financial and non-financial) as well as its regular monitoring.

The third line of defense is our Internal Auditing function. As an objective and independent auditing body, it examines both the operational business (first line of defense) and the controls and monitoring functions (second line of defense) to ensure that risks are effectively identified, evaluated and controlled vis-à-vis the Executive Board and the Supervisory Board.

Both the second and third line of defense functions regularly report to the Executive Board and the Audit Committee of the Supervisory Board.

Internal control system

Internal control system for the (Group) financial reporting process

The objective of the internal control system for the financial reporting process is to implement controls that provide assurance that the financial statements are prepared in compliance with the relevant accounting laws and standards. This system covers measures designed to ensure the complete, correct and timely reporting and presentation of information that is relevant for the preparation of the Consolidated Financial Statements and the Combined Management Report.

Our internal control system for financial reporting is based on the COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework, a globally recognized standard divided into five components: control environment, risk assessment, control activities, information and communication as well as monitoring activities. Each of these components is regularly documented, reviewed and/or assessed. This control system aims to ensure the accuracy of the consolidated accounting process through functioning internal controls with reasonable assurance.

The Group Financial Reporting function centrally steers the preparation of the Consolidated Financial Statements of Merck KGaA as the parent company of the Merck Group. This Group function defines the reporting requirements that all companies of the Group must meet. At the same time, the function steers and monitors the scheduling and process-related requirements of the Consolidated Financial Statements. The Business Services organization manages all changes to the equity holding structure and correspondingly adapts the Group's scope of consolidation. The consolidation process ensures the proper elimination of intragroup transactions. Group-wide accounting guidelines form the basis for the preparation of the financial statements in accordance with the International Financial Reporting Standards (IFRS), which are submitted to Group Financial Reporting; the guidelines are adapted in a timely manner to reflect changes in the financial regulatory environment and are updated to reflect internal reporting requirements. For special issues, such as the accounting treatment of intangible assets within the scope of business combinations in accordance with IFRS 3 or defined benefit obligations, external experts are additionally involved where necessary.

The individual legal entities, including Merck KGaA, have a local internal control system within a global framework. Where financial processes are handled by the Business Services organization, the internal control system of the Business Services organization is additionally applied. Both ensure that accounting complies with IFRS and with the Group accounting guidelines.

Group Financial Reporting provides support to the local contacts and ensures a consistently high quality of reporting throughout the entire reporting process.

For Group financial reporting purposes, most of our subsidiaries use standard SAP software. Consolidation software from SAP is also used for the elimination of intragroup transactions. A detailed authorization concept ensures the segregation of duties with respect to both single entity reporting and the Consolidated Financial Statements. The accounting process is generally designed to ensure that all units involved adhere to the principle of dual control.

The operational effectiveness of our internal financial control system is regularly tested within the scope of self-assessments by our legal entities and enabling Group functions. The quality is systematically reviewed by a dedicated Group function for internal controls and governance. Control deficiencies are properly recorded and, wherever necessary, adequate countermeasures are taken to remediate them in a timely manner.

The overall effectiveness of our internal financial control system with regard to accounting and the compliance of the relevant individual companies' financial reporting is confirmed by both the local Managing Director and the local Chief Financial Officer by signing the single entity reporting and a

separate confirmation regarding the effectiveness of the control system. For the accounting treatment of balance sheet items, Group Financial Reporting closely cooperates with Risk Management to correctly reflect potential risks in the balance sheet.

All the structures and processes described in the foregoing relate to the Group Financial Reporting procedures and are subject to regular review by Group Internal Auditing based on an annual audit plan set out by the Executive Board.

The results of the self-assessments, quality reviews and internal audits are dealt with by the Executive Board, the Supervisory Board and the Audit Committee. Our internal financial control system makes it possible to lower the risk of material misstatements in accounting. However, residual risk cannot be entirely ruled out as no internal control system is infallible, irrespective of its design.

Non-financial internal control system and overall evaluation*

In the context of constantly evolving external and internal requirements for the management of non-financial risks, work continued in fiscal 2024 on the development of a procedural and organizational concept as well as a roadmap for expanding non-financial risk management.

The non-financial internal control system aligns with the sustainability strategy and is set up corresponding to the requirements of the CSRD regulation. The goal is to continuously prepare for regulatory compliance pursuant to upcoming CSRD requirements by implementing organization-wide measures and controls. In comparison with the previous year, the internal controls for sustainability reporting were further formalized, and integration into the overall internal control system was initiated.

The aim of our internal control system is therefore to prevent and reduce potential risks and to actively steer risks in business processes. In this way, it helps ensure that the company’s activities comply with laws and regulations. The entire internal control system and the applied methods are continuously refined. Responsibility for the effectiveness of the internal control system and the further development of the non-financial key metrics lies with the respective senior leaders or risk and process owners.

In 2024, all relevant aspects for evaluating the overall effectiveness of the internal control system and risk management were integrated in a single confirmation process. This process included respective confirmations of effectiveness by the Group functions, the local Managing Director, the local Chief Financial Officer, and the business functions. The results of this assessment were presented to the Executive Board, considering the recommended opportunities for improvement where applicable.

Given the multi-layered process landscape and the comprehensive changes regarding the catalog of requirements for non-financial information, the maturity of the non-financial internal control system was enhanced. Based on risk-based assessments of the financial and non-financial internal control system, compliance and risk management, stakeholder confirmations, and regular general audits by Internal Auditing, as of December 31, 2024, the Executive Board was not aware of any indications with regard to material issues that this system is not appropriate or effective.

* The contents of this chapter or section are voluntary and therefore not audited. However, our auditor has read the text critically.

Risk and opportunity management

Group Risk Management provides the organizational framework for risk management and reports to the Group Chief Financial Officer. We have established a holistic risk management system aimed at safeguarding the long-term achievement of our Group's goals and addressing risks to ensure our continued existence and future success. Within the scope of audits, Group Internal Auditing regularly reviews the performance of risk management processes within the units at the local level and, at the same time, the communication of relevant risks from the operating businesses to Group Risk Management. Additionally, the external auditor examines the risk early warning system in accordance with section 317 (4) of the German Commercial Code (HGB) as part of the year-end audit of Merck KGaA.

Our risk management activities aim to continuously and promptly identify, assess, and manage risks so that appropriate measures can be implemented to mitigate their potential negative impact. The responsibilities, objectives and procedures of risk management are outlined in our internal group standard for risk management. The designated risk owners, including business heads, managing directors of the subsidiaries and the heads of enabling Group functions, are responsible for overseeing and running local risk management processes. These processes encompass various requirements, such as identifying risks considering internal and external factors (impacting both financial and non-financial targets), analyzing risks, implementing appropriate mitigation actions, establishing preventive measures and contingency plans if applicable, and documenting risks and mitigation efforts.

The risk owners continuously assess the status of risks and report their risk portfolio to Group Risk Management twice a year. To facilitate and support these activities, we employ dedicated risk management tools. Group Risk Management coordinates and supervises the bottom-up risk reporting process. This includes validating the plausibility of the reported risks, assessing the effectiveness of mitigation measures and time frames, and determining the residual risk. The net risk is then presented in the internal risk report.

For the internal bottom-up risk reporting process, reporting is based on defined thresholds, and a variety of distribution functions are used to reflect scenarios with varied occurrence probabilities. Risks below the global reporting threshold are managed and monitored at a local level. The time frame applied for internal risk and opportunity reporting is five years. It may extend beyond this time frame in specific cases, such as for regulatory risks related to climate change. The outlined risks and their evaluation are based on respective annual values within the reporting period. The assessment of the risks presented relates to December 31, 2024. No significant changes occurred after the balance sheet date that would necessitate an amended presentation of the Group’s risk situation.

Group Risk Management analyzes the reported information to determine the current risk portfolio of the Group. This assessment is presented in a comprehensive report, accompanied by detailed explanations, to the Executive Board, the Supervisory Board and relevant committees twice a year. This also encompasses a quantitative aggregation of risks at Group level, using a Monte Carlo simulation. Moreover, any notable changes in the assessment of existing risks or the identification of new significant risks can be reported at any time and promptly communicated to the Executive Board.

Our internal controlling processes incorporate the opportunity management process, which is aligned with the Group’s strategy within the operating units. As part of the strategy and planning processes, the business sectors analyze and evaluate possible business-related opportunities. In this context, investment opportunities are carefully examined and prioritized primarily in terms of their potential value proposition, ensuring optimal resource allocation. We target investment in growth markets to leverage the opportunities of dynamic development and customer proximity at a local level.

Identified opportunities that are deemed likely to occur are integrated into the business plans and forecasts. Additionally, trends and events that have the potential to positively impact EBITDA pre or operating cash flow are considered. These opportunities have the potential to have a positive effect on our medium-term prospects.

Risk and opportunity assessment

The significance of a risk is evaluated based on its potential unfavorable deviation from our financial and non-financial targets in conjunction with the probability of occurrence of the respective risk.

The underlying scales for measuring these factors are shown below:

Probability of occurrence

Probability of occurrence	Explanation
<1%	Highly improbable
1 – 5%	Improbable
5 – 20%	Possible
20 – 50%	Likely
>50%	More likely than not

Degree of impact

Degree of impact	Explanation
>€ 500 million	Critical negative impact on EBITDA pre and/or operating cash flow
€ 100 – 500 million	Significant negative impact on EBITDA pre and/or operating cash flow
€ 25 – 100 million	Moderate negative impact on EBITDA pre and/or operating cash flow
€ 10 – 25 million	Minor negative impact on EBITDA pre and/or operating cash flow
<€ 10 million	Immaterial negative impact on EBITDA pre and/or operating cash flow

To enable a thorough evaluation of both financial and non-financial risks, a qualitative rating scale is available to evaluate the indirect financial impact. The use scale includes dimensions like Environmental, Social and Governance (ESG), reputational, strategic, and operational aspects and is mandatory for the assessment of non-quantifiable and qualitative risks. The scale categorizes the risks as low, moderate, significant, or critical and provides a comprehensive reference for assessment.

Opportunities are assessed within their respective business environment. During short-term and strategic planning, general measures of business functions are quantified, typically in relation to EBITDA pre (earnings before interest, taxes, depreciation, and amortization) and operating cash flow. In addition, we identify and leverage opportunities as part of our regular business operations and through our daily observation of internal processes and markets.

Investment opportunities are primarily evaluated and prioritized using metrics such as net present value, internal rate of return, return on capital employed (ROCE), and the payback period of the investment. These indicators are used to assess the potential of investment projects and prioritize them accordingly. Similarly, scenarios are used to simulate the impact of possible fluctuations and changes in the respective parameters on results.

Business-related risks and opportunities

Political and regulatory risks and opportunities

As a global corporate group, we face political and regulatory changes in a large number of countries and markets.

Risk of more restrictive regulatory requirements regarding drug pricing and reimbursement as well as pricing-related opportunities

Our business is affected by numerous regulations that are continuously changing – and could even become more stringent. For example, in the Healthcare business sector, the known trend towards increasingly restrictive requirements in terms of drug pricing, reimbursement and the expansion of rebate groups is continuing. With globally rising healthcare expenditures, both in absolute amounts and relative to GDP, healthcare budgets around the world face increasing pressure. These developments can negatively influence the profitability of our products, as can market referencing between countries, and the success of market launches. Foreseeable effects are considered as far as possible in the business sector's plans. Close communication with health and regulatory authorities serves as a preventive measure to avert such risks. The remaining risks beyond the current plans resulting from restrictive regulatory requirements are possible to likely with an up to significant impact. Additionally, an event with moderate impact could occur more likely than not. While we consider the possibility of resulting price cuts in our forecasts, there is also an opportunity in the case that price pressure from healthcare systems worldwide is less pronounced than expected or materializes at a later point in time versus the base assumption. Additionally, as a global specialty innovator that pursues a focused leadership approach in attractive therapeutic areas, we are positioned to benefit from attractive pricing schemes for demonstrated major therapeutic improvements.

Risk of stricter regulations for the manufacturing, testing and marketing of products

We must adhere to a multitude of regulatory requirements regarding the manufacturing, testing and marketing of many of our products. Specifically, in the European Union, we are subject to the EU chemicals regulation REACH. Similar regulations are emerging globally in relevant markets, particularly in Asia. These regulations demand comprehensive tests for chemicals. Moreover, the use of chemicals, such as per- and polyfluorinated alkyl substances (PFAS), in production and final products could be restricted, which would negatively impact the ability to manufacture and market certain products. With the EU Chemicals Strategy for Sustainability, an initiative of the European Green Deal, we expect increasing demands concerning the substitution of specific hazardous substances. We are constantly pursuing research and development (R&D) in substance characterization and the possible substitution of critical substances so as to mitigate this risk. Further, additional regulatory requirements could potentially lead to additional efforts and/or costs. Nevertheless, risks of stricter regulations are classified as possible to likely with moderate impacts.

Risk of negative political and macroeconomic developments

Merck operates in an increasingly fragmented global landscape, shaped by protectionist trade policies, regional competition and shifting alliances among major players such as the United States, the EU, China, and emerging economies including Mexico as well as Brazil, India and other countries from the BRICS organization. The EU's 2024-2025 work program, the U.S. administration's domestic priorities, China's push for economic self-sufficiency, and the rising influence of BRICS nations will fundamentally redefine global supply chains and trade flows in the years to come.

In this complex environment, escalating geopolitical tensions add layers of uncertainty and risk. The Russia-Ukraine war has disrupted European supply chains and raised energy costs, influencing regional stability and complicating business operations industry-wide. The Middle East conflict has intensified concerns around stability in a key region for trade and innovation, raising the risk of wider regional spillovers that could impact global trade. Meanwhile, rising tensions between mainland China and Taiwan add further complexity, as potential disruptions to the East Asian tech and manufacturing hubs could pose challenges for our supply chain and require heightened risk management efforts.

The U.S. administration's "Made in America" agenda, coupled with tightened export controls in biopharma and electronics in particular, is reshaping our strategic positioning in North America. In parallel, Europe is pushing for "technological sovereignty" under the European Commission's latest initiatives. For instance, in the Electronics business sector, a strong local presence in China enables us to remain competitive in the country while our global footprint could provide opportunities to capture the demand shifting from Asia to other regions such as the United States and Europe. Although individual industry players are delaying ongoing expansions in the United States and Europe, the general trend toward a geographical shift remains, especially with regard to capacities for the production of advanced microchips.

China's pursuit of economic self-reliance in sectors such as pharmaceuticals, biotechnology and advanced electronics remains a challenge. The country's dual circulation strategy emphasizes local innovation and domestic demand, potentially raising regulatory barriers for foreign companies. Meanwhile, other major markets, including Mexico alongside Brazil, India and other countries from the BRICS organization, are taking on increasingly influential roles in global trade and industry standards. India's focus on becoming a manufacturing and pharmaceutical powerhouse has led to significant investments in healthcare and tech infrastructure.

In addition to individual market dynamics, the BRICS organization is advocating for multipolar trade frameworks that aim to reduce dependency on Western-centric systems and foster stronger South-South cooperation. As BRICS expands its influence on global trade policies, we are closely monitoring these developments to ensure that our supply chains and regulatory strategies remain flexible and aligned with this emerging trade ecosystem.

The evolving regional focus across these markets is likely to lead to higher operational costs and inflationary pressures, particularly for companies dependent on global logistics and high-tech manufacturing. Our response involves a dual approach: enhancing cost efficiency while making targeted investments in critical regions to align with local regulatory landscapes and market demands.

Our robust risk management framework continuously monitors geopolitical and economic indicators across all major regions, enabling us to adapt swiftly to new developments. This real-time monitoring capability supports a proactive approach, enabling us to align with diverse regulatory priorities and mitigate disruptions across our core sectors.

Looking forward, our strategy emphasizes resilience through regional diversification, regulatory alignment and tailored investments in key regions. Besides ensuring operational continuity, this approach puts us in an ideal position for long-term stability and growth across a globally interconnected and increasingly multipolar economic landscape.

The net risks of negative geopolitical and macroeconomic developments are seen as possible and might have significant to critical effects. However, our assumptions on geopolitical developments exclude scenarios with severe escalation of tension. The materialization of such scenarios would jeopardize entire industries and the balance of political and economic structures, posing a substantial challenge for us, as for any other company.

Further details on the macroeconomic development can be found under "**Macroeconomic and Sector-Specific Environment**".

Market risks and opportunities

Risks and opportunities in life science

Our Science & Lab Solutions business unit serves customers in various sectors including the biotech and pharmaceutical industries in the areas of production, testing and research, as well as public authorities and research institutions. Despite current headwinds – a complex macroeconomic environment and softer market demand, especially in the United States and China – the business unit is well positioned to deliver long-term, profitable growth. We aim to offer our customers a streamlined experience and a comprehensive portfolio of offerings to facilitate their research and analytical processes. This includes several customer solutions in innovative digitalization and automation.

The Process Solutions business unit offers its comprehensive bioprocessing product portfolio to biotech and pharma customers that are focused on developing and manufacturing traditional and novel therapies. Our portfolio includes filtration devices, chromatography resins, single-use assemblies and systems, and excipients. We have strategically positioned ourselves to capture numerous opportunities from the industry's shift towards biologics, coupled with the growing demand for bioproduction driven by numerous drug candidates and regulatory approvals. In addition, we are well prepared to benefit from our customers' investments in expanding bioreactor capacity. Our commitment to innovation and our customer-focused approach positions us to advance the field of biomanufacturing.

The growing use of biologics is creating a need for more efficient and higher-yield manufacturing processes. This represents an opportunity for us to enable continuous and intensified processing through our ongoing innovation in single-use technologies and advancements in bioproduction. Acceleration of the pharmaceutical development process could lead to faster market growth and a more positive direction compared with our latest plan. Conversely, a deceleration of pharmaceutical R&D activities may result in slower than anticipated market development. Demand growth is expected to normalize as funding levels stabilize and the pipeline of drugs in development remains robust and diverse.

Our Life Science Services business unit fully integrates its services as a contract development and manufacturing organization (CDMO) to meet the evolving needs of our global customers across all stages of drug development, from preclinical to commercialization. Our CDMO services cover a wide range of modalities, including monoclonal antibodies (mAbs), high-potency active pharmaceutical ingredients (HP-APIs), antibody-drug conjugates (ADCs), viral and gene therapies (VGTs), and end-to-end mRNA offerings. We continually invest in expanding our portfolio and production capabilities to offer specialized solutions for both traditional and innovative therapies. This positions us to capitalize on the potential of the growing biopharmaceutical market by providing leading CTMO services to our customers. Through quicker establishment of novel modalities on the market in combination with our broad and integrated portfolio, we can increase the potential beyond the assumptions reflected in our plan. For emerging biotechnology companies, the timing and magnitude of a sustained return to growth of funding (venture capital and IPOs) will determine the pace of growth in R&D spending, presenting both a risk and an opportunity to life science suppliers.

The market risks for the Life Science Services business unit are assessed as likely with moderate to significant impact.

Further details on the industry, market developments and associated risks can be found under "**Risks due to increased competition and customer technology changes as well as related opportunities**" and "**Macroeconomic and Sector-Specific Environment**".

Risks and opportunities in the semiconductor industry

Our Semiconductor Solutions business unit leverages a broad portfolio of independent technologies. This enables us to supply products for every key step in wafer processing, helping our customers to achieve their technology roadmaps.

The underlying semiconductor industry is cyclical by nature. The current downturn has been exacerbated by a recession in the wake of the Covid-19 pandemic. The economic slowdown has led to a temporary weakness of the traditional industry growth drivers such as PCs, smartphones and traditional data centers, while the new growth drivers, such as AI and automotive, are still too small to compensate for these effects. The multilayered macroeconomic effects and poor transparency throughout the supply chain cause a certain degree of uncertainty when estimating the timing and shape of the industry recovery. This uncertainty is reinforced by the current dynamic around the trade conflict between the United States and China. External and internal assumptions on the shape of the industry recovery and the future escalation of the trade conflict (e.g. further trade restrictions) can deviate either positively or negatively. Such deviations present both an inherent opportunity and a risk to our base plan.

Irrespective of the current turbulent macroeconomic situation, the positive medium- and long-term growth prospects of our markets remain unchanged. We see long-term growth opportunities in the semiconductor market due to the significantly accelerating global demand for innovative semiconductor materials with potential growth upside, driven by a faster market adaptation and penetration. This demand is driven by exponential data growth and highly impactful technology trends such as autonomous driving, electric vehicles, Internet of Things (IoT) and 5G. We will benefit from the high material requirement, particularly of chips powering AI applications, and are working with our customers on almost all of these groundbreaking technological innovations in the semiconductor sector. That is why we are investing in our highly attractive growth markets and purposefully expanding production capacities with a smart localization of our footprint to further boost customer proximity and ensure supply stability. Having the right capacity in the right place to bring new products and higher volumes to our customers enables us to stay flexible about the timing of the market upswing and can serve as a competitive advantage.

The aforementioned trends and the continued announcements of major capacity expansions in the industry in the coming years also benefit our DS&S business. With this portfolio of gas and chemical cabinets and the potential to provide our largest customers with turnkey solutions for the delivery of bulk gases in the manufacturing process, we are well positioned to capture upcoming opportunities.

The market risks for the Semiconductor Solutions business unit are likely with up to significant impact. Additionally, an event with minor impact could occur more likely than not.

Risks due to increased competition and customer technology changes as well as related opportunities

In the Healthcare business sector, both our biopharmaceutical products and classic pharmaceutical business are exposed to increased competition from other rival products, especially in the form of biosimilars and generics but also in innovative R&D. We compete with other pharmaceutical companies in various therapeutic indications and rely on high quality data to successfully market our products. For this reason, we closely observe our competitive landscape and make assumptions with regard to future competitor entries that pose competition to our products. Due to the uncertainty that is inherent to clinical trials, there is the possibility that competitor trials fail to meet primary endpoints in their studies or deliver inferior data than we initially anticipated. If there are no new competing products or if our competitors deliver less promising data, this could represent opportunities for us in therapeutic areas in which we are active.

In the Life Science and Electronics business sectors, risks are posed by not only cyclical business fluctuations but also changes in the technologies used or customer sourcing strategies. We use close customer relationships and in-house further developments as well as market proximity, including precise market analyses, as mitigating measures. Overall, the occurrence of these risks is possible to likely and could have a significant impact.

The risks due to increased competition and customer technology changes are assessed as possible to likely with up to significant impacts.

Further details on the industry and market development can be found under “**Macroeconomic and Sector-Specific Environment**”.

Risks and opportunities of research and development

Innovation driven by R&D is a major element of the Group strategy – including fostering innovation at the intersection of our business sectors – and is particularly important in the Healthcare business sector. In regular portfolio management reviews, we continually evaluate and, if necessary, realign research areas and R&D pipeline projects to focus our investments in areas where patient needs are served best. Nevertheless, R&D projects can experience delays, expected budgets can be exceeded, or targets can remain unmet. Sometimes, development projects are discontinued after high levels of investment at a late phase of clinical development. Decisions – such as those relating to the transition to the next clinical phase – are taken with a view to balance risks and opportunities.

In addition to in-house R&D efforts, strategic alliances with external partners and the in- and out-licensing of programs also form part of the catalog of measures to develop innovative medicine and ensure the efficient allocation of resources. Strategic alliances with partners as well as in- and out-licensing transactions always follow a stringent selection process along clear strategic and financial decision criteria. An example of such in-licensing deals is the partnership with Jiangsu Hengrui Pharmaceuticals Co. Ltd. for a next-generation selective PARP1 (poly (ADP-ribose) polymerase 1) inhibitor and ADC (antibody-drug conjugate), which was announced in early 2024. The partnership represents a strong strategic fit, leveraging our internal DNA damage response expertise and in-house ADC capabilities. This agreement provides the opportunity to advance more therapeutic options for patients with difficult-to-treat cancers. In general, however, forecasting the exact number of transactions per year is challenging, and furthermore, it is possible that we may not be able to identify a sufficient number of in-licensing assets on financially acceptable terms.

The aforementioned development opportunities are associated with different types of risks. There is the risk that regulatory authorities either do not grant or delay approval or grant only restricted approval. The risk that undesirable side effects of a pharmaceutical product could remain undetected until after approval or registration could result in a restriction of approval or withdrawal from the market. Furthermore, we cannot guarantee that all the assets we are currently developing will achieve the desired commercial success. The failure to meet targets in this area could have significant effects, for example due to lower net sales or the non-occurrence of milestone payments from collaboration agreements. These risks are evaluated with probabilities ranging from possible to likely.

Moreover, in Electronics, we will also continue to invest heavily in R&D in leading-edge material solutions. The aim is to seize growth opportunities arising from the increasing global demand for innovative semiconductors. Promising opportunities for innovation are constantly arising throughout our Semiconductor Solutions business. We work closely with our customers to exploit these. Technology inflection points bring opportunities to our material solutions and the chance to differentiate ourselves from the competition.

In addition, we see opportunities in organic light-emitting diode (OLED) materials in high-quality display applications. We have been conducting R&D in the area of OLED technology for more than 15 years and have grown into a well-positioned material supplier for OLEDs. Through our semiconductor and display knowledge, we will be able to contribute to the new display devices including foldable displays and Augmented Reality/ Virtual Reality applications, which require a broad set of materials. The increasing convergence of optical and semiconductor technologies allows us to leverage existing competencies in these fields and benefit from growing demands. With the acquisition of Unity-SC, we now master all key interactions of light and materials – generating, modulating, guiding, and analyzing light – within one unified group.

More detailed descriptions on our R&D activities worldwide can be found under "**Research and Development**" in "**Fundamental Information about the Group**".

Risks and opportunities related to the quality and availability of products

Opportunities arising from capacity expansion

We make targeted investments worldwide to expand our regional capacities and drive sustainable growth in all three of our business sectors.

In fiscal 2024, we announced several new investments to expand capacity and product capabilities at facilities around the world. These include investments in new state-of-the-art research and quality control labs in Germany, a new bioprocessing manufacturing facility in Korea, new ADC manufacturing capabilities in St. Louis, Missouri, USA, and distribution centers in Brazil and Germany. Having the right capacity in the right place secures a more reliable and effective supply chain, helps meet customer demand and offers the opportunity for us to capture a higher market share and a competitive advantage. However, market dynamics naturally influence our expansion activities as well as utilization. We therefore review our expansion plans regularly and adapt them accordingly.

Risks arising from project execution

In today's dynamic business environment, we prioritize innovation and growth. Projects are essential for achieving our strategic objectives, such as driving innovation or expansion and promoting sustainable development. To effectively support further business growth and enhance efficiency, we continuously invest in production facilities and equipment, IT systems, distribution centers, office buildings, and other projects. However, project execution involves significant capital expenditures, making effective project management critical to avoid delays and higher spending. Inadequate planning, execution errors and ineffective change management can lead to inefficiencies and disruptions, resulting in increased costs and lower sales.

In a rapidly evolving market, delaying or deferring investments poses a risk of missing out on market growth and development. To mitigate this risk, we actively monitor industry trends, conduct market research and maintain a flexible project portfolio. By aligning our investment decisions with market dynamics, we aim to capture opportunities and minimize the risk of being left behind. This is particularly important in industries like semiconductors, where market cycles present substantial risks. Overall, the risks are possible to likely and could have a moderate impact.

To proactively address project execution risks, we apply well-established project planning and internal control practices, collaborate closely with stakeholders and conduct regular project reviews through teams and steering committees. This approach enables us to detect risks early on and implement corrective actions or discontinue projects that are unlikely to succeed. Through comprehensive planning, accurate cost estimations and re-evaluations, we monitor costs and ensure efficient resource allocation. Effective project governance and prioritization further contribute to desired project outcomes.

Risk of a temporary ban on products/production facilities or of non-registration of products due to non-compliance with quality standards

We are required to comply with the highest standards of quality in the manufacturing of pharmaceutical products (Good Manufacturing Practice or official pharmacopoeia). In this regard, we are subject to the supervision of the regulatory authorities. Conditions imposed by national regulatory authorities could result in a temporary ban on products/production facilities and possibly affect new registrations with the respective authority. We make the utmost effort to ensure compliance with regulations, regularly perform own internal audits and carry out external inspections. Thanks to these quality assurance processes, the occurrence of a risk with a moderate impact is possible; however, a significant impact cannot be entirely ruled out and depends on the product concerned and the severity of the objection.

Risks of production availability

Further risks include operational failures due to fire or force majeure, for example natural disasters such as floods, droughts or earthquakes, which could lead to a substantial interruption or restriction of business

activities. As far as possible and economically viable, the Group limits its damage risks with insurance coverage, the nature and extent of which is constantly adapted to current requirements. Likewise, we are exposed to risks of production outages and the related supply bottlenecks that can be triggered by technical problems in production facilities with very high-capacity utilization. Furthermore, there are risks of supply bottlenecks due to a lack or disappearance of capacity. We work towards continual mitigation of such risks by making regular investments, setting up alternative sourcing options and maintaining sufficient inventory levels.

The occurrence of these risks with a moderate impact is considered possible, while a highly improbable individual extreme event could have a critical negative effect.

Supply Chain Integrity

In 2024, we successfully navigated a complex landscape of challenges, including ongoing geopolitical tensions, supply chain disruptions due to natural disasters and evolving regulatory environments. Our commitment to building resilient supply chains has been pivotal in ensuring uninterrupted service across all business sectors.

In the Healthcare business sector, we have effectively managed the supply of our medicines, ensuring that patients have access to essential therapies even as competitors faced shortages. Through proactive measures such as diversifying sourcing options, building safety stocks and maintaining close relationships with suppliers, we have fortified our supply reliability.

In Life Science, our supply resilience activities have enabled us to monitor several potential impact events closely, ensuring that we remain responsive to challenges rooted in geopolitical challenges and regulatory changes. Our proactive engagement with suppliers has been crucial in maintaining service continuity and adapting to evolving circumstances.

In Electronics, events such as the earthquake in Taiwan early in the year and recent typhoons in the Pacific region have tested our supply chains. However, thanks to our strong supplier relationships and ongoing efforts to enhance resilience, we have avoided major disruptions. Our focus on diversifying sourcing and strengthening partnerships has positioned us to navigate these challenges effectively.

While we acknowledge that certain vulnerabilities persist, we are committed to investing in our supply chain resilience across all sectors. Overall, the likely risks could have a moderate to significant impact while single improbable events could have a critical negative effect.

Risks due to product-related crime

As a leading global science and technology company and manufacturer of innovative products, we face various security and crime-related risks due to the complexities of international trade and global supply chains. Our products are vulnerable to counterfeiting, theft, illegal diversion, and misuse. If unaddressed, these risks could lead to financial loss, reputational damage and business disruption and even compromise patient safety. To mitigate these threats, we have implemented technical, operational and procedural measures to protect our product integrity and supply chains while ensuring that emerging threats are managed effectively.

Overall, the threat resulting from product-related crime is likely with a moderate impact.

Risks from the use of social media

We and our employees are active on numerous social media platforms. The consistent and legally compliant use of such platforms and their content is important in terms of increasing awareness of our brand, among other things. We take all necessary precautions and have implemented processes to ensure awareness regarding the proper handling of social media as well as actively managing and controlling our publications and communication.

Nevertheless, reputational risks could result, for instance through public dialogues on social media. On the qualitative rating scale, we thus rate this risk as significant.

Financial risks and opportunities

As we operate internationally, and due to our presence in the capital markets, we are exposed to various financial risks and opportunities. Above all, these are liquidity and counterparty risks, financial market risks and opportunities, and risks of fluctuations in the market values of operational tangible and intangible assets as well as risks and opportunities from pension obligations.

In the area of financial risks and opportunities, we use an active management strategy to reduce the effects of fluctuations in exchange and interest rates. The management of financial risks and opportunities by using derivatives is regulated through extensive guidelines. Speculation is prohibited, and derivative transactions are subject to constant risk controls. The strict separation of functions between trading, settlement and control functions is ensured.

Liquidity risks

To ensure continued existence, we must be able to fulfill our commitments arising from operating and financial activities at any time. Therefore, to reduce potential liquidity risks, we have a central Group-wide liquidity management system in place and a balanced maturity profile. The maturities of our financial liabilities are aligned with our planned free cash flow. Furthermore, we have a syndicated loan facility of € 2.5 billion with a term until 2029, which ensures continuing solvency if any liquidity bottlenecks occur. As our loan agreements do not contain any financial covenants, these agreed lines of credit can be accessed even if our credit rating should deteriorate. Additionally, we have a commercial paper program with a maximum volume of € 2.5 billion. The occurrence of liquidity risk is assessed as highly improbable and with only immaterial impact.

Counterparty risks

Counterparty risks arise from the potential default by a partner in connection with financial investments, loans and financing commitments on the one hand and receivables in operating business on the other.

As for counterparty risks from financial transactions, we review all central positions relating to trading partners and their credit ratings daily. We manage financial risks of default by diversifying our financial positions and through the related active management of our trading partners. Significant financial transactions involving credit risk are entered into with banks and industrial companies that have a good credit rating. Moreover, our large banking syndicate – the renewed syndicated loan facility of € 2.5 billion was syndicated among 15 banks in 2024 – reduces possible losses in the event of default.

The solvency and operational development of trading partners are regularly reviewed as part of the management of operational counterparty risks. Sovereign risks are also analyzed. The volume of receivables of each customer is capped in line with their credit ratings. Risk-mitigating measures, such as credit insurance, are used as appropriate. Nevertheless, defaults by isolated trading partners, even those with outstanding credit ratings, cannot be entirely ruled out, although rated as unlikely.

Counterparty risks are classified as possible risks and might have moderate effects.

Financial market risks and opportunities

As a result of our international business activities and global corporate structure, we are exposed to risks and opportunities from fluctuations in exchange rates. These result from financial transactions, operating receivables and liabilities as well as future cash flows from sales and expenses in foreign currency. We use derivatives to manage these risks and opportunities (further information can be found under "**Derivative financial instruments**" in the "**Notes to the Consolidated Financial Statements**"). Foreign exchange rate risks are rated as possible with a significant effect on EBITDA pre or operating cash flow.

Variable interest and current financial liabilities are exposed to the risks and opportunities of interest rate fluctuations. Interest rate risks have a negative impact, are considered possible and pose a moderate risk overall.

Risks of impairment of balance sheet items

The carrying amounts of individual balance sheet items are subject to the risk of changing market and business conditions and thus to changes in fair values as well. Necessary impairments could have a significant negative non-cash impact on earnings and affect the accounting ratios. This applies specifically to the high level of intangible assets including goodwill, which mainly derive from the purchase price allocations made in connection with past acquisitions (further information can be found under "**Goodwill**" and "**Other intangible assets**" in the "**Notes to the Consolidated Financial Statements**"). This qualitative risk might have a significant effect on reputation.

Risks and opportunities from pension obligations

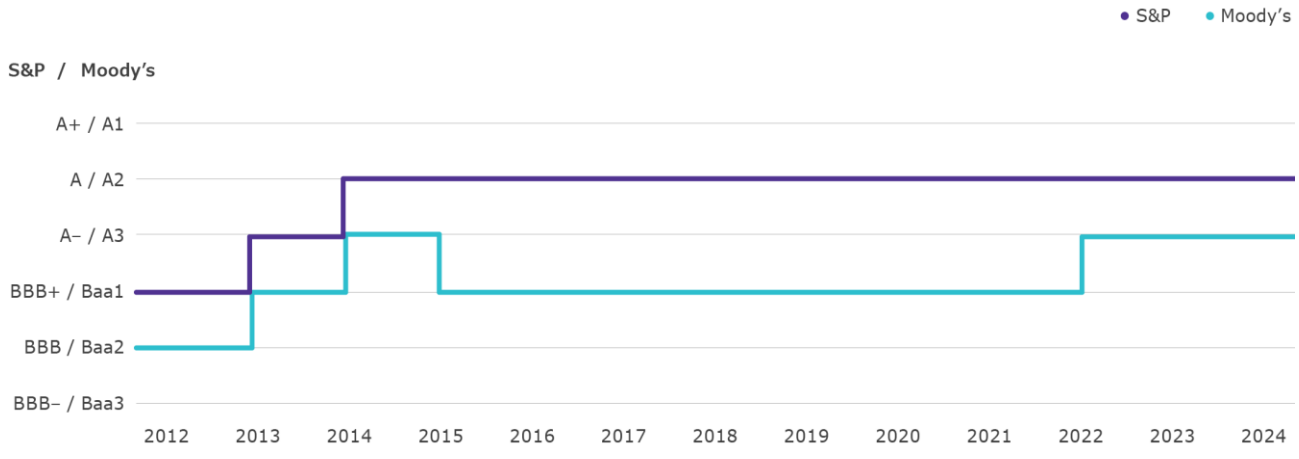
We have commitments in connection with pension obligations. The present value of defined benefit obligations can be significantly increased or reduced by changes in the relevant valuation parameters, for example, the interest rate or future salary increases. Pension obligations are regularly assessed as part of annual actuarial reports. The obligations are covered by the pension provisions reported in the balance sheet based on the assumptions as of the balance sheet date. Some of these obligations are funded by plan assets (further information can be found under "**Provisions for pensions and other post-employment benefits**" in the "**Notes to the Consolidated Financial Statements**").

To the extent that pension obligations are covered by plan assets consisting of interest-bearing securities, shares, real estate, and other financial assets, decreasing or negative returns on these assets can adversely affect the fair value of plan assets and thus result in further additions to pension provisions. By contrast, rising returns increase the value of plan assets, thereby resulting in excess cover of plan liabilities. We increase the opportunities of fluctuations in the market value of plan assets on the one hand and reduce the risks on the other by using a diversified investment strategy. The possible risk due to pension obligations could have minor effects.

Assessment by independent rating agencies

The capital market uses the assessments published by rating agencies to help lenders assess the risks of financial instruments used by us. We are currently rated by Standard & Poor's and Moody's. Standard & Poor's has issued a long-term credit rating of A with a stable outlook and Moody's a rating of A3 with a stable outlook. In line with market procedures, our financing conditions are closely tied to our rating. The better the rating, the more favorably we can generally raise funds on the capital market or from banks.

Overview of Rating Development



Risks due to the divestment, acquisition and integration of companies and businesses

The successful acquisition and integration of new businesses inherently involve risks, due primarily to the uncertainty of meeting business objectives and synergy targets as well as adhering to the planned integration budget. Conversely, divestments may result in liabilities and additional expenses arising from potential indemnifications and commitments assured in the sale transaction or from separation costs exceeding expectations. We mitigate transaction-related risks by leveraging our robust track record, conducting rigorous due diligence and employing representations and warranties insurance in our merger and acquisition transactions. Furthermore, we ensure seamless integration through strategic planning and execution, facilitating the alignment of the acquired entities with our organizational goals. At present, only minor negative impacts are likely, and we are not aware of any other risks in this domain.

Tax risks

Merck and its subsidiaries operate worldwide and are consequently subject to different national tax laws and regulations. National tax audits of our entities are conducted on an ongoing basis by the tax authorities of the respective countries in which we operate. Tax risks originate particularly from the changes in national tax laws and regulations, and case laws and interpretations by national tax authorities as well as from significant transactions such as acquisitions, divestments and reorganizations.

Findings of the national audit authorities of the various countries may lead to higher tax expenses and payments and may also have an impact on the amount of tax receivables, and tax liabilities as well as on deferred tax assets and liabilities.

Our tax function regularly and systematically assesses the relevant tax risks. Appropriate standards are put in place to identify tax risks at an early stage in order to review, assess and mitigate them effectively and efficiently. Group Tax coordinates mitigation measures with the subsidiaries. Risks in addition to those already accounted for in the balance sheet are classified as improbable to possible with moderate to significant impact.

Information on the accounting and measurement policies for income taxes can be found under "**Income tax**" in the "**Notes to the Consolidated Financial Statements**".

Legal risks

Generally, we strive to minimize and control our legal risks. To this end, we have taken the necessary precautions to identify threats and defend our rights where necessary. Nevertheless, we are still exposed to risks from litigations or legal proceedings. In particular, these include risks in the areas of product liability, competition and antitrust law, pharmaceutical law, patent law, trademark law, data protection law, tax law, and environmental protection. As a research-based company, we have a valuable portfolio of industrial property rights, patents and brands that could become the target of attacks and infringements. The outcome of future proceedings or those currently pending is difficult to foresee. For instance, we are currently involved in litigation with Merck & Co. Inc., Rahway, New Jersey (USA) (outside the United States and Canada: MSD), against whom we have filed lawsuits in various countries. This company has also sued us in the United States for trademark infringement, among other things.

Due to long statutes of limitations or in some cases the absence thereof, it is not possible to rule out that we will face third-party claims arising from the same issue despite the conclusion of legal proceedings. Court or official rulings or settlements that we consider as "highly improbable" to "more likely than not" could lead to expenses with a significant to critical impact on our business and earnings. Despite extensive precautionary measures, non-compliance with laws and regulations leading to related consequences can never be completely excluded. In our opinion, the lawsuit described below is the most significant legal risk, however this should not be seen as an exhaustive overview of all legal disputes currently ongoing.

Product liability risks

We are exposed to product liability risks, which can lead to considerable claims for damages and defense costs. In view of this, we have taken out liability insurance to mitigate such risks. However, it could be that the insurance coverage is insufficient for individual cases. Although the occurrence of product liability claims in excess of the existing insurance coverage is considered improbable, individual cases could still have a critical effect.

Human resources risks

The company's future growth relies on its innovative strength, making employee expertise and engagement essential for its success in all business sectors. The market for qualified specialists and talented young staff is characterized by fierce competition, while the company is also faced with the challenge of being viewed as an attractive employer. To retain critical skills and expertise, it is important to proactively identify and address country- and industry-specific fluctuation risks.

The company prioritizes recruiting and retaining specialists and talent through strategies such as employer branding initiatives, global talent management, succession planning, and competitive compensation packages. However, there are potential employee-related risks that could affect business activities, which are assessed as having a moderate impact on a qualitative rating scale.

Information technology risks

We use a variety of IT systems and processes to optimally support our globalization. Trends in information technology offer various opportunities but also harbor risks.

Risks due to cybercrime and the failure of business-critical applications

Increasing international networking and the related possibility of IT system abuse are resulting in cybercrime risks for us, such as the failure of central IT systems, the loss of the data integrity or the disclosure of confidential data from R&D as well as business activities, the manipulation of IT systems in process control, or an increased burden or adverse impact on IT systems as a result of virus attacks.

We maintain and operate an information protection management system based on ISO 27001. Our governance framework contains organizational, process-related and technical information security countermeasures based on recognized international standards. In addition, we employ harmonized electronic and physical security controls (e.g. access control and security monitoring) to bolster our ability to handle sensitive data, such as trade secrets.

Cyber Security is part of our Group Corporate Security Office. In addition, we have a Group Chief Information Security Officer and a network of Information Security Officers within the business sectors, each supported by dedicated networks. The individual sectors hold risk ownership and act as our first line of cyber security defense. Our Global Cyber Security function acts as a second line of defense and has responsibilities regarding cyber security risk governance and oversight. Our third line of defense consists of internal audits.

Globally used IT applications form the basis for the contractual delivery of products and solutions. The failure of business-critical IT applications could therefore have a direct influence on our ability to deliver and on the quality of our products. This also applies to the failure of a data center. To achieve the required service quality, we use a quality management system certified to ISO 9001 that also applies to the provision of IT. In addition, to reduce the risk of failure, we operate several redundantly designed data centers. Furthermore, insurance solutions for cybercrime offenses are in place at Group level.

Likewise, complications with the changeover of IT systems could negatively impact the earnings situation. Close monitoring of critical IT projects serves to mitigate this risk.

The effects of cybercrime or the failure of business-critical IT applications and their influence on EBITDA pre and operating cash flow are considered to be likely and with a significant impact, while unlikely events could lead to critical impacts.

Environmental, climate-related and safety risks

As a company with global production operations, we are exposed to risks of possible damage to personnel, goods and our reputation. These include physical risks from droughts, storms, floods, extreme heat, and wind. Mitigation measures such as audits, consultations and training on environmental protection, occupational health and safety minimize these risks to people and the environment. We monitor these risks at our sites and those of our suppliers and contract manufacturers, ensuring continuity of plant and equipment. By adhering to high technical standards, our rules of conduct and all legal requirements in environmental protection and occupational health and safety, we preserve goods and assets, with comprehensive insurance policies providing further financial protection.

We continuously monitor regulatory risks associated with the transition to a low-carbon economy, which could materialize through rising carbon prices via emissions trading systems, taxes or energy legislation. We aim to mitigate these risks through comprehensive strategies, including our energy and CO_2 management initiatives and efforts to reduce process emissions, all of which are included in the implementation of our inaugural transition plan. Mainly, we classify these as likely risks with moderate impacts. However, a critical impact on EBITDA pre or operating cash flow cannot be fully ruled out.

In 2022, we performed a qualitative climate risk and vulnerability assessment covering upstream and downstream activities and our own operations. In 2023 and 2024, in alignment with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), we conducted quantitative climate scenario analyses focusing on upstream activities and our own operations. These assessments identified climate-related risks and opportunities considering two climate pathways: the Paris Agreement-aligned 1.5°C scenario and the Representative Concentration Pathway (RCP) 8.5, which corresponds to a 4°C scenario, across different time horizons (2030 and 2050). We evaluated the potential effects of physical risks on our key sites, assessing vulnerabilities and implementing necessary safeguards.

In line with our commitment to risk mitigation, we continue to develop innovative and sustainable approaches, foreseeing no relevant short-term deviations from our expectations regarding impacts on EBITDA pre or operating cash flow.

For further details on climate-related risks, please see our “**TCFD Report**”.

Overall view of the risk and opportunity situation and management assessment

The most significant individual risks or risk clusters have been outlined in this report, with business- and market-related risks being the most significant alongside IT, supply chain and legal risks. Of particular significance are the still ongoing global macroeconomic and geopolitical developments, increasing existing risks related to more restrictive regulatory requirements regarding drug pricing and reimbursement, the demand for our products, business interruptions at our production sites, lack of availability of good quality materials or services, and risks related to R&D.

By implementing risk mitigation measures such as continually improving management actions (organizational responsibilities and process improvements), utilizing existing insurance coverage and taking accounting precautions, we have successfully taken counteraction, particularly against significant individual risks.

The overall risk of the Group, which is derived from the probability-weighted aggregation of the identified risks, leads to the assessment that an existence-threatening risk-scenario, for which coverage and financing of the losses are questionable, is improbable. We are convinced that we will also successfully manage the aforementioned challenges in the future and benefit from diversification through our different products and markets.

Based on our assessment, we believe that the most promising opportunities arise from business-related opportunities. The activities described hold significant opportunities for us in the medium to long term, beyond the forecast period. We actively pursue the opportunities that arise and specify their expected effects in the forecast development of EBITDA pre and operating cash flow. Additionally, we proactively seek out new opportunities, assess their feasibility and drive them forward where appropriate. If opportunities arise in addition to the forecast developments, or these occur more quickly than anticipated, this could have positive effects on our EBITDA pre or operating cash flow.

Report on expected developments

The following report provides a forecast for the development of net sales and EBITDA pre for the Merck Group and the individual business sectors Life Science, Healthcare and Electronics as well as a forecast for Group operating cash flow in fiscal 2025.

€ million	Net Sales	EBITDA pre[1]	Operating cash flow
Merck Group	• ~21,500 to 22,900 • Organic +3% to +6% • Foreign exchange effect -1% to +2%	• ~6,100 to 6,600 • Organic +3% to +8% • Foreign exchange effect -2% to +1%	• Slight growth
Life Science	• ~9,100 to 9,800 • Organic +2% to +7% • Foreign exchange effect 0% to +3%	• ~2,600 to 2,900 • Organic +2% to +9% • Foreign exchange effect -1% to +2%	
Healthcare	• ~8,300 to 8,900 • Organic +1% to +5% • Foreign exchange effect -2% to +1%	• ~3,000 to 3,300 • Organic +3% to +9% • Foreign exchange effect -3% to 0%	
Electronics	• ~3,800 to 4,200 • Organic +2% to +6% • Foreign exchange effect 0% to +3%	• ~1,000 to 1,100 • Organic +3% to +9% • Foreign exchange effect +2% to +5%	
Corporate and Other	-	• ~ -550 to -600	

[1] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Fundamental assumptions

Against the backdrop of the ongoing highly dynamic development of macroeconomic, geopolitical and industry-specific conditions, the forecast is again subject to greater uncertainty and volatility in fiscal 2025. Nevertheless, this forecast assumes a stable trading and geopolitical environment. It does not reflect any drastic measures that could potentially be taken in the future, such as intensified trade restrictions. Moreover, our Surface Solutions business unit will remain part of the forecast for fiscal 2025 until the divestment is closed in full.

We also expect a persistently volatile environment as regards the development of foreign exchange rates. For 2025, we expect roughly stable foreign exchange effects. Positive foreign exchange effects from the development of the U.S. dollar and individual Asian currencies are expected to be offset by the foreign exchange development of some emerging and developing economies. As regards the average €/US$ exchange rate, we continue to assume a range between € 1.03 and € 1.07 for fiscal 2025 as a whole.

Net sales

For fiscal 2025, we expect organic sales growth of between +3% and +6% for the Group; all our business sectors are expected to contribute to this. We expect Life Science in particular to return to organic growth, reflecting the gradual recovery of the market. Above all, the Process Solutions business unit is likely to drive this development and the Science & Lab Solutions business unit will also contribute to organic growth. For Healthcare, we assume that organic growth will be driven primarily by products from the Cardiovascular, Metabolism & Endocrinology franchise. In addition, Mavenclad® as well as products from the Oncology franchise and for the treatment of infertility are expected to contribute to this development. Organic growth in Electronics is likely to be driven mainly by our semiconductor materials business, reflecting the ongoing and extensive recovery of the semiconductor market. The slightly declining project business of the Semiconductor Solutions business unit is typically subject to stronger fluctuations owing to the dependency on major individual orders. For our Display Solutions business unit (renamed Optronics on January 1, 2025), we expect a stable development. We assume foreign exchange effects of -1% to +2% and forecast net sales for the Merck Group within the range of € 21.5 billion and € 22.9 billion (2024: € 21.2 billion).

EBITDA pre[1]

For EBITDA pre, we likewise anticipate organic growth of +3% to +8%, to which all business sectors are also expected to contribute. The development is essentially in line with organic sales growth. In Life Science, we additionally expect positive effects from further cost discipline. In Healthcare, strictly prioritized growth investments, e.g. in preparation for the market launch of pimicotinib, are especially reflected in research and development as well as marketing and sales expenses. In Electronics, we are also continuing to pursue active cost management. Nevertheless, targeted growth investments are also being made. Expected negative effects from currency hedging transactions are likely to be the largest driver of the rise in costs in Corporate and Other. Including forecast foreign exchange effects of between -2% and +1%, we expect EBITDA pre for the Merck Group of € 6.1 billion to € 6.6 billion (2024: € 6.1 billion).

Operating cash flow

The forecast for operating cash flow is generally subject to a higher fluctuation corridor than the forecast for EBITDA pre. We provide an estimate of the development of operating cash flow only for the Group as a whole.

The development of operating cash flow will largely be in line with the operating performance. Effects from the buildup of working capital will have an opposing effect, which reflects the strong business performance on the one hand. On the other hand, increasing receipt of payment from customers in the fourth quarter of 2024 will negatively impact operating cash flow in fiscal 2025. Overall, we forecast a slight increase in operating cash flow in fiscal 2025 against a strong comparative basis in the previous year (2024: € 4.6 billion).

As regards the composition of operating cash flow, we refer to the section entitled "**Internal Management System**" in the combined management report as well as the **Consolidated Cash Flow Statement** in the Consolidated Financial Statements.

[1] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Report in accordance with section 315a HGB

The following information is provided in accordance with section 315a in conjunction with section 289a of the German Commercial Code (HGB) and the explanatory report pursuant to section 176 (1) sentence 1 of the German Stock Corporation Act (AktG).

As of December 31, 2024, the company's subscribed capital is divided into 129,242,251 no-par value bearer shares plus one registered share. Each share therefore corresponds to € 1.30 of the share capital. The holder of the registered share is E. Merck Beteiligungen KG. It is entitled and obliged to appoint one-third of the members of the Supervisory Board representing the limited liability shareholders. If the holder of the registered share is a general partner, they have no such right of appointment. The transfer of the registered share requires the company's approval. The approval is granted at the sole discretion of the personally liable general partner with an equity interest, namely E. Merck KG.

Pursuant to the information on voting rights submitted to us in accordance with the German Securities Trading Act (WpHG), no shareholders owned direct or indirect investments exceeding 10% of the voting rights as of December 31, 2024.

According to the Articles of Association of Merck, the general partners not holding an equity interest who form the Executive Board are admitted by E. Merck KG with the consent of a simple majority of the other general partners. A person may be a general partner not holding an equity interest only if they are also a general partner of E. Merck KG. In addition, at the proposal of E. Merck KG and with the approval of all general partners not holding an equity interest, further persons who are not general partners not holding an equity interest may be appointed to the Executive Board.

The Articles of Association of Merck KGaA can be amended by a resolution at the Annual Meeting that requires the approval of the general partners. Notwithstanding any statutory provisions to the contrary, the resolutions of the Annual General Meeting are adopted by a simple majority of the votes cast. Where the law requires a capital majority in addition to the voting majority, resolutions are adopted by a simple majority of the share capital represented in the vote. The Articles of Association of Merck KGaA encompass authorized and contingent capital.

The Executive Board is authorized to increase the company's share capital with the approval of the Supervisory Board and of E. Merck KG on one or more occasions, up to and including April 21, 2027, by a total of up to € 56,521,124.19 by issuing new no-par value bearer shares in exchange for cash and/or non-cash contributions (Authorized Capital 2022). Limited liability shareholders are generally granted statutory rights to subscribe to the new shares. However, the Executive Board is authorized, with the approval of the Supervisory Board, to exclude limited liability shareholders' subscription rights, either in full or in part, in the case of a capital increase in exchange for cash contributions pursuant to or by analogous application of section 186 (3) sentence 4 AktG, if the issue price of the new shares is not substantially lower than the stock exchange price of the company's shares already listed and if the new shares issued under exclusion of these subscription rights do not exceed a proportional amount of 10% of the share capital, either at the time of Authorized Capital 2022 taking effect or being utilized.

This restriction to 10% of the share capital shall include the proportional amount of the share capital that is attributable to shares that are issued under exclusion of subscription rights or sold during the term of Authorized Capital 2022, based on an authorization to issue new shares or to sell own shares by direct or analogous application of section 186 (3) sentence 4 AktG. This restriction shall also include the proportional amount of the share capital that is attributable to shares which may or must be issued in order to service bonds carrying a conversion or option right or a conversion or option obligation, if the bonds are issued during the term of Authorized Capital 2022 under exclusion of limited liability shareholders' subscription rights by analogous application of section 186 (3) sentence 4 AktG.

It is likewise possible to exclude the subscription rights of limited liability shareholders with the approval of the Supervisory Board in the case of capital increases in exchange for non-cash contributions, particularly for the purpose of acquiring enterprises, parts of enterprises or interests in enterprises. In addition, with the approval of the Supervisory Board, limited liability shareholders' subscription rights can be excluded in order to enable E. Merck KG to exercise its right pursuant to Article 32 (3) of the Articles of Association of Merck KGaA to participate in a capital increase by issuing shares or freely transferable share subscription rights.

It is likewise possible to exclude, with the approval of the Supervisory Board, the subscription rights of limited liability shareholders in order to enable E. Merck KG to exercise its right pursuant to Article 33 of the Articles of Association of Merck KGaA to convert its equity interest into share capital, either in full or in part.

Moreover, with the approval of the Supervisory Board, the subscription rights of limited liability shareholders can be excluded if and to the extent this is necessary to grant the holders or creditors of conversion or option rights, and/or the holders or creditors of financing instruments carrying conversion or option obligations, which were or are issued by the company or by a domestic or foreign company in which the company directly or indirectly holds the majority of the votes and capital, subscription rights to the extent to which they would be entitled after the exercise of the conversion or option rights or after the performance of a conversion or option obligation.

Finally, with the approval of the Supervisory Board, the subscription rights of limited liability shareholders can be excluded in order to offset any fractional amounts resulting from a capital increase.

The sum of shares issued on the basis of Authorized Capital 2022 under exclusion of limited liability shareholders' subscription rights must not exceed a proportional amount of 10% of the share capital, taking into account other shares of the company which, during the term of Authorized Capital 2022, are sold or issued under exclusion of subscription rights or which are to be issued under bonds issued after April 22, 2022, under exclusion of subscription rights; this limitation shall apply both at the time of this authorization taking effect and at the time of this authorization being exercised.

To the extent that subscription rights are not excluded under the above provisions, they may also be granted to limited liability shareholders by way of indirect subscription rights pursuant to section 186 (5) AktG, or in part by way of direct subscription rights, and otherwise by way of indirect subscription rights pursuant to section 186 (5) AktG. Furthermore, the Executive Board is authorized, with the approval of the Supervisory Board, to determine the additional details of the capital increase and its implementation, including the content of rights attached to the shares as well as the terms and conditions of the share issue.

The Articles of Association of Merck KGaA also encompass contingent capital. The share capital is contingently increased by up to € 66,406,298.40, composed of 51,081,768 shares (Contingent Capital I). The contingent capital increase serves to grant exchange rights to E. Merck KG in accordance with Article 33 of the Articles of Association of Merck KGaA to enable it to convert its equity interest into shares. The shares carry dividend rights from the beginning of the fiscal year following the year in which the conversion option is exercised.

Moreover, the share capital is contingently increased by up to € 16,801,491.20, composed of up to 12,924,224 no-par value bearer shares (Contingent Capital II). This contingent capital increase is only to be implemented insofar as the bearers or creditors of option or conversion rights, or with an obligation to convert or exercise options on warrant bonds, option participation certificates, option participation bonds, convertible bonds, convertible participation certificates, or convertible participation bonds that are issued or guaranteed by the company or a subordinate Group company on the basis of the authorization resolution of the Annual General Meeting from April 28, 2023, to April 27, 2028, to utilize their option or conversion rights, or to fulfill their conversion obligation or obligation to exercise options insofar as they are obliged to fulfill their conversion or option exercise obligation, or insofar as the company exercises an option, in full or in part, to grant shares in the company instead of paying the sum of money due, and to the extent that in each case a cash settlement is not granted, or own shares or other forms of fulfillment are used. Each issue of new shares shall take place at the determined option or conversion price, pursuant to the aforementioned authorization resolution. The new shares participate in the profit from the beginning of the fiscal year in which they are created; insofar as this is legally permissible, the Executive Board may, with the approval of the Supervisory Board and in deviation from section 60 (2) AktG, stipulate that the new shares also participate in the profit for a past fiscal year. The Executive Board is authorized, with the approval of the Supervisory Board and of E. Merck KG, to stipulate the further details of the implementation of the increase in contingent capital.

The company is not authorized to acquire its own shares.

The company has not entered into any material agreements subject to a change of control pursuant to a takeover offer, and it has not entered into any compensation agreements with the members of the Executive Board or employees in the event of a takeover offer.

(Group) sustainability statement**

General

Introduction

The Combined Management Report of Merck KGaA and the Merck Group for fiscal 2024 includes a combined Sustainability Statement. The Combined Sustainability Statement was prepared in order to meet the requirements set forth in Directive (EU) 2022/2464 of the European Parliament and of the Council dated December 14, 2022 (Corporate Sustainability Reporting Directive, CSRD), in Article 8 of Regulation (EU) 2020/852 and in sections 289b to 289e, 315b and 315c of the German Commercial Code (HGB) regarding a Combined Non-financial Statement. The Combined Sustainability Statement comprises the Group Sustainability Statement and the Non-financial Statement of the parent company. When preparing the Group Sustainability Statement, the first set of European Sustainability Reporting Standards (ESRS) was implemented in full. The use of the ESRS as a framework represents a break in consistency. This is done to reflect the importance of the ESRS as reporting standards adopted by the European Commission. No specific framework was used when preparing the Non-financial Statement of Merck KGaA; instead, conclusions drawn from the Group were used for support.

The scope of consolidation of this Combined Sustainability Statement corresponds to that of the Annual Report for 2024. The concepts and results presented relate to both Merck KGaA and the Merck Group. We explicitly state when, in individual cases, the information provided deviates from this.

Deloitte GmbH Wirtschaftsprüfungsgesellschaft conducted a limited assurance engagement of the combined Sustainability Statement. References to information not included in the Management Report are not part of the Sustainability Statement. The information based on the standards of the **Sustainability Accounting Standards Board (SASB)**, the **Task Force on Climate-related Financial disclosures (TCFD)** and the **Global Reporting Initiative (GRI)** can be found in the Annual Report under "**Other Information**". These as well as the additional content provided on both the company's websites and external websites that are linked in this report were not part of the limited assurance engagement performed by Deloitte.

Pursuant to section 289c (3) and section 315c (2) HGB, we are obliged to review topics for their double materiality. In 2024, we carried out a materiality analysis in accordance with the ESRS and thus identified the topics that are material for us. Further information on the process and the detailed results of the materiality analysis can be found under **ESRS 2 IRO-1**.

Pursuant to section 315c (1) HGB in conjunction with section 289c (2) HGB, the report contents are classified as follows: We report environmental matters in accordance with section 315c in conjunction with section 289c (2) sentence 1 HGB under **E1**, **E2**, **E3**, **E4**, and **E5**. We report on employee matters in accordance with section 315c HGB in conjunction with section 289c (2) sentence 2 HGB under **S1** and **S2**. We report on social matters in accordance with section 315c HGB in conjunction with section 289c (2) sentence 3 HGB under **S1**, **S2** and **S4**. We report on respect for human rights in accordance with section 315c HGB in conjunction with section 289c (2) sentence 4 HGB under **S1**, **S2** and **S4**. The topic of anti-corruption and anti-bribery was not assessed as material in our materiality analysis in accordance with the ESRS. Thus, we report on this topic in accordance with section 315c HGB in conjunction with section 289c (2) sentence 5 HGB in the separate section on **Anti-Corruption and Anti-Bribery**.

In order to adopt the terminology of the ESRS, we also use the term Sustainability Statement instead of Non-financial Statement in the following.

** The Combined Sustainability Statement was not subject to a content review as part of the audit of the financial statements but was subject to a separate limited assurance audit by Deloitte.

General Disclosures (ESRS 2)

Basics for preparation

General basis for preparation of the Sustainability Statement (BP-1)

Our Sustainability Statement is prepared on a consolidated basis. The scope of consolidation corresponds to our financial reporting. The Sustainability Statement covers our own business operations. Based on our double materiality analysis, the reporting extends to the upstream and downstream value chain where applicable in the respective policies, actions, metrics and targets. More information is provided in the respective topical chapters.

Disclosures in relation to specific circumstances (BP-2)

We define the time horizon of impacts, risks and opportunities (IROs) in our materiality analysis in accordance with the requirements of the European Sustainability Reporting Standards (ESRS): short-term (1–2 years), medium-term (3–5 years) and long-term (more than 5 years). With regard to risks and opportunities, we apply a more differentiated definition for long-term to align it with our risk management approach: We distinguish between more than 5–15 years and more than 15 years.

To calculate our energy mix, we use estimates by relying on external sources such as “Our World in Data” (see **E1-5**). For the metrics related to renewable and non-renewable energy production, we used estimates also based on industry averages data. For the Scope 3 emissions category 11, which pertain to the use of products sold, we use estimates based on internal expert assessments of greenhouse gas (GHG) emissions, energy consumption, and sales volumes. For the metrics related to resource inflows, we used estimations regarding the percentage of biological and reused or recycled materials (see **E5-4**). There are no significant measurement uncertainties in relation to quantitative data and monetary amounts. Our previous reporting was carried out in accordance with sections 315b and 315c in conjunction with 289b to 289e of the German Commercial Code (HGB) and in accordance with the Global Reporting Initiative (GRI). The adoption of the ESRS resulted in changes to our reporting in terms of certain disclosures. Due to applying the new reporting requirements, we refrain from disclosing adjusted comparative figures.

In addition to the information in accordance with ESRS, we provide information based on the standards of the Sustainability Accounting Standards Board (SASB), the Task Force on Climate-related Financial Disclosures (TCFD) and the Global Reporting Initiative (GRI). In doing so, we intend to meet the increasing transparency expectations of various investor groups and other stakeholders. The GRI, TCFD and SASB disclosure are reported under “**Other Information**” and were not part of the limited assurance engagement conducted by Deloitte for our Sustainability Statement. We also base our process and data on the ISO standards ISO 14001, ISO 45001, ISO 9001, and ISO 50001. The corresponding certifications are validated by external auditors and reported in the appropriate places in this Sustainability Statement.

We included information on the following disclosure requirement by reference:

Information about key elements of our business model and value chain (ESRS 2 SBM-1 38, 40a i-ii and 42a-c) can be found under Company Profile and Structure in the section “**Fundamental Information about the Group**”.

Our governance

The role of the administrative, management and supervisory bodies (GOV-1)

The following table shows the composition and diversity of the members of the administrative, management and supervisory bodies. In our company, this includes the Executive Board and the Supervisory Board of Merck KGaA as well as the Board of Partners of E. Merck KG:

	2024
Number of Executive Board members	–
Number of non-Executive Board members	–
Board's gender diversity ratio (in %)	35.6
Percentage of independent Board members	100

Due to specifics of our Merck KGaA corporate structure, there are no executive or non-executive members in the relevant bodies but only members as such. All members have comparable rights and duties. The board's gender diversity ratio reflects the average ratio of female to male board members.

The following table shows the share of members of administrative, management and supervisory bodies broken down by gender:

	2024
Male (in %)	63.3
Female (in %)	36.7
Other (in %)	–
Total number	**30**

The following table shows the share of members of administrative, management and supervisory bodies broken down by age group:

	2024
under 30 years old (in %)	–
30-50 years old (in %)	30.0
over 50 years old (in %)	70.0
Total number	**30**

Supervisory Board and the associated Audit Committee

Our Supervisory Board has 16 members and performs a monitoring function. It is composed of eight shareholder representatives and eight employee representatives.

The Audit Committee is part of the Supervisory Board and is composed of three representatives each of shareholders and employees, who are responsible for monitoring IROs. The committee is generally responsible for accounting and audit matters. Its other tasks include auditing the Annual Financial Statements, the Consolidated Financial Statements and the respective reports of the auditor as well as the half-year financial report and the quarterly financial statements. The tasks also include monitoring sustainability reporting. The Audit Committee is informed about the risk report at least once a year and about the status report on risk management at least twice a year. In addition, the committee informs the Supervisory Board about the Sustainability Statement at least once a year. Further meetings are convened as and when necessary. Regular updates and reports are to be provided using trend descriptions and benchmark values to show both the status quo and progress. In this way, the Supervisory Board and/or the Audit Committee monitor the sustainability goals and their achievement.

The Supervisory Board aims to optimally fulfill its control function through the diversity of its members. Their expertise covers aspects including various sustainability topics and is determined annually through a self-assessment of relevant criteria for Supervisory Board members using a qualification matrix. The latest self-assessment revealed that 15 members of the Supervisory Board have sustainability-related expertise. In the self-assessment, four members stated that they have good to very good knowledge in the field of sustainability, which is essentially based upon training courses, memberships in relevant associations and substantial practical experience in committees dealing with sustainability matters. These members possess specific expertise in topics such as climate change, social issues and corporate governance. This indicates that the Supervisory Board as a body has the appropriate skills and expertise to monitor sustainability aspects.

Executive Board

The Executive Board is made up of five members, whose areas of responsibility are listed in detail in the responsibility distribution plan of the Executive Board. The members of the Executive Board are jointly responsible for the management of the company. They work together on specialist matters and regularly brief one another on important matters in their areas of responsibility. This shared responsibility applies in particular to the areas of sustainability and risk management. As part of the individual management responsibilities defined in the responsibility distribution plan, the sustainability aspects of the company were assigned to the CEO until September 30, 2024, and have been the responsibility of the CEO of Healthcare since October 1, 2024. The Chief Financial Officer is responsible for the company’s risk management.

The Executive Board provides the Supervisory Board and its Audit Committee regularly, promptly and comprehensively about all company-relevant issues concerning strategy, planning, business development, the risk situation, risk management, and compliance. The rules of procedure of the Executive Board and of the Supervisory Board govern the further details and ensure that the Supervisory Board is kept adequately informed by the Executive Board.

The Executive Board has extensive knowledge of the key industries and business sectors in which the company operates. For each of the business sectors, Life Science, Healthcare and Electronics, there is at least one member of the Executive Board with in-depth expertise in accordance with the diversity concept. The Executive Board covers the full range of necessary industry experience. Furthermore, the Executive Board has a wealth of knowledge regarding the company’s main markets in Europe, North America and Asia-Pacific region and possesses management experience in Denmark, Malaysia, Singapore, Spain, the United Kingdom, and the United States. There are detailed reporting obligations below the Board level for senior executives who are specifically responsible for governance processes, procedures and controls.

The Executive Board exchanges information in regular meetings. At least once a year, members are informed about the work of the Human Rights Officer and the results of the human rights risk analysis. They also meet once a year to update the Group-wide policy statement on respecting human rights. Regular reporting monitors our targets and the achievement of the targets.

When identifying potential members for the Executive Board and when they are subsequently appointed by E. Merck KG, we take into account, among other things, sustainability-related skills and expertise such as in-depth knowledge and experience regarding the requirements for the transformation toward climate-neutral business models and industry-specific expertise.

Board of Partners

The Board of Partners of E. Merck KG, Darmstadt, Germany, complements the competencies and activities of the Supervisory Board and, like the latter, fulfills an independent advisory and controlling function toward the Executive Board. It has three committees to which individual tasks can be delegated: the Personnel Committee, the Finance Committee and the Research and Development Committee. The whole of the Board of Partners is involved in the annual corporate planning, including the corporate strategy, where sustainability aspects such as IROs are taken into account.

In our company, unlike in joint stock companies, it is not the Supervisory Board but the Board of Partners of E. Merck KG that is responsible for the design and review of the remuneration system and for the level and composition of the remuneration of the Executive Board members. The Board of Partners has delegated this task to its Personnel Committee. In addition, the Board of Partners has to monitor the management performance of the Executive Board. It informs itself about the affairs of Merck KGaA, Darmstadt, Germany, and may inspect and examine the company’s accounts, other documents and assets for this purpose. Regular updates and reports, including a status quo report, are used to monitor the progress toward targets. The Board of Partners therefore monitors the targets and their achievement.

When appointing members of the Board of Partners, the Family Board of E. Merck KG takes into account competencies and expertise in relation to sustainability matters. With regard to the current members of the Board of Partners, expertise is largely based on internal and external training courses on sustainability matters as well as long-term experience from membership of relevant boards and committees. With regard to industry and product knowledge, the Board of Partners complements the expertise, experience and activities of the Supervisory Board with members who have in-depth expertise and experience in the Life Science, Healthcare and Electronics sectors as well as strong management and leadership abilities.

When selecting the administrative, management and supervisory bodies described above, we take into account sustainability-related expertise and competencies that are relevant to our identified IROs. Their expertise in this regard is available to the Group through knowledge transfer in the form of discussions, training and expert meetings.

Further information on the respective bodies can be found under “**Statement on Corporate Governance**” (content is not audited).

Information provided to and sustainability matters addressed by the administrative, management and supervisory bodies (GOV-2)

The Supervisory Board, the Executive Board and the Board of Partners deal with sustainability matters in different ways. The Executive Board presents the Audit Committee of the Supervisory Board with an assessment of the Group's current risk portfolio once a year and the current implementation status of risk management twice a year.

At the meeting in February 2024, the Supervisory Board and the Audit Committee dealt intensively with the Annual and Consolidated Financial statements prepared by the Executive Board as well as with the Non-financial Statement. The Head of Corporate Sustainability, Quality and Trade Compliance (SQ) presents the Non-financial Statement to the Supervisory Board annually. SQ reports to the Member of the Executive Board and CEO of Healthcare. The Executive Board is informed about the risk report at least twice a year.

The Executive Board is responsible for preparing the annual financial statements including the non-financial statement for Merck. Our Human Rights Officer from the Group function SQ is responsible for monitoring human rights and environmental due diligence. The Executive Board is informed about the work of the Human Rights Officer and the implementation status of risk management and due diligence at least once a year.

Our Board of Partners regularly monitors and discusses sustainability matters within the scope of the Executive Board remuneration in the form of performance indicators and as part of the company's annual strategy.

When making decisions on major transactions, the administrative, management and supervisory bodies regularly consider the IROs and weigh them against one another by examining the advantages and disadvantages of the respective transaction. We also take sustainability matters into account when evaluating potential acquisitions, allocating operating expenditure, deciding on capital expenditure, as well as in research and development.

The following material IROs (see the respective identifiers in brackets) were addressed by the administrative, management and supervisory bodies or their relevant committees during the reporting period.

Executive Board:

- Transition plan for climate change mitigation, see **E1** (E1-NI-01 to E1-NI-06; E1-R-01 and E1-R-02; E1-O-01)
- Circular economy, including a new target, see **E5** (E5-PI-01)
- Diversity, equity, inclusion and belonging, see **S1** (S1-NI-03; S1-NI-04; S1-PI-02; S1-PI-03)
- Human rights, see **S2** (S2-NI-01; S2-NI-03; S2-NI-04; S2-NI-05; S2-NI-06; S2-NI-07)
- Animal welfare, including targets, see **G1** (G1-NI-01)

Supervisory Board:

- Climate change and emission reduction, see **E1** (E1-NI-01 to E1-NI-06; E1-R-01 and E1-R-02; E1-O-01)
- Transition plan for climate change mitigation, see **E1** (E1-NI-01 to E1-NI-06; E1-R-01 and E1-R-02; E1-O-01)
- Circular economy, including a new target, see **E5** (E5-PI-01)
- Results of Employee Engagement Survey, see **S1** (S1-NI-01; S1-NI-02; S1-NI-03; S1-NI-04; S1-PI-01; S1-PI-02; S1-PI-03)
- Geopolitical risks and their relevance for business development, see **S2** (S2-R-01)

Audit Committee:

- Climate change and emission reduction, see **E1** (E1-NI-01 to E1-NI-06; E1-R-01 and E1-R-02; E1-O-01)
- Gender pay gap, see **S1** (S1-NI-04)

Integration of sustainability-related performance in incentive schemes (GOV-3)

Sustainability matters are an integral component of the remuneration of our Executive Board. Specifically, the performance of the Executive Board is assessed based on GHG emission reduction targets as reported under **E1-4**.

The Long-Term Incentive Plan (LTIP) incorporates a sustainability factor that adjusts the target achievement based on the performance of our three strategic sustainability goals (“dedicated to human progress”, ”partnering for sustainable business impact” and ”reducing our ecological footprint”) over a three-year period. This adjustment can increase or decrease the variable remuneration of our Executive Board members by up to 20.0% depending on the achievement of these sustainability goals. Additionally, in the profit-sharing scheme for the Executive Board, bonus criteria for increasing profit sharing are based on extraordinary contributions to our three strategic sustainability goals including metrics such as CO_2 reduction. Conversely, malus criteria for decreasing profit sharing apply in cases where the sustainability goals are not reached.

In the current reporting period, a percentage of the variable remuneration was directly linked to climate-related considerations. This includes the ongoing integration of sustainability targets into the LTIP for executives including the Executive Board. This first LTIP target including GHG emissions was set as of fiscal 2022, focusing on Scope 1 and 2 emissions, with an evaluation timeframe covering 2022, 2023 and 2024. In fiscal 2023, we established a new LTIP target for the period of 2023 to 2025, and in fiscal 2024, we set another target for 2024 to 2026. Each target aims for absolute GHG emission reductions, with the target values being tightened annually. We are currently discussing the proposal for the 2025–2027 targets. The potential payout for the first evaluation timeframe for the Executive Board should take place in 2026 after an additional one-year holding period and will be performed accordingly going forward.

The climate-related considerations factored into the remuneration include specific targets for reducing Scope 1 and 2 GHG emissions, which contribute to achieving our climate targets by 2030. These targets are aligned with our commitment to the Science Based Targets initiative (SBTi) to limit global warming to 1.5°C. The Executive Board is responsible for overseeing the implementation of targets for climate change mitigation. The Merck Sustainability Board regularly reviews progress toward implementing the targets. This board, led by the Chief Sustainability Officer, should ensure that the corporate sustainability strategy and the individual business strategies are aligned, with the aim of reinforcing the commitment to climate-related performance.

The integration of climate-related targets into the remuneration framework reflects our commitment to sustainability and the importance of leadership accountability in achieving our climate objectives. For 2024, the climate-related remuneration of the Executive Board could not be determined as LTIP 2022 will only be paid out in 2026.

Further information on the integration of sustainability-related performance in incentive schemes of our Executive Board members can be found in our “**Compensation Report**” (not audited as part of the audit of the Sustainability Statement).

Statement on due diligence (GOV-4)

Core elements of due diligence	Paragraphs in the Sustainability Statement
Embedding due diligence in governance, strategy and business model	**ESRS 2 GOV-2** **ESRS 2 GOV-3** **ESRS 2 SBM-3**
Engaging with affected stakeholders in all key steps of the due diligence	**ESRS 2 GOV-2** **ESRS 2 SBM-2** **ESRS IRO-1** **E1-2** **E2-1 (Pollution of water)** **E2-1 (Pollution of soil)** **E2-1 (Substances of concern and substances of very high concern)** **E3-1** **E4-1** **E5-1** **S1-1** **S2-1** **S4 SBM-2** **S4-1 (Health and safety of our patients)** **S4-1 (Access to our products and services and access to (quality) information)** **G1-1 (Corporate culture)** **G1-1 (Animal welfare)**
Identifying and assessing adverse impacts	**ESRS 2 IRO-1** **E1 SBM-3** **E2 SBM-3 (Pollution of water)** **E2 SBM-3 (Pollution of soil)** **E2 SBM-3 (Substances of concern and substances of very high concern)** **E3 SBM-3** **E4 SBM-3** **E5 SBM-3** **S1 SBM-3** **S2 SBM-3** **S4 SBM-3 (Health and safety of our patients)** **S4 SBM-3 (Access to our products and services and access to (quality) information)** **G1 SBM-3 (Corporate culture)** **G1 SBM-3 (Animal welfare)**
Taking actions to address those adverse impacts	**E1-3** **E2-2 (Pollution of water)** **E2-2 (Pollution of soil)** **E2-2 (Substances of concern and substances of very high concern)** **E3-2** **E4-3** **E5-2** **S1-4** **S2-4** **S4-4 (Health and safety of our patients)** **S4-4 (Access to our products and services and access to (quality) information)** **G1-MDR-A (Corporate culture)** **G1-MDR-A (Animal welfare)**
Tracking the effectiveness of these efforts and communication	Targets: **E1-4** **E2-3 (Pollution of water)** **E2-3 (Pollution of soil)** **E2-3 (Substances of concern and substances of very high concern)** **E3-3** **E4-4** **E5-3** **S1-5** **S2-5** **S4-5 (Health and safety of our patients)** **S4-5 (Access to our products and services and access to (quality) information)** **G1-MDR-T (Corporate culture)** **G1-MDR-T (Animal welfare)** Metrics: **E1-5** **E1-6** **E1-7** **E1-8** **E2-4 (Pollution of water)** **E2-5 (Substances of concern and substances of very high concern)** **E3 MDR-M** **E4-5** **E5-4** **E5-5** **S1-6** **S1-8** **S1-9** **S1-10** **S1-12** **S1-13** **S1-14** **S1-16** **S1-17** **G1 MDR-M (Animal welfare)**

Risk management and internal controls over sustainability reporting (GOV-5)

In the context of constantly evolving external and internal requirements for the management of non-financial risks, work continued in 2024 on the development of a procedural and organizational concept as well as a roadmap for expanding non-financial risk management. The non-financial internal control system aligns with the sustainability strategy and is set up in accordance with the requirements of the Corporate Sustainability Reporting Directive (CSRD). The objective is to continuously improve compliance pursuant to CSRD requirements by implementing organization-wide actions and controls. The Merck internal control system is oriented toward the COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework, a globally recognized standard divided into five components: control environment, risk assessment, control activities, information, and communication as well as monitoring. In comparison with the previous year, the internal controls for sustainability reporting were further formalized and integration into the overall internal control system was initiated.

Our risk assessment follows predefined approaches for quantitative and qualitative assessments. Depending on the impact and probability, subsequent prioritization is possible. Mitigation actions for all relevant identified risks are key for their appropriate management and thus for reducing their impact and likelihood. The implementation of actions to reduce the likelihood of relevant risks can include creating provisions to reduce gross impacts or adjusting insurance coverage. Based on the remaining risk, the risk owner and, if relevant, the Executive Board decide whether the implemented actions are sufficient or if the remaining risk needs further mitigation actions. Every mitigation action is reviewed twice a year to confirm its effectiveness and determine whether additional actions are required. Group Risk Management monitors the aggregated mitigation measures and is regularly informed if deviations are determined regarding implemented mitigation actions.

The responsibility for the effectiveness of the internal control system and the further development of non-financial key metrics lies with the respective senior leaders or risk and process owners. In 2024, non-financial aspects were added to the approach for confirming the overall effectiveness of the internal control system, with the responsible Group functions, the respective local Managing Director and the respective local Chief Financial Officer signing respective confirmations.

Our strategy

Strategy, business model and value chain (SBM-1)

Responsible action is an integral part of our corporate culture. This also includes respecting the interests of our employees, customers, investors, and society. Our aim is to attach the same importance to safety and ethical aspects as to business success. We want to mitigate ethical, economic, environmental, and social risks as far as possible. We integrate sustainability into the innovation process and into all steps of the value chain. Today, our products are already having a positive impact on human progress and global health, namely our medicines and our biological and chemical innovations that utilize the latest technologies.

From the early stages of development, we keep an eye on the entire life cycle of a product including disposal. We want to continuously improve the way we measure our progress by adapting to existing and upcoming legal regulations and integrating quantitative sustainability-related criteria into our product development processes across all business sectors. Within our research and development (R&D) processes, we are committed to continuously improving and integrating sustainability and circular economy criteria to assess the sustainability performance of our products and portfolio, enabling us to create more sustainable products for our customers and society. By supplying products that meet extensive sustainability criteria, we also help our customers to achieve their sustainability targets. More information can be found under **E5**.

We aim to drive health equity to address the global disparity in this area. We understand health equity as a concerted effort to ensure that all people, regardless of socioeconomic, geographical or other differences, can obtain the best possible care. We work with partners to tackle these complex challenges and are committed to systematically integrating the interests and perspectives of our stakeholders into our strategy and business model. More information can be found under **S4**.

A key element of our strategy is our commitment to advancing human progress through our employees, who engage with complex challenges while nurturing a culture of innovation and inclusion. Our business model is designed to empower our employees through fair working conditions, including the health and safety, alongside our dedication to diversity, equity, inclusion, and belonging. This approach enables our employees to pursue careers that resonate with their individual aspirations, skills, and passions. More information can be found under **S1**.

The following table shows the number of employees in headcount by geographical region:

	2024[1]
Europe	28,138
North America	14,187
Asia-Pacific (APAC)	15,593
Latin America	3,502
Middle East and Africa (MEA)	1,137

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

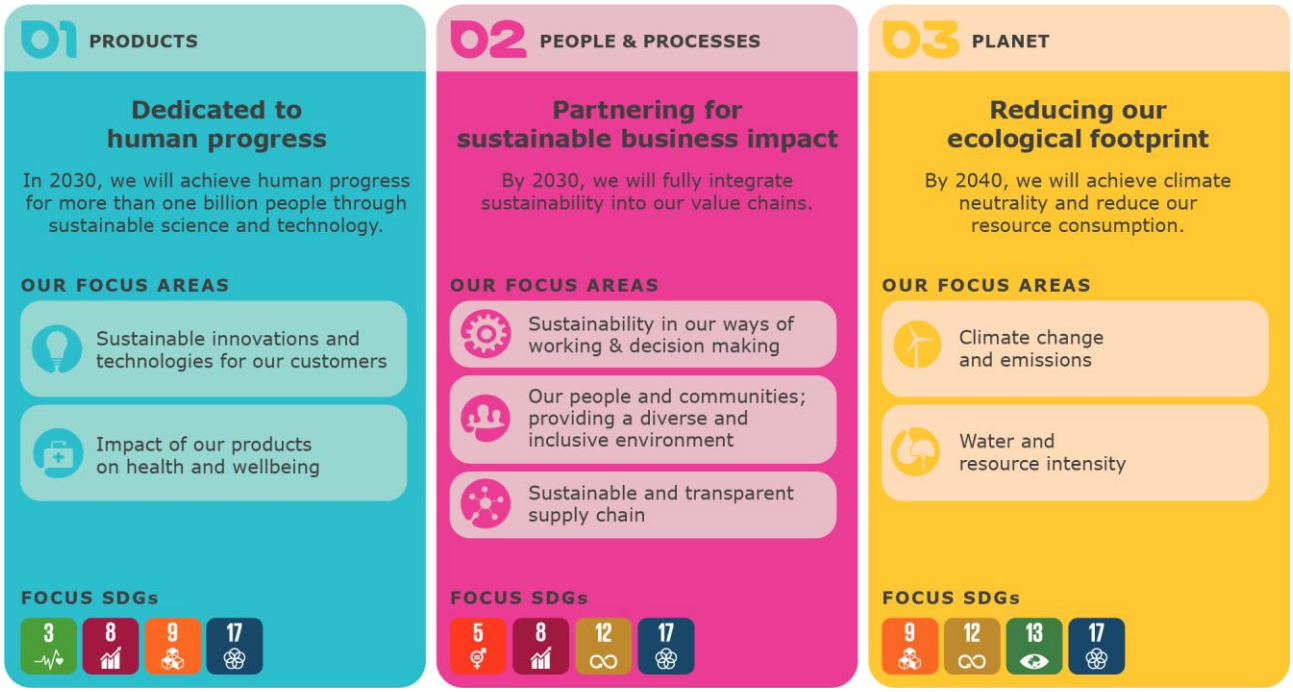
We apply strict sustainability standards to our procurement activities. With our efforts in supplier management in our upstream value chain, we strive to comply with basic environmental and social standards. Therefore, we have introduced corresponding strategies, processes, and guidelines to prevent violations of these standards in the supply chain and continuously improve our sustainability performance. Unless otherwise stated, the approaches presented apply to tier 1 suppliers (direct suppliers). In addition, our supplier management activities include special actions, in particular for indirect suppliers of conflict minerals. To achieve our sustainability goals, our purchasing team works closely with our suppliers. We want to create transparency in all our sourcing regions and fully integrate sustainability into all our value chains. More information can be found under **S2**.

As part of our efforts to ensure transparency and sustainability, it is important to have a precise knowledge of our negative impacts on the environment. Emissions are released into the air and water, and wastewater and waste are generated as a result of our business activities. In addition, we use materials that can adversely affect the environment if not handled properly. We aim to minimize our impact on the environment and have developed strategies to improve our environmental performance. This includes making the most efficient use of increasingly scarce resources. Minimizing negative environmental impacts and taking meaningful climate action requires a holistic approach while also entailing the constant monitoring of practices and performance. Our objective is to decouple business growth from negative environmental impacts wherever possible. During product manufacture, it is important to us to keep the environmental impact as low as possible, which is why we attach great value to safe production, upholding high environmental standards and strict quality management. More information can be found under **E1**, **E2**, **E3**, **E4** and **E5**.

In a complex world increasingly characterized by dynamic macroeconomic and geopolitical developments, scientific breakthroughs are needed more urgently than ever. Factors such as an ageing population, new technologies and climate change present both challenges and opportunities. At Merck, we see this change as a catalyst for innovation and growth. We closely monitor new global trends and challenges; among other things we use scenario analyses, in order to clearly understand the complex nature of potential impacts. In addition, we participate in dialogue and initiatives, consult with other organizations in our industry and assess media and news coverage. This enables us to minimize risks while also leveraging new business opportunities.

Our sustainability strategy

The rapidly growing challenges facing both society and the environment require a clear objective for the coming years. Consequently, sustainability is an essential element of our corporate strategy. We are pursuing the following three strategic sustainability goals:



Overall, our sustainability strategy is centered on seven focus areas, within which we realize and will continue to realize numerous initiatives and projects. We measure our progress using 16 sustainability key indicators, which we publish on our **website** (content of the website is not audited).

In the following table, we present the part of the sustainability indicators that is mandatory for our ESRS reporting:

Strategic goal	Value chain	Sustainability key indicator	**2024**	2023	More information
1	Downstream	Number of people treated with our Healthcare products (in million)[1]	184	177	**S4**
2	Own operations	Percentage of women in leadership positions	39	39	**S1**
2	Own operations	Environment, health and safety (EHS) incident rate	2.2	2.4	**S1**
2	Own operations	Lost time injury rate (LTIR)	1.2	1.3	**S1**
	Upstream	Percentage of relevant suppliers (in terms of number) that are covered by a valid sustainability assessment[1]	75	66	**S2**
2	Upstream	Percentage of relevant suppliers (in terms of spend) that are covered by a valid sustainability assessment[1]	94	94	**S2**
2	Own operations	Violations of Global Social and Labor Standards Policy	57	60	**S1**
3	Own operations	Greenhouse gas emissions Scope 1 and 2 (in metric tons)[1]	1,085,124	1,463,000	**E1**
3	Upstream; downstream	Indirect greenhouse gas emissions (Scope 3 intensity: metric tons CO_2eq per € million gross profit)	359	371	**E1**
3	Upstream	Percentage of purchased electricity from renewable sources	52	51	**E1**
3	Own operations	Circularity rate (in %)	69.2	67.8	**E5**
3	Own operations	Water efficiency (m^3 per € million net sales)	588	576	**E3**

[1] The key indicator is used to determine the sustainability factor for the Merck Long-Term Incentive Plan (LTIP).

Generally, our sustainability strategy is implemented Group-wide. Specific activities are defined for our three business sectors with their different products and services portfolios. Unless stated otherwise, the sustainability key indicators apply globally. Where applicable, we differentiate according to geographical regions or relationships with stakeholders – for example, our strategy within our Healthcare business sector that aims to improve access to our products and services as well as to (quality) information focuses on low- and middle-income countries. The targets that we have defined in this context relate to our stakeholders, for example the end-users that benefit from our schistosomiasis elimination program mainly in sub-Saharan Africa.

Our Life Science business sector takes a holistic life-cycle approach, embedding sustainability across the entire value chain: from the selection of raw materials and the supply chain to research and development, production, packaging, distribution, product use, and end-of-life cycle and disposal. We also go beyond the product life cycle and work to increase global access to science and STEM education. Our progress toward meeting these commitments supports our customers in their own sustainability journeys through targeted actions, such as our Design for Sustainability framework, SMASH Packaging program, or our EDISON program for energy and water efficiency. Through global collaboration with cross-functional teams, industry partners, suppliers, and customers, we act as a sustainability multiplier for the life science industry. More information can be found in **E1**, **E2**, **E3**, and **E5**.

The strategic focus of our Healthcare business sector is to balance the needs of patients and the environment while driving long-term business growth. Our commitment includes reducing environmental impact and increasing circularity. In R&D we aim to develop medicines with a high health impact while minimizing their environmental footprint. We are committed to advancing health equity. Our aim is to improve availability, accessibility and affordability with a particular focus on low- and middle-income countries. We aim to address unmet medical needs by providing tailored healthcare solutions, and leveraging digital health technologies. Collaboration is key to this strategy: We build transparent relationships with suppliers while also engaging with local communities, academic institutions, and non-profit organizations. More information can be found under **S4**.

At our Electronics business sector, we are committed to shaping the digital transformation. We consider sustainability to be a core aspect of our technology roadmap and endeavor to address the critical industry challenges that lie ahead. We use data and digital tools to accelerate the development of new solutions, such as process gases with lower global warming potential or substitutes for substances of concern. As a major supplier to the electronics industry, we are committed to reducing the environmental impact of our business activities, focusing on greenhouse gas emissions, water consumption, energy use, and waste. More information can be found in **E1**, **E2**, **E3**, and **E5**.

Details on our business model and our value chain can be found under Company Profile and Structure in the section "**Fundamental Information about the Group**" in our Management Report.

Interests and views of stakeholders (SBM-2)

Engaging with our various stakeholders is crucial for us. Through this dialogue, we communicate our decisions and actions transparently in order to secure our social license to operate. We aim to conciliate divergent interests as far as possible while also building trust and sustaining it in the long term. We pursue a continuous dialogue with our stakeholders and use this exchange to identify trends and developments in society and in our business fields so as to take them into account in our sustainability endeavors. We regularly conduct a systematic materiality analysis to learn about our stakeholders' expectations. In doing so, we identify the economic, social and environmental issues that are important to our stakeholders – and thus also to us.

We have established guidelines and principles for interacting with certain stakeholders. The focus is always on compliance with the rules. For example, we have defined internal guidelines and review processes for relationship with patients, for interactions in the healthcare sector and for business partnerships.

Our most important stakeholders:

- Associations/political decision-makers
- Communities
- Competitors
- Customers
- Employee representation bodies
- Employees
- Healthcare systems
- Media
- Non-governmental organizations (NGOs)
- Patient organizations
- Patients
- Sales and business partners
- Scientists
- Shareholders
- Supervisory authorities
- Suppliers
- The Merck family

We organize interaction with our stakeholders on a decentralized basis – based on business requirements, legal frameworks (e.g., interaction with patients or political decision-makers), relevance, and the type of interaction. We communicate regularly with our stakeholders through a variety of channels. For instance, we conduct stakeholder surveys or organize topic-specific dialogue at a regional, national and international level. We also participate in exchange through discussions and informational forums as well as through our advocacy work and industry coalitions.

We believe that the interests, views and rights of our workforce are integral components of our strategy and business model. We engage in regular dialogue with our employees through different formats such as surveys or Employee Resource Groups to gather insights into their needs and concerns. This feedback directly informs our policies and initiatives, which are aimed at continuously enhancing employee welfare, diversity, and inclusion. By integrating employee perspectives into our decision-making processes, we aim to ensure that our business model not only drives financial performance but also fosters a culture of respect and empowerment.

We are committed to promoting a strong sense of inclusion and belonging among our employees. Therefore, we approach **Diversity, Equity, Inclusion and Belonging** (DEIB) with the same sense of purpose as our Group´s other business objectives. For example, we aim to help every employee maximize their potential, regardless of their gender identity, culture, ethnicity, race, religion or creed, sexual orientation, nationality, socioeconomic and family status, language, disability status, age, mindset, faiths, military service, or political conviction. We believe that our DEIB approach inspires progress, strengthens our ability to innovate in all areas of our business sectors and fuels our efforts to make positive impacts in the communities where we live and work.

In our Human Rights Charter and the complementing policies, we outline our commitment to uphold the rights of our employees, aiming to ensure a safe, equitable, and inclusive work environment. For example, our Social and Labor Standards Policy states that our company does not tolerate any form of discrimination, physical or verbal harassment, or intolerance. We conduct regular risk assessments to identify and mitigate any potential human rights risks within our workforce. More information on our own workforce can be found under **S1**.

With regard to workers in the value chain, our objective is to ensure that no violations of human rights occur in our own business activities or at our suppliers or business partners. Our commitment to the human rights of our value chain workers is reflected in our respective policies. As a key element of our approach, we adapted our guideline on supplier category strategies to integrate sustainability criteria into our decision-making processes. This has implications for our supplier selection processes and supplier performance evaluation. Moreover, we are active members in multi-stakeholder groups in order to exchange on and consider the interests of value chain workers from specific areas. We conduct regular assessments and offer training courses for suppliers with the aim of ensuring that our suppliers adhere to human rights due diligence requirements. More information on the processes for collaborating with value chain workers can be found under **S2**.

With regard to consumers and end-users, we want to conduct high-quality clinical research that complies with applicable laws and regulations. We set Group-wide requirements that aim to ensure that high ethical and scientific standards are met when we conduct our clinical studies. Our top priority is the safety, well-being, dignity, and rights of the sick and healthy people who take part in our clinical studies. Once our products are commercially available, they can only be purchased from a pharmacy with a prescription from a licensed physician. This is to ensure the safe use of our medications for our end-users as access to the drug is only given when medically justified. We aim to ensure that our products are effective in combating a disease, while posing the lowest possible risk for the end-users.

Furthermore, we prioritize access to our products and services as well as access to (quality) information based on their impact on patients – particularly in low- and middle-income countries. We focus on affordability, availability and accessibility. Alongside access to our healthcare portfolio, our strategy focuses on diseases that disproportionately affect underserved populations. Our approach involves close cooperation with governments of various countries, non-governmental organizations and other stakeholders. In the context of access to (quality) information, our business model focuses on strengthening healthcare systems and local healthcare capabilities with the aim to enhance the skills and capacities of scientific and medical professionals through a network of experts. More information on processes for engaging with consumers and end-users can be found under **S4**.

In order to gain a comprehensive understanding of our internal and external stakeholders, we identified and classified stakeholders and users of sustainability reports as part of the materiality analysis. Further information can be found in the process description for identifying and evaluating our material IROs, see step 3: "**List and involvement of relevant stakeholders**".

Information from the administrative, management and supervisory bodies on the views and interests of the stakeholders concerned regarding the company's sustainability impacts

Our Executive Board has Group-wide responsibility for our sustainability strategy. In 2020, it adopted our three strategic sustainability goals. The Group Corporate Sustainability unit is responsible for the development and design of the sustainability strategy and informs the Executive Board about progress and need for action at least once a year. Group Corporate Sustainability is part of the Group function Corporate Sustainability, Quality and Trade Compliance (SQ), which reports to the CEO of the Healthcare business sector – on behalf of the Executive Board. At Executive Board level, responsibility for environment, social and corporate governance (ESG) aspects also lies with the CEO of Healthcare on behalf of the Executive Board. The Head of SQ also acts as Chief Sustainability Officer. She informs the Executive Board about relevant sustainability matters, for example in relation to climate change mitigation.

Group Corporate Sustainability is also responsible for coordinating the Merck Sustainability Board (MSB), which is chaired by the Head of SQ. The board is made up of representatives from our business sectors and important Group functions, such as Procurement, Communications and Controlling. Members of the Executive Board may participate in the meetings of the MSB.

The MSB steers and monitors the Group-wide implementation of the sustainability strategy, defines priorities and stipulates globally applicable sustainability policies. In addition, it ensures that the initiatives of our various business sectors, Group functions and subsidiaries are aligned with our global sustainability strategy. Moreover, it recommends corresponding initiatives to the Executive Board. Within their respective area of responsibility, each Executive Board member is also responsible for sustainability, reviews the priorities that have been set, and decides on the implementation of initiatives.

Material impacts, risks and opportunities and their interaction with our strategy and business model (SBM-3)

The material IROs that we identified in our materiality analysis are briefly listed below and are described in detail in the respective topic chapters. We describe the methodology of our double materiality analysis under "**Description of the process to identify and assess material impacts, risks and opportunities (IRO-1)**."

Impact, risk and opportunities (IRO) identifier	Type of IRO	Sustainability matter	Reference chapter
E1-NI-01	Actual negative impact	Climate change adaptation; Climate change mitigation	**E1 Climate Change**
E1-NI-02	Actual negative impact	Climate change mitigation; Climate change adaptation; Energy	**E1 Climate Change**
E1-NI-03	Actual negative impact	Climate change mitigation; Climate change adaptation; Energy	**E1 Climate Change**
E1-NI-04	Actual negative impact	Climate change mitigation; Climate change adaptation	**E1 Climate Change**
E1-NI-05	Actual negative impact	Climate change mitigation; Climate change adaptation; Energy	**E1 Climate Change**
E1-NI-06	Actual negative impact	Energy	**E1 Climate Change**
E2-NI-01	Actual/potential negative impact	Pollution of water	**E2 Pollution**
E2-NI-02	Potential negative impact	Substances of concern; Substances of very high concern	**E2 Pollution**
E3-NI-01	Actual/potential negative impact	Water withdrawals	**E3 Water and marine resources**
E4-NI-01	Potential negative impact	Direct impact drivers of biodiversity loss - Land-use change, fresh water-use change, and sea-use change	**E4 Biodiversity and Ecosystems**
E5-NI-01	Actual negative impact	Resource inflows, including resource use	**E5 Resource Use and Circular Economy**
E5-NI-02	Actual/potential negative impact	Resource outflows related to products and services; Waste	**E5 Resource Use and Circular Economy**
E5-NI-03	Actual/potential negative impact	Waste	**E5 Resource Use and Circular Economy**
S1-NI-01	Potential negative impact	Working conditions: Secure employment; Working time; Adequate wages; Collective bargaining, including rate of workers covered by collective agreements	**S1 Own Workforce**
S1-NI-02	Potential negative impact	Working conditions: Work-life balance	**S1 Own Workforce**
S1-NI-03	Potential negative impact	Equal treatment and opportunities for all: Employment and inclusion of persons with disabilities	**S1 Own Workforce**
S1-NI-04	Potential negative impact	Equal treatment and opportunities for all: Gender equality and equal pay for work of equal value	**S1 Own Workforce**

Impact, risk and opportunities (IRO) identifier	Type of IRO	Sustainability matter	Reference chapter
S2-NI-01	Actual negative impact	Equal treatment and opportunities for all: Diversity; Employment and inclusion of persons with disabilities	**S2 Workers in the value chain**
S2-NI-02	Actual negative impact	Equal treatment and opportunities for all: Measures against violence and harassment in the workplace	**S2 Workers in the value chain**
S2-NI-03	Potential negative impact	Other work-related rights: Child labor; Forced labor	**S2 Workers in the value chain**
S2-NI-04	Potential negative impact	Other work-related rights: Child labor; Forced labor	**S2 Workers in the value chain**
S2-NI-05	Actual negative impact	Other work-related rights: Child labor; Forced labor; Adequate housing; Water and sanitation; Privacy	**S2 Workers in the value chain**
S2-NI-06	Actual negative impact	Working conditions: Secure employment; Working time; Adequate housing; Health and safety;	**S2 Workers in the value chain**
S2-NI-07	Actual negative impact	Working conditions: Health and safety	**S2 Workers in the value chain**
S4-NI-01	Potential negative impact	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
G1-NI-01	Actual negative impact	Animal welfare	**G1 Business conduct**
E5-PI-01	Actual positive impact	Resource outflows related to products and services	**E5 Resource Use and Circular Economy**
S1-PI-01	Actual positive impact	Working conditions: Health and safety	**S1 Own Workforce**
S1-PI-02	Actual positive impact	Equal treatment and opportunities for all: Diversity	**S1 Own Workforce**
S1-PI-03	Actual positive impact	Equal treatment and opportunities for all: Training and skills development	**S1 Own Workforce**
S4-PI-01	Actual positive impact	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
S4-PI-02	Actual positive impact	Personal safety of consumers and/or end-users: Health and safety; Information-related impacts for consumers and/or end-users: Access to (quality) information	**S4 Consumers and End-users**
S4-PI-03	Potential positive impact	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
S4-PI-04	Potential positive impact	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
S4-PI-05	Potential positive impact	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
S4-PI-06	Actual positive impact	Social inclusion of consumers and/or end-users: Access to products and services	**S4 Consumers and End-users**
S4-PI-07	Actual positive impact	Social inclusion of consumers and/or end-users: Access to products and services	**S4 Consumers and End-users**
S4-PI-08	Actual positive impact	Information-related impacts for consumers and/or end-users: Access to (quality) information	**S4 Consumers and End-users**

Impact, risk and opportunities (IRO) identifier	Type of IRO	Sustainability matter	Reference chapter
G1-PI-01	Potential positive impact	Corporate culture	**G1 Business conduct**
E1-R-01	Risk	Climate change adaptation	**E1 Climate Change**
E1-R-02	Risk	Climate change mitigation	**E1 Climate Change**
E2-R-01	Risk	Pollution of soil	**E2 Pollution**
E2-R-02	Risk	Substances of concern and substances of very high concern	**E2 Pollution**
E5-R-01	Risk	Resource inflows, including resource use	**E5 Resource Use and Circular Economy**
E5-R-02	Risk	Resource inflows, including resource use	**E5 Resource Use and Circular Economy**
S1-R-01	Risk	Working conditions: Health and safety	**S1 Own Workforce**
S2-R-01	Risk	Working conditions: Health and safety	**S2 Workers in the value chain**
S4-R-01	Risk	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**
E1-O-01	Opportunity	Climate change mitigation	**E1 Climate Change**
S4-O-01	Opportunity	Personal safety of consumers and/or end-users: Health and safety	**S4 Consumers and End-users**

Beyond this, no company-specific IROs were identified that exceed the topics stipulated by the ESRS. The current and anticipated financial effects of our material IROs on our business model, value chain, strategy and decision-making are described in the topic-specific chapters.

With regard to the identified material risks and opportunities, there were no events in the reporting year that led to significant effects on our results of operations, financial positions, net assets and liquidity beyond the provisions to environmental protection reported under **E2**. We do not expect any significant change in the next reporting period.

Changes to the materiality analysis resulted from the change in reporting framework. In previous years, we applied the Global Reporting Initiative (GRI) standard for our materiality analysis. Our 2024 materiality analysis has been conducted in accordance with the ESRS. In contrast to the GRI, the ESRS requirements stipulate that the materiality analysis must also consider financial materiality (double materiality). Another difference is that the ESRS provide a more detailed list of sustainability matters in greater detail to be considered in the analysis. For example, we identified material IROs for substances of concern. Another change compared to the previous year is that no material IROs were identified for the topics of compliance management, responsible interactions with health systems, bioethics and digital ethics, as well as innovation and technology. Therefore, we do not provide any information on these topics in this report.

Thanks to our robust business model with three business sectors operating in different markets and our clear positioning as a science and technology company, we are well positioned even in economically difficult times. In 2024, we updated our resilience analysis, focusing on climate risks and opportunities to ensure a comprehensive understanding of the challenges and prospects ahead. For details see **E1**.

Our management of impacts, risks and opportunities

Description of the process to identify and assess material impacts, risks and opportunities (IRO-1)

For the impact assessment, we assessed impacts using all the criteria specified in the ESRS. Accordingly, negative impacts occur when the company causes harm to society and/or the environment through its direct or indirect business activities. We consider positive impacts as activities that go well beyond compliance with laws and generate clear added value for the environment and/or society. For the assessment we considered whether the impact is actual or potential and evaluated the severity based on scale and scope, as well as the likelihood of potential impacts. Additionally for negative impacts we considered whether the impact was of irremediable character.

We conducted the assessment along our entire value chain for all our business sectors, taking into account our portfolios of products and services, our assets, our diverse business relationship and our geographical location. To determine which of the sustainability matters are material for reporting purposes, we assessed individually each of the impacts identified as actual or potential and gave them a quantitative threshold. Impacts rated as significant or substantial/critical are considered material for reporting purposes.

In order to determine financial materiality, we assessed the risks and opportunities with regard to their likelihood of occurrence and the potential magnitude of the financial effects in accordance with the ESRS requirements. For the magnitude of a risk or opportunity we assessed five categories with their effect on EBITDA pre and/or operating cash flow: immaterial, minor, moderate, significant, or critical. For the likelihood, we determined the categories highly improbable, improbable, possible, likely, or more likely than not. The total financial impact was calculated by multiplying the magnitude by the likelihood. We aligned the assessment criteria with our Group Risk Management and took into account their risk matrix. To set the threshold, we considered every sub-(sub-) topic including its underlying risks and opportunities and its respective quantitative assessment results. The threshold for financial materiality corresponding to that of Group Risk Management was set for all sub-(sub-)topics whose risks and opportunities were assessed as having a magnitude of significant or critical. When assessing IROs, a gross approach was applied, meaning that no mitigation measures were taken into consideration.

To identify our material IROs, we conducted a double materiality analysis. The process can be described in the following steps:

- Step 1 – List of sustainability topics and identification of IROs: We created a list of topics based on the sustainability matters listed in ESRS 1 AR 16 and compared them with our sustainability topics from the 2023 materiality analysis. To compile the list of IROs, we conducted additional research in the SASB standards and further databases. We assigned each IRO to the appropriate ESRS sub-(sub-)topic. For risks, including physical and transition risks and opportunities, we additionally considered risk assessments, for example in the risk report, risk tables and the TCFD risk report. We conducted the assessment for our entire value chain, also taking into account country-specific features.
- Step 2 – Mapping the value chain: Due to the differing nature of our business sectors' business models, the value chain stages were identified for each business sector in order to gain an overview of the whole value chain. Based on that, we identified business activities and related industries. We then derived the underlying ESRS sectors and industries in referring to the ESRS SEC 1 sector classification standard. Where possible, we also indicated dependencies on countries, geographic regions and sites, e. g. in connection with pollution.
- Step 3 – List and involvement of relevant stakeholders: We identified and classified our internal and external stakeholders. Based on their involvement in the overall assessment process of the materiality analysis, we divided them into two groups: Internal experts of the Group functions, such as Procurement, Human Resources, and the Financial departments (Risk Management, Financial Reporting, Controlling), as well as experts from the three business sectors were involved in the detailed identification, validation, and evaluation of the IROs in their respective field of expertise. Further external and internal stakeholders were involved in

validating the results via questionnaires. We considered nature as a silent stakeholder when assessing IROs regarding the respective topics, for example biodiversity. During the process, no direct consultations with affected communities took place.

- Step 4 – Description of IROs: We then analyzed whether IROs exist for the identified business activities and the underlying industries of the value chain. We also reviewed our business activities for impacts, risks and opportunities in connection with pollution, water and marine resources as well as resource use and circular economy. An unbiased approach was applied throughout the process. New insights, which originated either from internal topic experts or from other stakeholders, were included and taken into account in all steps of the approach as needed.
- Step 5 – Assessment of IROs: As described in step 3, the identified IROs were evaluated by internal experts in their respective area of expertise on the basis of aligned quantified assessment criteria along the value chain. The results of the impact assessment were validated by involving internal and external stakeholders to ensure that the results align with stakeholder perspectives.
- Step 6 – Final review and approval: Finally, the results of the impact and financial materiality assessment were validated. This included various quality controls, such as checks and validations by the management of the business sectors. Finally, the Merck Sustainability Board (MSB) approved the results.

Our process to identify and assess climate-related impacts, risks, and opportunities

Our approach to identifying and evaluating climate-related impacts, risks, and opportunities consists of several key steps:

- Identification of Critical Sites: We began by shortlisting our most significant sites for our global operations, also considering their total insured value.
- GHG Inventory Analysis: We used our existing internal analysis to evaluate emissions across our operations, helping us understand the sources and magnitudes of our emissions.
- Physical Risks Identification: We then conducted a comprehensive assessment of climate-related physical risks by identifying potential hazards such as floods, heatwaves, and windstorms, particularly under the high-emission climate scenario (4.0°C). This involved evaluating the exposure and sensitivity of our assets and activities to these hazards.
- Transition Risks and Opportunities: We assessed climate-related transition risks and opportunities within our operations and value chain by identifying key transition drivers related to a 1.5°C climate scenario. We then evaluated how our activities and financials might be exposed to these variables, with related quantifications of gross transition risks or opportunities.
- Risk Assessment: We analyzed historical data, scientific research, and expert opinions to determine the probability and characteristics of potential catastrophic events in specific areas. For relevant risks, we evaluated their potential impacts both with and without mitigation actions, considering, for instance, strategic investments in renewable energy and enhancing energy efficiency.
- Exposure Analysis: We identified and quantified the assets that could be at risk due to climate events, for example, buildings, infrastructure, inventory, and other physical or financial assets.
- Vulnerability Analysis: We assessed the vulnerability of exposed assets, to understand how different asset types respond to hazards and to estimate their susceptibility to damage or loss.
- Event Simulation: We simulated the potential impact of events by combining hazard characteristics, such as intensity and duration, with asset vulnerability to estimate possible losses.
- Loss Estimation: We calculated expected losses in terms of financial impact, including property damage, business interruption, liability claims, and other relevant factors.

Assessment of Climate-Related Hazards

Our company utilizes Climate Risk Assessment (CRA) methodology and models of an external provider to quantify both physical and transition risks and opportunities across various time horizons. For physical hazards, these are linked to the expected lifetime of assets, strategic planning, and capital allocation. Our identification of climate-related hazards and assessment of exposure and sensitivity are informed by high-emission climate scenarios and relevant regional climate projections. This process involves detailed analysis using climate models to evaluate the potential frequency and severity of hazards. We systematically assess the exposure and sensitivity of our assets and business activities by considering geographic, operational, and temporal factors:

- Likelihood: Evaluating the probability of occurrence for each identified hazard based on historical data and climate models.
- Magnitude: Assessing the potential severity of each hazard and its scale of impact on our operations and assets.
- Duration: Considering the expected duration of each hazard to understand potential long-term impacts on our business.
- Geospatial Coordinates: Incorporating geospatial data to analyze specific locations of our operations and supply chains, identifying vulnerabilities based on geographic exposure to climate-related hazards.

This structured approach enables us to systematically assess whether our assets and business activities may be exposed to these hazards. Our analysis of physical climate-related risks is based on geospatial coordinates specific to our locations, allowing for a detailed assessment of vulnerabilities.

In general, material risks and opportunities derive from impacts, dependencies or other factors, such as exposure to climate hazards or regulatory changes that address systemic risks. Therefore, we assessed whether financial risks and opportunities arise from the identified material impacts. Moreover, we also assessed and considered risks and opportunities that are not directly connected to an impact.

The risk assessment follows predefined approaches for quantitative and qualitative assessments. Sustainability risks are treated in the same way as other risk types according to their magnitude and likelihood of occurrence. Depending on the magnitude and likelihood, subsequent prioritization is possible following the categories such as significant or critical. Accordingly, risks that are rated as significant or critical in terms of their magnitude have an impact on EBITDA pre and/or operating cashflow above € 100 million.

According to our Group Risk Management, all business sectors are required to ensure an adequate level of local risk management. This includes regular and continuous efforts to identify, assess, monitor, and control local risks. The business sectors are instructed to analyze the risks in an aggregated manner that enables a realistic overview of our overall risk profile. Our opportunities are identified as part of the strategy development or forecasting processes. We then evaluate the potential, taking opportunities and risks into account and using scenarios to obtain a holistic view of possible developments.

The materiality analysis considers our entire value chain, i.e. our upstream and downstream value chain as well as own business. As described in step 1, the data sources for our list of sustainability topics are derived from the materiality analysis 2023 and other sources. According to the topic-specific requirements of E4, a preliminary analysis using the IBAT tool has shown that we have own sites near key biodiversity areas. However, the data does not allow any conclusions about our actual impact on biodiversity in these areas. A detailed list of the sites, as well as further information can be found under E4-SBM-3.

The materiality analysis process has evolved in the reporting period to incorporate a more structured stakeholder engagement approach, including identifying and classifying stakeholders. The analysis explicitly follows a double materiality approach, considering both our company's impacts on the environment and society and the financial implications of sustainability matters for our company. Furthermore, the assessment employs standardized criteria for evaluating IROs. For risks and opportunities, criteria were aligned with Group Risk Management.

The materiality analysis was last modified in preparation for 2024. Alongside the alignment with ESRS requirements, this involved a comprehensive review of previously identified sustainability topics as well as the integration of new insights, e.g., from stakeholders. The materiality analysis will be reviewed annually, with the next scheduled review planned for the first half of 2025.

Disclosure requirements in ESRS covered by the non-financial statement (IRO-2)

The following table lists the disclosure requirements complied with when preparing the non-financial statement on the basis of our materiality analysis:

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS 2	General disclosures	BP-1	Basis for preparation	General basis for preparation of sustainability statements	**ESRS 2 BP-1**
ESRS 2	General disclosures	BP-2	Basis for preparation	Disclosures in relation to specific circumstances	**ESRS 2 BP-2**
ESRS 2	General disclosures	GOV-1	Governance	The role of the administrative, management and supervisory bodies	**ESRS 2 GOV-1**
ESRS 2	General disclosures	GOV-2	Governance	Information provided to and sustainability matters addressed by the undertaking's administrative, management and supervisory bodies	**ESRS 2 GOV-2**
ESRS 2	General disclosures	GOV-3	Governance	Integration of sustainability-related performance in incentive schemes	**ESRS 2 GOV-3**
ESRS 2	General disclosures	GOV-4	Governance	Statement on due diligence	**ESRS 2 GOV-4**
ESRS 2	General disclosures	GOV-5	Governance	Risk management and internal controls over sustainability reporting	**ESRS 2 GOV-5**
ESRS 2	General disclosures	SBM-1	Strategy	Strategy, business model and value chain	**ESRS 2 SBM-1**
ESRS 2	General disclosures	SBM-2	Strategy	Interests and views of stakeholders	**ESRS 2 SBM-2**
ESRS 2	General disclosures	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**ESRS 2 SBM-3** **E1 SBM-3** **E2 SBM-3 (Pollution of water)** **E2 SBM-3 (Pollution of soil)** **E2 SBM-3 (Substances of concern and substances of very high concern)** **E3 SBM-3** **E4 SBM-3** **E5 SBM-3** **S1 SBM-3** **S2 SBM-3** **S4 SBM-3 (Health and safety of our patients)** **S4 SBM-3 (Access to our products and services and access to (quality) information)** **G1 SBM-3 (Corporate culture)** **G1 SBM-3 (Animal welfare)**
ESRS 2	General disclosures	IRO-1	Impact, risk and opportunity management	Description of the process to identify and assess material impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS 2	General disclosures	IRO-2	Impact, risk and opportunity management	Disclosure requirements in ESRS covered by the undertaking's sustainability statement	**ESRS 2 IRO-2**

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS 2	General disclosures	MDR-P	Impact, risk and opportunity management	Policies adopted to manage material sustainability matters	**E1-2** **E2-1 (Pollution of water)** **E2-1 (Pollution of soil)** **E2-1 (Substances of concern and substances of very high concern)** **E3-1** **E4-1** **E5-1** **S1-1** **S2-1** **S4-1 (Health and safety of our patients)** **S4-1 (Access to our products and services and access to (quality) information)** **G1-1 (Corporate culture)** **G1-1 (Animal welfare)**
ESRS 2	General disclosures	MDR-A	Impact, risk and opportunity management	Actions and resources in relation to material sustainability matters	**E1-3** **E2-2 (Pollution of water)** **E2-2 (Pollution of soil)** **E2-2 (Substances of concern and substances of very high concern)** **E3-2** **E4-2** **E5-2** **S1-4** **S2-4** **S4-4 (Health and safety of our patients)** **S4-4 (Access to our products and services and access to (quality) information)** **G1-MDR-T (Corporate culture)** **G1-MDR-T (Animal welfare)**
ESRS 2	General disclosures	MDR-M	Metrics and targets	Metrics in relation to material sustainability matters	**E1-5** **E1-6** **E1-7** **E1-8** **E2-4 (Pollution of water)** **E2-5 (Substances of concern and substances of very high concern)** **E3 MDR-M** **E4-5** **E5-4** **E5-5** **S1-6** **S1-8** **S1-10** **S1-14** **S1-17** **S1-9** **S1-12** **S1-13** **S1-16** **G1 MDR-M (Animal welfare)**

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS 2	General disclosures	MDR-T	Metrics and targets	Tracking effectiveness of policies and actions through targets	**E1-4** **E2-3 (Pollution of water)** **E2-3 (Pollution of soil)** **E2-3 (Substances of concern and substances of very high concern)** **E3-3** **E4-4** **E5-3** **S1-5** **S2-5** **S4-5 (Health and safety of our patients)** **S4-5 (Access to our products and services and access to (quality) information)** **G1-MDR-T (Corporate culture)** **G1-MDR-T (Animal welfare)**
ESRS E1	Climate Change	GOV-3	Governance	Integration of sustainability-related performance in incentive schemes	**ESRS 2 GOV-3**
ESRS E1	Climate Change	E1-1	Strategy	Transition plan for climate change mitigation	**E1-1**
ESRS E1	Climate Change	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**E1 SBM-3**
ESRS E1	Climate Change	IRO-1	Impact, risk and opportunity management	Description of the processes to identify and assess material climate-related impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS E1	Climate Change	E1-2	Impact, risk and opportunity management	Policies related to climate change mitigation and adaptation	**E1-2**
ESRS E1	Climate Change	E1-3	Impact, risk and opportunity management	Actions and resources in relation to climate change policies	**E1-3**
ESRS E1	Climate Change	E1-4	Metrics and targets	Targets related to climate change mitigation and adaptation	**E1-4**
ESRS E1	Climate Change	E1-5	Metrics and targets	Energy consumption and mix	**E1-5**
ESRS E1	Climate Change	E1-6	Metrics and targets	Gross Scopes 1, 2, 3 and Total GHG emissions	**E1-6**
ESRS E1	Climate Change	E1-7	Metrics and targets	GHG removals and GHG mitigation projects financed through carbon credits	**E1-7**
ESRS E1	Climate Change	E1-8	Metrics and targets	Internal carbon pricing	**E1-8**
ESRS E1	Climate Change	E1-9	Metrics and targets	Anticipated financial effects from material physical and transition risks and potential climate-related opportunities	Phase-In
ESRS E2	Pollution	IRO-1	Impact, risk and opportunity management	Description of the processes to identify and assess material pollution-related impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS E2	Pollution	E2-1	Impact, risk and opportunity management	Policies related to pollution	**E2-1 (Pollution of water)** **E2-1 (Pollution of soil)** **E2-1 (Substances of concern and substances of very high concern)**
ESRS E2	Pollution	E2-2	Impact, risk and opportunity management	Actions and resources related to pollution	**E2-2 (Pollution of water)** **E2-2 (Pollution of soil)** **E2-2 (Substances of concern and substances of very high concern)**

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS E2	Pollution	E2-3	Metrics and targets	Targets related to pollution	**E2-3 (Pollution of water)** **E2-3 (Pollution of soil)** **E2-3 (Substances of concern and substances of very high concern)**
ESRS E2	Pollution	E2-4	Metrics and targets	Pollution of air, water and soil	**E2-4 (Pollution of water)**
ESRS E2	Pollution	E2-5	Metrics and targets	Substances of concern and substances of very high concern	**E2-5 (Substances of concern and substances of very high concern)**
ESRS E2	Pollution	E2-6	Metrics and targets	Anticipated financial effects from pollution-related risks and opportunities	Phase-In
ESRS E3	Water and marine resources	IRO-1	Impact, risk and opportunity management	Description of the processes to identify and assess material water and marine resources-related impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS E3	Water and marine resources	E3-1	Impact, risk and opportunity management	Policies related to water and marine resources	**E3-1**
ESRS E3	Water and marine resources	E3-2	Impact, risk and opportunity management	Actions and resources related to water and marine resources	**E3-2**
ESRS E3	Water and marine resources	E3-3	Metrics and targets	Targets related to water and marine resources	**E3-3**
ESRS E3	Water and marine resources	E3-5	Metrics and targets	Anticipated financial effects from water and marine resources-related impacts, risks and opportunities	Phase-In
ESRS E4	Biodiversity and ecosystems	E4-1	Strategy	Transition plan and consideration of biodiversity and ecosystems in strategy and business model	**E4-1**
ESRS E4	Biodiversity and ecosystems	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**E4 SBM-3**
ESRS E4	Biodiversity and ecosystems	IRO-1	Impact, risk and opportunity management	Description of processes to identify and assess material biodiversity and ecosystem-related impacts, risks, dependencies and opportunities	**ESRS 2 IRO-1**
ESRS E4	Biodiversity and ecosystems	E4-2	Impact, risk and opportunity management	Policies related to biodiversity and ecosystems	**E4-2**
ESRS E4	Biodiversity and ecosystems	E4-3	Impact, risk and opportunity management	Actions and resources related to biodiversity and ecosystems	**E4-3**
ESRS E4	Biodiversity and ecosystems	E4-4	Metrics and targets	Targets related to biodiversity and ecosystems	**E4-4**
ESRS E4	Biodiversity and ecosystems	E4-5	Metrics and targets	Impact metrics related to biodiversity and ecosystems change	**E4-5**
ESRS E4	Biodiversity and ecosystems	E4-6	Metrics and targets	Anticipated financial effects from material biodiversity and ecosystem-related risks and opportunities	Phase-In
ESRS E5	Resource use and circular economy	IRO-1	Impact, risk and opportunity management	Description of the processes to identify and assess material resource use and circular economy-related impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS E5	Resource use and circular economy	E5-1	Impact, risk and opportunity management	Policies related to resource use and circular economy	**E5-1**
ESRS E5	Resource use and circular economy	E5-2	Impact, risk and opportunity management	Actions and resources related to resource use and circular economy	**E5-2**
ESRS E5	Resource use and circular economy	E5-3	Metrics and targets	Targets related to resource use and circular economy	**E5-3**

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS E5	Resource use and circular economy	E5-4	Metrics and targets	Resource inflows	**E5-4**
ESRS E5	Resource use and circular economy	E5-5	Metrics and targets	Resource outflows	**E5-5**
ESRS E5	Resource use and circular economy	E5-6	Metrics and targets	Anticipated financial effects from resource use and circular economy-related impacts, risks and opportunities	Phase-In
ESRS S1	Own workforce	SBM-2	Strategy	Interests and views of stakeholders	**ESRS 2 SBM-2**
ESRS S1	Own workforce	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**S1 SBM-3**
ESRS S1	Own workforce	S1-1	Impact, risk and opportunity management	Policies related to own workforce	**S1-1**
ESRS S1	Own workforce	S1-2	Impact, risk and opportunity management	Processes for engaging with own workers and workers' representatives about impacts	**S1-2**
ESRS S1	Own workforce	S1-3	Impact, risk and opportunity management	Processes to remediate negative impacts and channels for own workers to raise concerns	**S1-3**
ESRS S1	Own workforce	S1-4	Impact, risk and opportunity management	Taking action on material impacts on own workforce, and approaches to managing material risks and pursuing material opportunities related to own workforce, and effectiveness of those actions	**S1-4**
ESRS S1	Own workforce	S1-5	Metrics and targets	Targets related to managing material negative impacts, advancing positive impacts, and managing material risks and opportunities	**S1-5**
ESRS S1	Own workforce	S1-6	Metrics and targets	Characteristics of the undertaking's employees	**S1-6**
ESRS S1	Own workforce	S1-7	Metrics and targets	Characteristics of non-employees in the undertaking's own workforce	Phase-In
ESRS S1	Own workforce	S1-8	Metrics and targets	Collective bargaining coverage and social dialogue	**S1-8**
ESRS S1	Own workforce	S1-9	Metrics and targets	Diversity metrics	**S1-9**
ESRS S1	Own workforce	S1-10	Metrics and targets	Adequate wages	**S1-10**
ESRS S1	Own workforce	S1-11	Metrics and targets	Social protection	Phase-In
ESRS S1	Own workforce	S1-12	Metrics and targets	Persons with disabilities	**S1-12**
ESRS S1	Own workforce	S1-13	Metrics and targets	Training and skills development metrics	**S1-13**
ESRS S1	Own workforce	S1-14	Metrics and targets	Health and safety metrics	**S1-14**
ESRS S1	Own workforce	S1-15	Metrics and targets	Work-life balance metrics	Phase-In
ESRS S1	Own workforce	S1-16	Metrics and targets	Remuneration metrics (pay gap and total remuneration)	**S1-16**
ESRS S1	Own workforce	S1-17	Metrics and targets	Incidents, complaints and severe human rights impacts	**S1-17**
ESRS S2	Workers in the value chain	SBM-2	Strategy	Interests and views of stakeholders	**ESRS 2 SBM-2**
ESRS S2	Workers in the value chain	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**S2 SBM-3**

Standard	Cross-cutting/thematic	No.	Scope of reporting	Designation of DRs	Reference
ESRS S2	Workers in the value chain	S2-1	Impact, risk and opportunity management	Policies related to value chain workers	**S2-1**
ESRS S2	Workers in the value chain	S2-2	Impact, risk and opportunity management	Processes for engaging with value chain workers about impacts	**S2-2**
ESRS S2	Workers in the value chain	S2-3	Impact, risk and opportunity management	Processes to remediate negative impacts and channels for value chain workers to raise concerns	**S2-3**
ESRS S2	Workers in the value chain	S2-4	Impact, risk and opportunity management	Taking action on material impacts on value chain workers, and approaches to managing material risks and pursuing material opportunities related to value chain workers, and effectiveness of those action	**S2-4**
ESRS S2	Workers in the value chain	S2-5	Metrics and targets	Targets related to managing material negative impacts, advancing positive impacts, and managing material risks and opportunities	**S2-5**
ESRS S4	Consumers and end-users	SBM-2	Strategy	Interests and views of stakeholders	**ESRS 2 SBM-2** **S4 SBM-2**
ESRS S4	Consumers and end-users	SBM-3	Strategy	Material impacts, risks and opportunities and their interaction with strategy and business model	**S4 SBM-3 (Health and safety of our patients)** **S4 SBM-3 (Access to our products and services and access to (quality) information)**
ESRS S4	Consumers and end-users	S4-1	Impact, risk and opportunity management	Policies related to consumers and end-users	**S4-1 (Health and safety of our patients)** **S4-1 (Access to our products and services and access to (quality) information)**
ESRS S4	Consumers and end-users	S4-2	Impact, risk and opportunity management	Processes for engaging with consumers and end-users about impacts	**S4-2 (Health and safety of our patients)** **S4-2 (Access to our products and services and access to (quality) information)**
ESRS S4	Consumers and end-users	S4-3	Impact, risk and opportunity management	Processes to remediate negative impacts and channels for consumers and end-users to raise concerns	**S4-3 (Health and safety of our patients)**
ESRS S4	Consumers and end-users	S4-4	Impact, risk and opportunity management	Taking action on material impacts on consumers and end-users, and approaches to managing material risks and pursuing material opportunities related to consumers and end-users, and effectiveness of those actions	**S4-4 (Health and safety of our patients)** **S4-4 (Access to our products and services and access to (quality) information)**
ESRS S4	Consumers and end-users	S4-5	Metrics and targets	Targets related to managing material negative impacts, advancing positive impacts, and managing material risks and opportunities	**S4-5 (Health and safety of our patients)** **S4-5 (Access to our products and services and access to (quality) information)**
ESRS G1	Business Conduct	GOV-1	Governance	The role of the administrative, supervisory and management bodies	**ESRS 2 GOV-1**
ESRS G1	Business Conduct	IRO-1	Impact, risk and opportunity management	Description of the processes to identify and assess material impacts, risks and opportunities	**ESRS 2 IRO-1**
ESRS G1	Business Conduct	G1-1	Impact, risk and opportunity management	Business conduct policies and corporate culture	**G1-1 (Corporate culture)** **G1-1 (Animal welfare)**

The table below contains all data points that derive from other EU legislation as listed in ESRS 2 appendix B. It indicates where the data points can be found in our report and which of these data points are assessed as “not material”.

Disclosure Requirement	Data point	Topic of Disclosure Requirement	SFDR Reference	Pillar 3 Reference	Bench-mark Regulation reference	EU Climate Law reference	Materiality	Reference
ESRS 2 GOV-1	21d	Board's gender diversity	x		x		material	**ESRS 2 GOV-1**
ESRS 2 GOV-1	21e	Percentage of board members who are independent			x		material	**ESRS 2 GOV-1**
ESRS 2 GOV-4	30	Statement on due diligence	x				material	**ESRS 2 GOV-4**
ESRS 2 SBM-1	40d-i	Involvement in activities related to fossil fuel activities	x	x	x		not material	
ESRS 2 SBM-1	40d-ii	Involvement in activities related to chemical production	x		x		not material	
ESRS 2 SBM-1	40d-iii	Involvement in activities related to controversial weapons	x		x		not material	
ESRS 2 SBM-1	40d-iv	Involvement in activities related to cultivation and production of tobacco			x		not material	
E1-1	14	Transition plan to reach climate neutrality by 2050				x	material	**E1-1**
E1-1	16g	Undertakings excluded from Paris-aligned Benchmarks		x	x		material	**E1-1**
E1-4	34	GHG emission reduction targets	x	x	x		material	**E1-4**
E1-5	38	Energy consumption from fossil sources disaggregated by sources (only high climate impact sectors)	x				material	**E1-5**
E1-5	37	Energy consumption and mix	x				material	**E1-5**
ESRS E1-5	40-43	Energy intensity associated with activities in high climate impact sectors	x				material	**E1-5**
E1-6	44	Gross Scope 1, 2, 3 and Total GHG emissions	x	x	x		material	**E1-6**
E1-6	53-55	Gross GHG emissions intensity	x	x	x		material	**E1-6**
E1-7	56	GHG removals and carbon credits				x	material	**E1-7**
E1-9	66	Exposure of the benchmark portfolio to climate-related physical risks			x		not reported (phase-in option)	
E1-9	66a 66c	Disaggregation of monetary amounts by acute and chronic physical risk/ Location of significant assets at material physical risk		x			not reported (phase-in option)	
E1-9	67c	Breakdown of the carrying value of its real estate assets by energy-efficiency classes		x			not reported (phase-in option)	
E1-9	69	Degree of exposure of the portfolio to climate- related opportunities			x		not reported (phase-in option)	
E2-4	28	Amount of each pollutant listed in Annex II of the E- PRTR Regulation (European Pollutant Release and Transfer Register) emitted to air, water and soil	x				material	**E2-4**

Disclosure Requirement	Data point	Topic of Disclosure Requirement	SFDR Reference	Pillar 3 Reference	Bench-mark Regulation reference	EU Climate Law reference	Materiality	Reference
E3-1	9	Water and marine resources	x				material	**E3-1**
E3-1	13	Dedicated policy	x				material	**E3-1**
E3-1	14	Sustainable oceans and seas	x				material	**E3-1**
E3-4	28c	Total water recycled and reused	x				not material	
E3-4	29	Total water consumption in m^3 per net revenue on own operations	x				not material	
ESRS 2 SBM-3 E4	16a-i		x				material	**ESRS 2 SBM-3 E4**
ESRS 2 SBM-3 E4	16b		x				material	**ESRS 2 SBM-3 E4**
ESRS 2 SBM-3 E4	16c		x				material	**ESRS 2 SBM-3 E4**
E4-2	24b	Sustainable land/agriculture practices or policies	x				material	**E4-2**
E4-2	24c	Sustainable oceans/seas practices or policies	x				material	**E4-2**
E4-2	24d	Policies to address deforestation	x				material	**E4-2**
E5-5	37d	Non-recycled waste	x				not material	
E5-5	39	Hazardous waste and radioactive waste	x				not material	
ESRS 2 SBM-3 – S1	14f	Risk of incidents of forced labour	x				material	**S1 SBM-3**
ESRS 2 SBM-3 – S1	14g	Risk of incidents of child labour	x				material	**S1 SBM-3**
S1-1	20	Human rights policy commitments	x				material	**S1-1**
S1-1	21	Due diligence policies on issues addressed by the fundamental International Labor Organization Conventions 1 to 8			x		material	**S1-1**
S1-1	22	Processes and measures for preventing trafficking in human beings	x				material	**S1-1**
S1-1	23	Workplace accident prevention policy or management system	x				material	**S1-1**
S1-3	32c	Grievance/complaints handling mechanisms	x				material	**S1-3**
S1-14	88b 88c	Number of fatalities and number and rate of work-related accidents	x		x		material	**S1-14**
S1-14	88e	Number of days lost to injuries, accidents, fatalities or illness	x				material	**S1-14**
S1-16	97a	Unadjusted gender pay gap	x		x		material	**S1-16**
S1-16	97b	Excessive CEO pay ratio	x				material	**S1-16**
S1-17	103a	Incidents of discrimination	x				material	**S1-17**
S1-17	104a	Non-respect of UNGPs on Business and Human Rights and OECD Guidelines	x		x		material	**S1-17**

Disclosure Requirement	Data point	Topic of Disclosure Requirement	SFDR Reference	Pillar 3 Reference	Bench-mark Regulation reference	EU Climate Law reference	Materiality	Reference
ESRS 2 SBM3 – S2	11b	Significant risk of child labour or forced labour in the value chain	x				material	**ESRS 2 SBM-3 S2**
S2-1	17	Human rights policy commitments	x				material	**S2-1**
S2-1	18	Policies related to value chain workers	x				material	**S2-1**
S2-1	19	Non-respect of UNGPs on Business and Human Rights and OECD Guidelines	x		x		material	**S2-1**
S2-1	19	Due diligence policies on issues addressed by the fundamental International Labor Organization Conventions 1 to 8	x				material	**S2-1**
S2-4	36	Human rights issues and incidents connected to its upstream and downstream value chain	x				material	**S2-4**
S3-1	16	Human rights policy commitments	x				not material	
S3-1	17	Non-respect of UNGPs on Business and Human Rights, ILO principles or OECD Guidelines	x		x		not material	
S3-4	36	Human rights issues and incidents	x				not material	
S4-1	16	Policies related to consumers and end-users	x				material	**S4-1**
S4-1	17	Non-respect of UNGPs on Business and Human Rights and OECD Guidelines	x		x		material	**S4-1**
S4-4	35	Human rights issues and incidents	x				material	**S4-4**
G1-1	10b	United Nations Convention against Corruption	x				material	**G1-1**
G1-1	10d	Protection of whistleblowers	x				material	**G1-1**
G1-4	24a	Fines for violation of anti-corruption and anti-bribery laws	x		x		not material	
G1-4	24b	Standards of anti-corruption and anti-bribery	x				not material	

The requirements of standard S3 affected communities are strongly aligned toward human rights issues in local communities in which a company operates or which may be affected by a company's supply chain. In general, our business activities within our supply chains do not go so far that we influence human rights aspects of the local communities. We interpret the disclosure requirements of the standard in a broader sense and track our activities in the area of **community engagement**. In the materiality analysis, we identified and assessed impacts related to the mandatory disclosures as per S3; however, these were below the stated threshold. The standard is therefore not material for our reporting.

Environment

Reporting in Accordance with the EU Taxonomy Regulation

Fundamentals

The EU taxonomy for sustainable activities (hereinafter "EU taxonomy") is a classification system that translates the climate and environmental objectives of the European Union (EU) into criteria for sustainable economic activities. For this purpose, the EU taxonomy defines various key figures and qualitative information that Merck must disclose. The introduction of the disclosure obligation under Article 8 of Regulation (EU) 2020/852 of the European Parliament and of the European Council dated June 18, 2020, which establishes a framework to facilitate sustainable investment and amends Regulation (EU) 2019/2088 (hereinafter "EU Taxonomy Regulation") and the Delegated Acts adopted in this regard, was carried out in several phases:

- For the 2021 reporting year, key figures were initially stated only for what are known as taxonomy-eligible economic activities and were limited to those that make a substantial contribution to climate change mitigation or climate change adaptation, as defined by the EU Taxonomy Regulation. An economic activity is considered taxonomy-eligible if it falls within the regulatory scope of the EU taxonomy.

- For the 2022 reporting year, in addition to the degree to which economic activities making a substantial contribution to climate change mitigation or climate change adaptation as defined by the EU Taxonomy Regulation are taxonomy-eligible, it was also necessary to report the extent to which the identified economic activities are taxonomy-aligned. According to the EU taxonomy, an economic activity qualifies as taxonomy-aligned if it is taxonomy-eligible and makes a substantial contribution to one of the environmental objectives without causing significant harm to the other objectives or failing to fulfill minimum social standards.

- As well as the aforementioned information, the degree of taxonomy eligibility for economic activities making a substantial contribution to the following four additional environmental objectives of the EU were included in the disclosure obligation in the 2023 reporting year: 1) sustainable use and protection of water and marine resources, 2) transition to a circular economy, 3) pollution prevention and control, and 4) protection and restoration of biodiversity and ecosystems. Furthermore, new economic activities for the environmental objectives of climate change mitigation and climate change adaptation were added, for which the degree of taxonomy eligibility was required to be disclosed in the 2023 reporting year. Reporting on the degree of taxonomy alignment for these newly added environmental objectives was not required at this time.

- From the 2024 reporting year, the degree of taxonomy eligibility and taxonomy alignment must be reported for all six environmental objectives.

Approach

To ensure the legally compliant fulfillment of its disclosure obligations, Merck has established an interdisciplinary project team that continuously analyzes the existence of taxonomy-eligible and taxonomy-aligned activities in close coordination with representatives of the business sectors and various Group functions.

Identification of taxonomy-eligible economic activities

When implementing the EU taxonomy requirements, the business model of Merck was subjected to a comprehensive analysis. Taxonomy-eligible economic activities were identified using a top-down approach on the basis of structured inquiries submitted to the relevant specialist departments. For the environmental objectives of climate change mitigation and climate change adaptation, the results of this analysis were supplemented by big data-supported analyses as part of a bottom-up approach. Among other things, the information referred to is also used in connection with the requirements of the REACH Regulation and in the context of customs declarations. The economic activities for the other four environmental objectives were also identified by referring to existing reporting structures and hierarchies.

As a result of this process, taxonomy-eligible activities generating net sales were identified only in conjunction with the following economic activities:

- Manufacture of energy-efficient building equipment in the Electronics business sector (environmental objective “climate change mitigation”)
- Manufacture of active pharmaceutical ingredients in the Healthcare and Life Science business sectors (environmental objective “pollution prevention and control”)
- Manufacture of medical products in the Healthcare business sector (environmental objective “pollution prevention and control”)
- Manufacture of electrical and electronic equipment in the Life Science business sector (environmental objective “transition to a circular economy”)

The EU Taxonomy Regulation differentiates between three categories of capital expenditure:

- Capital expenditure that relates to assets or processes associated with taxonomy-aligned economic activities (category A)
- Capital expenditure that is part of a plan to expand taxonomy-aligned economic activities or to transform taxonomy-eligible economic activities into taxonomy-aligned economic activities (category B)
- Capital expenditure related to the acquisition of products from taxonomy-eligible economic activities and individual actions that enable the target activities to be performed in a low-carbon manner or that reduce greenhouse gas emissions (category C)

On account of its business model, Merck only engages in taxonomy-eligible economic activities in conjunction with the manufacture of active pharmaceutical ingredients, medical products, electrical and electronic equipment, and, to a limited extent, energy-efficient building equipment, meaning it has only limited taxonomy-eligible capital expenditure in category A. There is no capital expenditure in category B to date, as Merck is not preparing any plans for capital expenditure to transform taxonomy-eligible economic activities into taxonomy-aligned economic activities. Furthermore, Merck has capital expenditure resulting from the acquisition of products of taxonomy-eligible economic activities or attributable to qualifying individual actions (category C). In order to be taxonomy-eligible, this capital expenditure must correspond to one of the economic activities named in the Delegated Acts and must be implemented and operational within 18 months.

At Merck, such capital expenditure exists in connection with the environmental objective of climate change mitigation in particular and covers the following areas:

- Electricity generation using solar photovoltaic technology (activity 4.1 of the Delegated Act on the "climate change mitigation" environmental objective)
- Transport by motorbikes, passenger cars and light commercial vehicles (activity 6.5 of the Delegated Act on the "climate change mitigation" environmental objective)
- In the previous year: renovation of existing buildings (activity 7.2 of the Delegated Act on the "climate change mitigation" environmental objective and activity 3.2 of the Delegated Act on the "circular economy" environmental objective)

Determination of taxonomy alignment

Technical screening criteria

In order to examine the taxonomy alignment of the taxonomy-eligible economic activities, a systematic analysis was conducted of the relevant regulations for the technical screening criteria, which are used to determine whether an economic activity contributes substantially to the environmental objective as well as whether the activity causes no significant harm to any of the other environmental objectives. This was based on the Delegated Acts on the EU taxonomy, which were used to identify taxonomy-eligible economic activities. They define corresponding requirements for the respective economic activities which must be fulfilled in order for them to be classified as taxonomy-aligned. For this purpose, interviews were conducted with business and project managers, and the physical climate risks at the sites were analyzed. Numerous documents were also inspected, including operating permits, product data sheets, environmental product declarations, energy performance certificates, and internal training documents.

Net sales, capital expenditure and operating expenditure in connection with the "climate change mitigation" environmental objective were only identified as taxonomy-aligned economic activities to a very small extent. No additional taxonomy-eligible and taxonomy-aligned net sales, capital expenditure or operating expenditure were identified for the "climate change adaptation" environmental objective. From 2024, the degree of taxonomy alignment must be reported for the other four environmental objectives in addition to the degree of taxonomy eligibility. Given the current state of the art, the taxonomy alignment of the activities identified by Merck as taxonomy-eligible cannot be guaranteed. This is due, in particular, to the stringent requirements profile of the technical screening criteria and the criteria for examining whether the activities cause significant harm to other environmental objectives set out in the catalog of the Taxonomy Regulation for the respective activities. With regard to the manufacture of active pharmaceutical ingredients and medical products in particular, the requirements concerning biodegradability and suitability for substitution with a similar active ingredient with the same efficacy cannot be met.

Minimum safeguards

The frameworks for determining minimum safeguards include the OECD Guidelines for Multinational Enterprises, the United Nations Guiding Principles on Business and Human Rights, the fundamental conventions of the International Labour Organization, and the International Bill of Human Rights. The requirements profile of the frameworks has been systematized and compared with internal documents, including an analysis of the Code of Conduct, work instructions, guidelines, and training documents. Compliance with the due diligence process required by the framework in the area of human rights is ensured with respect to the individual business activities. Risk analyses are carried out with regard to the minimum safeguard requirements and appropriate actions are derived from them.

Determination of the taxonomy KPIs

The three key performance indicators (KPIs), namely net sales, capital expenditure and operating expenditure, were derived mainly from existing financial reporting systems; the capital expenditure KPI was derived partly from, inquiries made to the Investment Controlling unit. The principle of materiality was applied.

Accounting and measurement policies

The EU Taxonomy Regulation and the corresponding Delegated Acts contain wording and requirements which are subject to interpretation, even taking into account the supplementary publications of the European Commission and the EU Platform on Sustainable Finance, and/or for which clarifications have not yet been published in every case. The most significant interpretive issues and the approach that Merck is taking are presented below.

Taxonomy eligibility

Ancillary activities that are operationally necessary for our core business do not qualify as independent taxonomy-eligible economic activities. This applies, for example, to the transport of our products to our customers, research and development activities, and the acquisition or construction of production buildings in areas that cannot be allocated to a taxonomy-eligible target activity.

To examine the taxonomy eligibility of an economic activity, Merck applies an end product-oriented approach for manufacturing-related activities. This means the end product must result from one of the economic activities specified in the Delegated Act in order to qualify as being taxonomy-eligible. In the case of organic basic chemicals, Merck deems the corresponding economic activities taxonomy-eligible only if the manufacturing activities for the named chemical products involve a significant transformation process. In our interpretation, products that are merely passed on for sale, repackaged or mixed do not qualify as taxonomy-eligible within the meaning of the EU Taxonomy Regulation.

The purchase or performance of contract manufacturing services for active pharmaceutical ingredients or medical products in the Healthcare and Life Science business sectors typically does not give rise to a taxonomy-eligible economic activity, as Merck does not control the circumstances under which the contract manufacturing is performed in many cases.

In the area of fossil gas, Merck operates a gas turbine and a cogeneration facility at its Darmstadt site to generate electricity and heat from fossil gaseous fuels for its own use. These activities in the area of electricity generation from fossil gaseous fuels as well as the operation of cogeneration facilities with fossil gaseous fuels have been classified as not material. Additional activities in the field of nuclear energy and fossil gas are either not performed or are performed to an insignificant extent only.

Net sales

The net sales KPI represents the ratio of net sales from taxonomy-eligible or taxonomy-aligned economic activities in a fiscal year to the total net sales of the same fiscal year. The definition of relevant net sales for the purposes of the EU Taxonomy Regulation corresponds to the definition of net sales in the Consolidated Financial Statements (see Note (9) “**Net sales**” in the Notes to the Consolidated Financial Statements).

Capital expenditure

The share of capital expenditure for assets or processes associated with economic activities classified as taxonomy-eligible or taxonomy-aligned is determined as follows: The share of total capital expenditure that is taxonomy-eligible or taxonomy-aligned is divided by the total capital expenditure according to the EU Taxonomy Regulation. At Merck and within the meaning of the EU Taxonomy Regulation, capital expenditure in the reporting period comprises additions to property, plant and equipment (IAS 16), rights of use from leases (IFRS 16), and intangible assets (IAS 38) with the exception of goodwill. Apart from the additions, advance payments for the named assets are also included. The denominator also includes additions to property, plant and equipment and intangible assets resulting from business combinations. The additions can be seen in the statements of changes in property, plant and equipment and intangible assets published in the Consolidated Financial Statements (see Note (20) "**Property, plant and equipment**" and Note (19) "**Other intangible assets**" in the Notes to the Consolidated Financial Statements).

In order to systematically exclude double counting, capital expenditure on products from taxonomy-aligned economic activities and individual actions that have already been examined under category A (i.e. capital expenditure relating to assets or processes associated with taxonomy-aligned economic activities) is included under this category only. For example, this means that capital expenditure for production buildings is examined for taxonomy eligibility under category A only, while capital expenditure for administrative buildings is included under category C.

Operating expenditure

The share of operating expenditure for assets or processes associated with economic activities classified as taxonomy-eligible or taxonomy-aligned is determined as follows: The share of total operating expenditures that is taxonomy-eligible or taxonomy-aligned is divided by total operating expenditure according to the EU Taxonomy Regulation. Operating expenditure relevant within the scope of reporting under the EU Taxonomy Regulation includes direct, non-capitalized research and development costs, low-value leases, building renovations, maintenance and repair, and all other direct internal and external expenses related to the day-to-day maintenance of property, plant and equipment that are necessary to ensure the continuous and effective functioning of these assets. During the clinical and preclinical development phases in the Healthcare business sector, it is unclear as to whether the activities will ever lead to regulatory approval and hence to marketable products. Accordingly, the corresponding research and development activities are not included as taxonomy-eligible operating expenditure in the numerator for economic activities relating to pharmaceutical ingredients and medical products.

Taxonomy KPIs

The following tables present the share of net sales, capital expenditure (CapEx) and operating expenditure (OpEx) attributable to taxonomy-eligible and taxonomy-aligned economic activities.

				Criteria for a substantial contribution						DNSH criteria ("Do no significant harm")									
Economic activities	**Code**	**Turnover 2024**	**Proportion of turnover 2024**	**Climate change mitigation**	**Climate change adaptation**	**Water**	**Pollution**	**Circular economy**	**Biodiversity**	**Climate change mitigation**	**Climate change adaptation**	**Water**	**Pollution**	**Circular economy**	**Biodiversity**	**Minimum safeguards**	**Proportion of taxonomy-aligned or eligible turnover 2023**	**Category enabling activity**	**Category transition-al activity**
	(a)	€ million	%	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1. Environmentally sustainable activities (taxonomy-aligned)																			
Manufacture of energy efficiency equipment for buildings (A1)	CCM 3.5	1	0.01	Y	N/EL	N/EL	N/EL	N/EL	N/EL		Y	Y	Y	Y	Y	Y	0.03	E	
Turnover of environmentally sustainable activities (taxonomy-aligned) (A.1)																			
Of which enabling		1	0.01	0.01	0.00	0.00	0.00	0.00	0.00								0.03	E	
Of which transitional		0.00	0.00	0.00													0.00		T
A.2 Taxonomy-eligible, but not environmentally sustainable activities (not taxonomy-aligned activities)				EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL										
Manufacture of active pharmaceutical ingredients (API) or active substances	PPC 1.1	125	0.59	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.47		
Manufacture of medicinal products	PPC 1.2	6,011	28.41	N/EL	N/EL	N/EL	EL	N/EL	N/EL								27.52		
Manufacture of electrical and electronic equipment	CE 1.2	99	0.47	N/EL	N/EL	N/EL	N/EL	EL	N/EL								0.47		
Turnover of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		6,236	29.48	0.00	0.00	0.00	29.01	0.47	0.00								28.46		
A. Turnover of taxonomy-eligible activities (A.1 + A.2)		**6,237**	**29.48**	0.01	0.00	0.00	29.01	0.47	0.00										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
Turnover of taxonomy-non-eligible activities (B)		14,919	70.52																
Total (A + B)		21,156	100.00																

				Criteria for a substantial contribution						DNSH criteria ("Do no significant harm")									
Economic activities	**Code**	**CapEx 2024**	**Proportion of CapEx 2024**	**Climate change mitigation**	**Climate change adaptation**	**Water**	**Pollution**	**Circular economy**	**Biodiversity**	**Climate change mitigation**	**Climate change adaptation**	**Water**	**Pollution**	**Circular economy**	**Biodiversity**	**Minimum safeguards**	**Proportion of taxonomy-aligned or eligible CapEx 2023**	**Category enabling activity**	**Category transition-al activity**
		(a)	€ million	%	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1 Environemtally sustainable activities (taxonomy-aligned)																			
Manufacture of energy efficiency equipment for buildings	CCM 3.5	1	0.02	Y	N/EL	N/EL	N/EL	N/EL	N/EL		Y	Y	Y	Y	Y	Y	0.06	E	
Electricity generation using solar photovoltaic technology	CCM 4.1	1	0.04	Y	N/EL	N/EL	N/EL	N/EL	N/EL		Y	Y	Y	Y	Y	Y	0.17	E	
Renovation of existing buildings	CCM 7.2	0	0.00	Y	N/EL	N/EL	N/EL	N	N/EL		Y	Y	Y	Y	Y	Y	0.43		T
CapEx of environmentally sustainable activities (taxonomy aligned) (A.1)		**2**	**0.07**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**								**0.66**		
Of which enabling		2	0.07	0.07	0.00	0.00	0.00	0.00	0.00									E	
Of which transitional		0	0.00	0.00															T
A.2 Taxonomy-eligible, but not environmentally sustainable activities (not taxonomy-aligned activities)				EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL										
Transport by motorbikes, passenger cars and light commercial vehicles (A.2)	CCM 6.5	28	1.22	EL	N/EL	N/EL	N/EL	N/EL	N/EL								1,35		
Manufacture of active pharmaceutical ingredients (API) or active substances	PPC 1.1	1	0.05	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.04		
Manufacture of medicinal products	PPC 1.2	81	3.47	N/EL	N/EL	N/EL	EL	N/EL	N/EL								4.27		
CapEx of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		**111**	**4.73**	**1.22**	**0.00**	**0.00**	**3.52**	**0.00**	**0.00**								5.67		
A. CapEx of taxonomy eligible activities (A.1 + A.2)		**112**	**4.80**	1.28	0.00	0.00	3.52	0.00	0.00										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
CapEx of taxonomy-non-eligible activities (B)		2,229	95.20																
Total (A + B)		2,341	100.00																

Economic activities	Code	OpEx 2024	Proportion of OpEx 2024	Criteria for a substantial contribution						DNSH criteria ("Do no significant harm")							Proportion of taxonomy-aligned or eligible OpEx 2023	Category enabling activity	Category transition-al activity
				Climate change	Climate change	Water	Pollution	Circular economy	Biodiversity	Climate change	Climate change	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards			
	(a)	€ million	%	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y; N; N/EL (b)	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	%	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																			
A.1 Environemtally sustainable activities (taxonomy-aligned)																			
Manufacture of energy efficiency equipment for buildings	CCM 3.5	1	0.02	Y	N/EL	N/EL	N/EL	N/EL	N/EL		Y	Y	Y	Y	Y	Y	0.02	E	
OpEx of environmentally sustainable activities (taxonomy aligned) (A.1)		**1**	**0.02**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**								**0.02**		
Of which enabling		1	0.02	0.02	0.00	0.00	0.00	0.00	0.00								0.02	E	
Of which transitional		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00		T
A.2 Taxonomy-eligible, but not environmentally sustainable activities (not taxonomy-aligned activities)				EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL	EL; N/EL										
Renovation of existing buildings (A.1)																			
Manufacture of active pharmaceutical ingredients (API) or active substances	PPC 1.1	1	0.05	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.11		
Manufacture of medicinal products	PPC 1.2	32	1.24	N/EL	N/EL	N/EL	EL	N/EL	N/EL								1.73		
Manufacture of electrical and electronic equipment	CE 1.2	1	0.04	N/EL	N/EL	N/EL	N/EL	EL	N/EL								0.16		
OpEx of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		**34**	**1.33**	**0.00**	**0.00**	**0.00**	**1.29**	**0.04**	**0.00**								1.99		
A. OpEx of taxonomy eligible activities (A.1 + A.2)		**35**	**1.35**	0.02	0.00	0.00	1.29	0.04	0.00										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
OpEx of taxonomy-non-eligible activities (B)		2,556	98.65																
Total (A + B)		2,591	100.00																

(a) The code is the abbreviation of the relevant objective to which the economic activity can make a substantial contribution, as well as the section number of the activity in the relevant Annex covering the objective, i.e.

Climate change mitigation: CCM
Climate change adaptation: CCA
Water and marine resources: WTR
Circular economy: CE
Pollution prevention and control: PPC
Biodiversity and ecosystems: BIO

(b) Y — Yes, activity is taxonomy-eligible and is taxonomy-aligned with the relevant environmental objective
N — No, activity is taxonomy-eligible but not taxonomy-aligned with the relevant environmental objective
N/EL — Activity is not taxonomy-eligible for the relevant environmental objective

Research and development expenses accounted for € 2,279 million (2023: € 2,445 million) of the presented operating expenditure, with € 1,503 million (2023: € 1,657 million) being attributable to the Healthcare business sector.

Climate Change (E1)

In 2024, we designed our first transition plan for climate protection, which we will further develop in 2025. It outlines how we intend to contribute to mitigating climate change and achieving our own climate goals. This underscores our commitment to the Paris Agreement on climate protection. The transition plan, in line with our climate strategy, focuses on our major decarbonization levers, such as reducing process emissions, improving energy efficiency, and significantly increasing the use of renewable energies. Furthermore, we updated our analysis regarding our climate risks and opportunities to gain a comprehensive understanding of the upcoming challenges. By continuously integrating our transition plan into our corporate strategy, we aim to actively support the global effort to limit global warming to 1.5°C.

Our material impacts, risks and opportunities related to climate change (E1 SBM-3)

As part of the materiality analysis, we identified impacts, risks, and opportunities related to climate change. Our disclosures focus on the following significant impacts:

Climate change adaptation; Climate change mitigation	
Identifier	E1-NI-01
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; own operations; downstream
Description	The company-specific GHG emissions from our own business activity (Scope 1 and 2) contribute to global environmental degradation. The GHG emissions associated with our purchased goods and services (part of Scope 3) represent the largest share of our total carbon footprint.

Climate change mitigation; Climate change adaptation; Energy	
Identifier	E1-NI-02
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Own operations
Description	As part of our own operations, we operate wastewater treatment plants in many of our production sites. Waste Water Utilities & Services activities require significant energy inputs, thereby releasing GHG emissions, for the withdrawal, conveyance, treatment, and distribution or discharge of potable water and wastewater.

Climate change mitigation; Climate change adaptation; Energy	
Identifier	E1-NI-03
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; downstream
Description	In Healthcare business sector, we utilize air freight services in our upstream value chain. Furthermore, air freight is relevant for all three business sectors in the downstream value chain. Companies in the air freight & logistics industry generate direct GHG emissions that contribute to climate change.

Climate change mitigation; Climate change adaptation	
Identifier	E1-NI-04
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; downstream
Description	We utilize road freight services in upstream and downstream transportation logistics. Compared to other modes of transport, road freight has a more localized negative effect on air quality through its emissions of sulfur oxides (SOx), nitrogen oxides (NOx), and particulate matter (PM).

Climate change mitigation; Climate change adaptation; Energy	
Identifier	E1-NI-05
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Own operations
Description	The waste we produce in our own business is often toxic, bioactive or hazardous and must be specially disposed of, e.g., by incineration. This kind of disposal requires high energy consumption.

Energy	
Identifier	E1-NI-06
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; own operations; downstream
Description	Our business sectors Life Science, Healthcare and Electronics are part of the industrial manufacturing sector. We require energy for our own production. Most of our energy demand is satisfied through the combustion of fossil fuels, such as natural gas, directly in the production processes, followed by the consumption of electricity (grid mix). Furthermore, in our upstream value chain, we indirectly rely on various energy intense industries, such as transportation and mining activities, as well as the manufacturing of various products. Business activity in these industries relies heavily on fossil fuels. In our downstream value chain, we also rely on energy intense business activities, such as transportation, warehousing, waste & utilities and sales & distribution. The predominant form of energy for these activities is also of fossil origin.

Climate change adaptation	
Identifier	E1-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Long-term
Value chain step	Upstream; own operations; downstream
Description	Physical risks: As a company with global production operations, we are exposed to risks of possible damage to personnel, goods and our reputation. These also include physical risks stemming from exposure to: precipitation, wind, droughts, thunderstorms, heat, wildfires, cold, hail, and floods.

Climate change mitigation	
Identifier	E1-R-02
Material impacts, risks and opportunities	Risk
Time horizon	long term
Value chain step	Upstream; own operations; downstream
Description	Transition risks: As a company engaged in global production, we face potential risks that could harm our personnel, goods, and reputation. These transition risks encompass higher direct labor costs, higher costs associated with CO_2 emissions in production, higher costs associated with hazardous waste disposal, higher electricity expenses, higher carbon taxes and emission trading costs.

Climate change mitigation	
Identifier	E1-O-01
Material impacts, risks and opportunities	Opportunity
Time horizon	Long term
Value chain step	Upstream; own operations; downstream
Description	Increased demand in the pharmaceutical sector globally due to wider accessibility to medicine and pharmaceutical products, leading to increased revenue.

Climate resilience analysis

Climate resilience analysis is a vital tool for identifying and evaluating the risks and opportunities that climate change presents to our business. In 2022, we conducted a qualitative assessment of climate risks and vulnerabilities across our upstream, own operations, and downstream activities. Building on this foundation, we aligned our efforts with TCFD recommendations in 2023 and 2024 by undertaking quantitative climate scenario analyses, specifically focusing on upstream activities and our own operations, excluding downstream activities. This assessment identified climate-related risks and opportunities across two potential climate pathways: a 1.5°C Paris Agreement-aligned scenario and an IPCC-based 4.0°C scenario, until 2050. Our analysis, guided by the TCFD framework, encompasses both transition and physical risks and opportunities related to our business activities.

Climate risks and opportunities refer to potential financial impacts stemming from climate change, categorized as follows:

- Physical Risks: These risks arise from damage and losses due to climate change, which can be acute (event-driven) or chronic (gradual shifts). Examples include, for example, extreme weather events, like droughts, heatwaves, floods, and forest fires. Our assessments highlight the necessity of resilient infrastructure and adequate insurance coverage to mitigate these risks.
- Transition Risks: These risks stem from the transition to a lower-carbon economy, which may impose various constraints on companies. These constraints fall under categories such as policy and legal, technology, market, and reputation. Our strategy aims to manage these risks through investments in renewable energy, enhancements in energy efficiency, and supplier decarbonization programs. We also incorporate greenhouse gas emissions criteria into our investment decisions and apply a shadow price for carbon to guide our strategic choices.
- Opportunities: The shift towards a low-carbon economy also generates opportunities (generally related to “transition”) such as potentially increased revenue from rising market demand for certain products. We plan to capitalize on these opportunities by aligning our market strategies with sustainability trends, thereby strengthening our competitive position and fostering growth.

The narratives used in our scenario analysis encompass a range of plausible futures, including scenarios that reflect varying degrees of climate mitigation efforts as well as economic and technological developments. We focus on time horizons of 2030 and 2050 to align with key milestones in global climate policy and our internal sustainability targets. The endpoints of these scenarios provide a framework for assessing potential risks and opportunities under different climate conditions, including both optimistic and pessimistic outcomes. The range of scenarios used covers its plausible risks and uncertainties due to the comprehensive nature of the scenarios selected. By incorporating a variety of narratives that reflect different levels of climate action and technological advancement, we can better understand the potential impacts on our business. This approach allows us to capture a wide spectrum of possible regulatory changes, market dynamics, and changes in consumer behaviors, ensuring that we are prepared for a range of outcomes. It is important to note that actual greenhouse gas emissions and global warming may diverge from the scenarios employed, influenced by global climate protection initiatives, demographic trends, social factors, and technological advancements.

Our process to identify and assess climate-related impacts, risks, and opportunities

Our approach to identifying and evaluating climate-related impacts, risks, and opportunities consists of several key steps:

- Identification of Critical Sites: We began by shortlisting our most significant sites for our global operations, also considering their total insured value.
- GHG Inventory Analysis: We used our existing internal analysis to evaluate emissions across our operations, helping us understand the sources and magnitudes of our emissions.
- Physical Risks Identification: We then conducted a comprehensive assessment of climate-related physical risks by identifying potential hazards such as floods, heatwaves, and windstorms, particularly under the high-emission climate scenario (4.0°C). This involved evaluating the exposure and sensitivity of our assets and activities to these hazards.
- Transition Risks and Opportunities: We assessed climate-related transition risks and opportunities within our operations and value chain by identifying key transition drivers related to a 1.5°C climate scenario. We then evaluated how our activities and financials might be exposed to these variables, with related quantifications of gross transition risks or opportunities.
- Risk Assessment: We analyzed historical data, scientific research, and expert opinions to determine the probability and characteristics of potential catastrophic events in specific areas. For relevant risks, we evaluated their potential impacts both with and without mitigation actions, considering, for instance, strategic investments in renewable energy and enhancing energy efficiency.
- Exposure Analysis: We identified and quantified the assets that could be at risk due to climate events, for example, buildings, infrastructure, inventory, and other physical or financial assets.
- Vulnerability Analysis: We assessed the vulnerability of exposed assets, to understand how different asset types respond to hazards and to estimate their susceptibility to damage or loss.
- Event Simulation: We simulated the potential impact of events by combining hazard characteristics, such as intensity and duration, with asset vulnerability to estimate possible losses.
- Loss Estimation: We calculated expected losses in terms of financial impact, including property damage, business interruption, liability claims, and other relevant factors.

Assessment of Climate-Related Hazards

Our company utilizes Climate Risk Assessment (CRA) methodology and models of an external provider to quantify both physical and transition risks and opportunities across various time horizons. For physical risks, these are linked to the expected lifetime of assets, strategic planning, and capital allocation. The identification of climate-related hazards and assessment of exposure and sensitivity are informed by high-emission climate scenarios and relevant regional climate projections. This process involves detailed analysis using climate models to evaluate the potential frequency and severity of hazards. We systematically assess the exposure and sensitivity of our assets and business activities by considering geographic, operational, and temporal factors:

- Likelihood: Evaluating the probability of occurrence for each identified hazard based on historical data and climate models.
- Magnitude: Assessing the potential severity of each hazard and its scale of impact on our operations and assets.
- Duration: Considering the expected duration of each hazard to understand potential long-term impacts on our business.
- Geospatial Coordinates: Incorporating geospatial data to analyze specific locations of our operations and supply chains, identifying vulnerabilities based on geographic exposure to climate-related hazards.

This structured approach enables us to systematically assess the extent to which our assets and business activities may be exposed to these hazards. Our analysis of physical climate-related risks is based on geospatial coordinates specific to our locations, allowing an assessment of vulnerabilities.

Transition Risks and Opportunities Identification

We implemented a comprehensive process to identify and quantify transition risks and opportunities within our operations and across our value chains. We evaluate the likelihood of potential transition events occurring, analyze the magnitude of their impact on our assets and business activities, and consider the duration over which these impacts may unfold. This involves several key steps:

- Identification of Climate Transition Drivers: We identified potential transition drivers, such as increased taxes on Scope 1 greenhouse gas emissions, the substitution of existing products with lower emission options, changing customer behavior, and shifts in consumer preferences. This identification spans short-, medium-, and long-term horizons.
- Informing the Identification and Assessment: Our identification of transition drivers and the assessment of exposure are informed by climate-related scenario analysis. We utilized a scenario consistent with the Paris Agreement, particularly aiming to limit climate change to 1.5°C versus pre-industrial levels.
- Key Forces and Drivers: In our scenario analysis, we consider several critical forces and drivers impacting our operations and strategic planning, including (but not limited to) policy assumptions, which involve analyzing potential impacts of regulatory frameworks and climate policies that may emerge in response to climate change; macroeconomic trends, which consider economic factors such as GDP growth, changes in consumer spending patterns that influence market demand, or changes in energy consumption patterns towards renewables; energy usage and mix, which evaluate shifts in energy consumption patterns and the transition to renewable energy sources; and technology assumptions, which consider advancements in technology that may impact our industry, including innovations in energy efficiency and carbon capture solutions.

By employing this range of scenarios, we ensure a comprehensive understanding of the potential risks and opportunities that climate change may present. These transition risks and opportunities are relevant to our company because they directly influence our strategic positioning in a low-carbon economy, impact our compliance with regulatory frameworks, and affect our reputation among stakeholders who prioritize sustainability. By proactively managing these risks, we can enhance our competitive advantage and drive innovation.

Results

The resilience analysis indicates that we are well-positioned to adjust and adapt our strategy and business model to climate change, with important aspects including managing assets, shifting products and services, and demonstrating resilience through securing ongoing access to finance in the future. For the time horizon until 2050, we found that the impact of physical risk on our sites is limited under a 4°C scenario. The analysis of transition risks has provided valuable insights that will inform our ongoing strategic planning and adaptation efforts. Moving forward, we will work on linking the resilience analysis with our transition plan to even more strongly integrate climate-related issues into our decision-making and strategy.

Our Strategic Approach

Our strategic approach aims to integrate climate considerations into our business practices. Additionally, we embed sustainability into our product development and market strategies. By prioritizing innovation and sustainable practices, we aim to enhance our resilience against climate-related risks while capturing opportunities from the transition to a low-carbon economy. Our commitment to sustainability aligns with global climate initiatives and drives long-term growth and competitiveness.

While our resilience analysis forms a foundational framework for managing climate-related risks, we recognize the uncertainties in predicting future climate conditions and regulatory landscapes. We are actively working to enhance our ability to adapt to these uncertainties, by focusing on supply chain sustainability and energy efficiency and reducing our carbon footprint as part of our inaugural transition plan. Additionally, while we have defined the time horizons, we are not yet aligned with the expected lifetime of our assets, strategic planning horizons, and capital allocation plans. We will be exploring ways to better integrate these aspects into our long-term planning and decision-making processes. Furthermore, we plan to enhance accuracy by conducting our analysis at the individual site level, rather than grouping sites close together.

Finally, we are also developing a comprehensive risk management strategy to strengthen our capacity to adapt to climate-related challenges and opportunities. More details on the actions and resources allocated to climate initiatives can be found in section **E1-3**.

Climate-related considerations in compensation

Climate-related considerations are integral to the remuneration of our members of the administrative and management bodies. Particularly, the performance of the Executive Board is assessed against greenhouse gas (GHG) emission reduction targets as reported under Disclosure Requirement **E1-4**.

In the current reporting period, a percentage of the remuneration recognized is directly linked to climate-related considerations. This includes the ongoing integration of sustainability targets into the Long-Term Incentive Plan (LTIP) for Executives, including the Executive Board. The first LTIP target including GHG emissions was set in fiscal year 2022, focusing on Scope 1 and 2 emissions, with an evaluation timeframe covering 2022, 2023, and 2024. In 2023, we established a new LTIP target for the period of 2023 to 2025, and in 2024, we set another target for 2024 to 2026. Each target aims for absolute emission reductions, with the target values increasing annually. We are currently discussing the proposal for the 2025-2027 targets. Potential payout for the first evaluation timeframe for the Executive Board will occur in 2026 and going forward respectively. The climate-related considerations factored into the remuneration include specific targets for scope 1 and 2 GHG emissions reductions, which are aligned with our commitment to reach the Science Based Targets initiative (SBTi) approved 1.5°C near-term goals for 2030. The Executive Board is responsible for overseeing the implementation of climate protection targets. The Merck Sustainability Board regularly reviews the progress of performance on the targets. This board, led by the Chief Sustainability Officer, ensures alignment between the corporate sustainability strategy and the individual business strategies, thus reinforcing the commitment to climate-related performance.

The integration of climate-related targets into the remuneration framework reflects our commitment to sustainability and the importance of leadership accountability in achieving our climate objectives. For 2024 the climate-related remuneration of the Executive Board cannot be determined as the LTIP 2022 will only be payed out in 2026.

Our transition plan for climate change mitigation (E1-1)

This year marks the development of our inaugural transition plan, reinforcing our commitment to climate change mitigation in line with the Paris Climate Agreement. We aim to reduce our direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions by 50% each by 2030, using 2020 as the base year. In addition, we have pledged to lower our indirect emissions along the entire value chain (Scope 3) by 52% per euro value added, also using 2020 as the baseline. By 2030, we aim to cover 80% of our purchased electricity with renewable sources. Our strategy encompasses a comprehensive approach that includes reducing process emissions, enhancing energy efficiency across our operations, and significantly increasing our use of renewable energy. These targets aim to align our operations with the global efforts to limit warming to 1.5°C, as outlined in the Paris Agreement.

Our transition plan is currently undergoing evaluation and inclusion in our business sector strategies. This process is ongoing, and all sector business strategies are and will be approved by the Executive Board to ensure that they are aligned with our sustainability objectives and to keep us on track to achieve our targets.

To achieve our greenhouse gas (GHG) reduction targets (details on these targets can be found in section **E1-4**), we are implementing essential decarbonization levers such as energy management, process emissions reduction, material efficiency, mode shift, renewable energy purchase and supplier decarbonization (more information can be found in our action plan under **E1-3**).

Furthermore, we are working on processes to mitigate against the risks of potentially 'locked-in' greenhouse gas emissions. This involves a thorough qualitative assessment of our relevant facilities to identify potential locked-in emissions that could jeopardize our greenhouse gas reduction targets. The two identified facilities, a gas turbine at our site in Darmstadt and a gas engine at our site in Gernsheim, may significantly impact our GHG emission reduction targets by contributing to overall emissions levels and driving transition risks associated with regulatory changes and market developments. As an initial approach, we aligned ourselves with the EU Emissions Trading System (EU-ETS) during the reporting year and identified these greenhouse gas-intensive facilities that fall under the EU-ETS scheme. To manage these facilities effectively, we will review the implementation of specific strategies. At the same time, we are already working on energy efficiency programs.

We are currently integrating our transition plan into our business strategy and financial planning to ensure alignment with our sustainability goals. Our company does not currently create an investment plan in the sense of the EU Taxonomy for transforming taxonomy-eligible into taxonomy-aligned economic activities. For this reason, aligning the transition plan with such a plan is not possible. We intend to conduct regular reviews to monitor our progress and adjust strategies to ensure we achieve our sustainability goals. We included capital expenditures (CapEx) and operational expenditures (OpEx) in our strategic planning and allocated resources strategically within the business areas to advance our initiatives for 2024/2025, with the intention of ensuring immediate progress in achieving our sustainability goals. Additionally, we are working to provide the necessary investments to drive the long-term transformation and resilience of our entire business activity within the framework of our transition plan. The Climate Benchmark Standards Regulation is not applicable to us, as we are not institutional investors.

The first elements of our transition plan are already being implemented. The individual measures are regularly evaluated to ensure long-term support for our sustainability goals. This includes regular assessments of our progress based on established metrics. Furthermore, we gain insights through collaboration with stakeholders, which are incorporated into our strategies. We are committed to transparency in our reporting and inform about our successes and challenges in achieving our sustainability goals.

Our short-term goal for 2030 includes a targeted reduction of Scope 1 and Scope 2 emissions by 50% each through initiatives such as NF_3 reduction, N_2O recycling, and the comprehensive use of renewable energies. By 2040, we aim for climate neutrality by maximizing renewable energy generation at our sites and minimizing process emissions. Our commitment also extends to Scope 3, where we expect significant reductions through dematerialization, circular economy, and continuously improved supply chain partnerships. Details of our action plans can be found in section **E1-3**.

In developing this first iteration of our transition plan, we engaged with a wide range of stakeholders to ensure a comprehensive and inclusive approach. This involved collaboration with all business sectors and key functions such as procurement, enabling us to integrate diverse perspectives and expertise. We conducted detailed energy assessments for representative sites and explored multiple GHG pathway scenarios to identify the most effective strategies for achieving our sustainability goals.

Our policies in connection with climate change mitigation and climate change adaptation (E1-2)

The policies listed below address the sustainability aspects of climate change mitigation and energy efficiency. Although we have yet to integrate the subtopic of climate change adaptation into our policies, we have taken an initial step by conducting our climate resilience analysis, which we aim to build upon in the future.

The EHS Policy establishes measurable targets for reducing greenhouse gas (GHG) emissions and promotes energy efficiency initiatives across our operations. Complementing this, the Air Emissions Standard sets protocols for monitoring and reducing air emissions, with a strong focus on adopting cleaner technologies to lower GHG emissions. To address specific emissions concerns, the Emissions of Refrigerants Standard regulates the use of refrigerants, emphasizing the importance of leak detection and the transition to low-global warming potential (GWP) alternatives to minimize emissions. Additionally, our Energy Management Standard is dedicated to improving energy efficiency and managing energy consumption, aiming to reduce overall carbon emissions. It includes specific internal guidelines that outline best practices for energy efficiency, such as conducting regular energy audits to identify inefficiencies and implementing corrective measures aimed at reducing energy use. We also recognize the importance of sustainable practices throughout our supply chain, which is why our Supplier Code of Conduct holds suppliers accountable for their environmental practices. This code requires suppliers to report their emissions and implement sustainable practices to align with our environmental goals.

EHS Policy	
Connection to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; energy
Key contents	The basis of our operational environmental management is the Group-wide EHS policy (Environment, Health and Safety). The policy formulates our responsibility to minimize the negative environmental impact associated with our business activities and to protect the health and safety of our employees, customers, and contractors. It specifies our commitment to work in such a way that we reduce or eliminate risks to the environment, human health and safety. The policy is continually monitored and part of our EHS management system. We are certified according to ISO 14001. The compliance with the requirements of ISO 14001 is reviewed annually as part of external surveillance and/or recertification audits. We have established robust processes and procedures to ensure compliance with regulations. We provide mandatory EHS training courses for our employees.
Scope of application	The policy applies Group-wide to our own operations and to the upstream and downstream value chain.
Accountability	Chair of the Executive Board and CEO.
Third-party standards/initiatives	The policy is based on the principles of the UN Global Compact and the Responsible Care® Global Charter. It is aligned with the ISO 14001 and 45001 standards.
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees and customers.
Availability	The policy is available internally on the intranet and publicly on our website.

Air Emissions Standards	
Connection to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation
Key contents	The policy defines our global guidelines for minimizing potential negative impacts associated with air emissions at our sites worldwide.
Scope of application	The policy applies Group-wide at all sites.
Accountability	Managing Director or Site Manager/Director, or qualified, responsible employees (e.g., EHS staff, facility management staff).
Third-party standards/initiatives	The policy is based on ISO 14001.
Consideration of stakeholder interests	New EHS Standards and major updates are discussed with internal stakeholders, mainly Business Sectors. EHS Standards are regularly reviewed.
Availability	The policy is available on the intranet.

Emissions of Refrigerants Standard	
Connection to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation
Key contents	The policy establishes binding requirements for the avoidance of refrigerant emissions across all areas of the company. This standard is to be implemented through specific global or local procedures by business sectors and enabling functions.
Scope of application	The policy applies Group-wide at all sites.
Accountability	Managing Director or Site Manager/Director, or qualified, responsible employees (e.g., EHS staff, facility management staff).
Third-party standards/initiatives	The policy is based on ISO 14001.
Consideration of stakeholder interests	New EHS Standards and major updates are discussed with internal stakeholders, mainly Business Sectors. EHS Standards are regularly reviewed.
Availability	The policy is available on the intranet.

Energy Management Standard	
Connection to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Energy; climate change mitigation
Key contents	The policy specifies binding requirements for energy management in all areas of the company. This standard is to be implemented through specific global or local procedures by business sectors and enabling functions.
Scope of application	The policy applies Group-wide at all sites.
Accountability	Managing Director or Site Manager/Director, or qualified, responsible employees (e.g., EHS staff, facility/energy management staff).
Third-party standards/initiatives	The policy is based on ISO 50001.
Consideration of stakeholder interests	New EHS Standards and major updates are discussed with internal stakeholders, mainly Business Sectors. EHS Standards are regularly reviewed.
Availability	The policy is available on the intranet.

Supplier Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; energy
Key contents	The policy describes the expectations to our suppliers and sales intermediates regarding to human and labor rights, occupational health and safety, ethics, business integrity, protection of the environment, animal welfare, as well as continuous improvement and supplier management. A standardized process has been set up to ensure that our suppliers recognize the policy. Group Procurement is responsible for integrating sustainability requirements into the relevant phases of our procurement and supplier management processes. Since 2023, the policy has been reflected in the General Terms & Conditions of Purchase.
Scope of application	The policy applies globally to all our providers of goods and/or services (“Suppliers”) and to sales intermediates (e.g., dealers, distributors, wholesalers, and resellers).
Accountability	Chief Procurement Officer and Group General Counsel.
Third-party standards/initiatives	The policy considers, amongst others, the UN Global Compact, the United Nations Guiding Principles on Business and Human Rights, the ILO core labor standards, the EU Conflict Minerals Regulation (EU) 2017/821, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Sec. 1502, and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas, the Green House Gas Protocol, ISO 50001 on Energy Management, the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Ellen MacArthur Foundation, the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, the ETS123 Appendix A and the US ILAR guide’s last edition.
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders and external experts.
Availability	The policy is available internally on the intranet and publicly on our website. The policy is referred to in our orders via a link to the General Terms and Conditions of Purchase; it is also embedded in new or amended contracts.

Our actions and resources in relation to our climate change policies (E1-3)

In alignment with our climate change policies outlined in **E1-2**, we are committed to addressing climate change through a comprehensive transition plan that adheres to the Paris Climate Agreement. This plan encompasses a range of strategic initiatives aimed at significantly reducing our greenhouse gas emissions and enhancing our sustainability practices. These projects cover upstream, our own operations and downstream value chains. Our actions focus on multiple decarbonization levers: energy management, process emissions reduction, material efficiency, mode shift, renewable energy purchase and supplier decarbonization program. For specific targets related to our climate change mitigation efforts, please refer to section **E1-4**. Not all climate mitigation projects are reflected in the action plan below; only key examples per decarbonization levers are highlighted. The total values for all emission reduction projects per sector give a complete picture of the overall decarbonization taking place. To address emissions in our supply chain, we have implemented a supplier decarbonization program that promotes reduction initiatives beyond our direct control. This program focuses on assessing and enhancing our suppliers' compliance with the Science Based Targets initiative, increasing the share of renewable electricity used by our suppliers and educating them on emission reduction leavers. While it enables us to track the maturity levels of our suppliers, the reduction impact remains unquantifiable at this stage, as emissions are currently reported based on industry averages rather than primary data. We anticipate that this initiative will have a significant positive effect.

Initiatives in the Life Science business sector

- Energy management: The EDISON program focuses on improving energy efficiency, achieving a reduction of 3,840 tons of CO_2eq in 2024. This program enhances operational efficiency by optimizing energy use in our facilities.
- Process emissions reduction: Our Process Gas Reduction initiative (Freon) reduces our reliance on high-GWP fluorinated carbons, contributing to our overall GHG targets with a Scope 1 reduction of 12,655 tons of CO_2eq in 2024 compared with 2023.
- Material efficiency: The Material Efficiency program focuses on improving yield and reducing production waste in our manufacturing. This contributes to Scope 3 Category 1 reductions. For example, at our Danvers, USA facility, a process improvement resulted in reduced scrap (and thus reduced need for purchased goods) in the manufacturing of our Mobius Single-Use products, avoiding 240 tons CO_2eq in 2024.
- Mode shift: Our Mode Shift program reduces emissions from logistics by focusing on use of sea freight instead of air freight. By the end of September in 2024, this program reduced Scope 3 emissions by 1,862 tons of CO_2eq in 2024 compared with the previous year.
- Time horizons for completion of the above-mentioned projects: The key actions listed under Mode Shift is expected to be implemented by end of 2025, and Material Efficiency by end of 2027. Our Energy Management program is funded through 2030 and does not currently have an end date. Once these time horizons are reached, these programs will remain implemented for continued reductions. Our Process Emissions reduction initiative is expected to be fully implemented by end of 2029.
- Total values for emission reduction projects in Life Science (2024): 19,678 tons of CO_2eq
- Logic/methodology to calculate expected reduction (2024): The reduction for these projects will be determined using various methods. For Energy Management, we factor in projects that were completed in 2024, calculate the expected energy savings per utility, and multiply by the site-specific emission factors to derive the emissions savings. For Process Emissions Reductions, because this is a multi-year program and series of projects, we calculate the absolute reduction in process emissions compared with our 2020 baseline. For Mode Shift, we identify the trade lanes and volumes that were converted from air to ocean freight and calculate the volume-adjusted difference in emissions compared with the previous year. For Material Efficiency, we identify the cost savings resulting from reduction of raw materials purchased to make the same quantity of finished goods and multiply by the raw material's corresponding EEIO emission factor.
- Expected total values for emission reduction projects in Life Science (2025): 15,907 tons of CO_2eq.

- Logic/methodology to calculate expected reduction (2025): The expected reduction for these projects is calculated by subtracting the total projected emissions reductions for 2025 from the total reductions for 2024. This difference shows the stand-alone emissions reduction for 2025. We determine total reductions by identifying all active initiatives in the respective year, estimating how much emissions they will reduce based on the base year (2020), and adjust for business growth in that year.

Initiatives in the Healthcare business sector

- Energy management: We continue to invest in on-site photovoltaic capacity. In 2024, among others we executed a photovoltaic investment in our Jakarta (Indonesia) site as further example of our global ambitions. As a result of this project, we expect to reduce 12% of our site's emissions. Additionally, we optimize HVAC (heating, ventilation, air conditioning) in our operations network. In the following years, we are committed to continue to invest in climate neutrality, for example, in energy-demanding utilities like water generation.
- Time Horizons for completion of the above-mentioned projects: Continual implementation plan, HVAC (heating, ventilation, air conditioning) and on-site photovoltaics. We are at the end of the implementation cycle, the mentioned water utilities projects will start as of 2025 and will be implemented in the next 3-5 years.
- Logic/methodology to calculate expected reduction (2024): The emission reduction reflects actual reductions in the reporting year. It compares emissions in 2024 with 2023.
- Total values for emission reduction projects in Healthcare (2024): 2,000 tons of CO_2eq
- Expected total values for emission reduction projects in Healthcare (2025): 2,423 tons of CO_2eq
- Logic/methodology to calculate expected reduction (2025): The expected reduction for these projects is calculated by subtracting the total projected emissions reductions for 2025 from the total reductions for 2024. This difference shows the stand-alone emissions reduction for 2025. We determine total reductions by identifying all active initiatives in the respective year, estimating how much emissions they will reduce based on the base year (2020), and adjust for business growth in that year.

Initiatives in the Electronics business sector

- Process emissions reduction: We were implementing NF_3 abatement projects at our Ulsan, South Korea, and Hometown, USA, sites from our Specialty Gases business field to reduce nitrogen trifluoride emissions. Those projects achieved a significant reduction of 385,743 tons of CO_2eq in 2024.
- Time horizons for completion of the above-mentioned projects: The key milestones of these projects were achieved in 2024.
- Total values for emission reduction projects in Electronics (2024): 385,743 tons of CO_2eq
- Logic/methodology to calculate expected reduction (2024): The emission reduction reflects actual reductions in the reporting year. It compares the NF_3 related process emissions in 2023 with 2024 and is net of growth.
- Expected total values for emission reduction projects in Electronics (2025): 195,118 tons of CO_2eq
- Logic/methodology to calculate expected reduction (2025): The expected reduction for 2025 is based on key projects that are anticipated to reach milestones that year, with their total contributions outlined. The most significant projects include the reduction of N_2O process emissions and sourcing additional renewable electricity contracts. Additionally, we will benefit from a full year's contribution from the previously mentioned NF_3 abatement project in Ulsan.

Contribution of decarbonization levers by scope to achieve our targets (2020–2030)

Scope 1 Target: Reduce Direct Emissions by 50% by 2030 (2020 Baseline)

- The primary decarbonization lever is addressing process emissions, particularly NF_3.
- From 2020 to 2024, this initiative contributed to a 53% reduction in Scope 1 emissions. We have achieved our goal ahead of schedule and are working to stabilize the results.

Scope 2 Target: Reduce Indirect Emissions by 50% by 2030 (2020 Baseline)

- The key decarbonization lever is the procurement of renewable electricity, such as through Virtual Power Purchase Agreements (VPPAs).
- From 2020 to 2024, we reduced our Scope 2 emissions by 30%.

Scope 3 Target: By 2030, we want to reduce our emissions along the entire value chain (Scope 3) by 52% in relation to our gross profit. (2020 Baseline)

- The primary decarbonization lever is our Supplier Decarbonization Program, designed to reduce emissions across our supply chain by promoting initiatives beyond our direct control.
- The program focuses on assessing and enhancing supplier compliance with the Science Based Targets initiative, increasing the share of renewable electricity used by suppliers and educating suppliers on emission reduction levers to drive actionable change.
- While this program tracks the maturity levels of our suppliers, the reduction impact cannot yet be quantified, as emissions are currently calculated using industry averages rather than primary data. Nevertheless, we anticipate that this initiative will yield a significant positive impact in the long term.

Financial resources for climate mitigation

In 2024, we allocated € 46 million of capital expenditure (CapEx) to the previously mentioned actions in relation to process emissions, which are included in the respective lines of balance sheet. No significant operating expenditures (OpEx) were allocated. For 2025, we intend to allocate € 18 million of CapEx and no significant OpEx.

In 2024, we allocated € 10 million of capital expenditure (CapEx) to the previously mentioned actions in relation to energy management which are included in the respective lines of balance sheet. No significant operating expenditures (OpEx) were allocated. These allocations comply with the key performance indicators outlined in Commission Delegated Regulation (EU) 2021/2178. For 2025, we intend to allocate € 12 million of CapEx and no significant OpEx.

Not all climate mitigation projects are reflected in the figures above; only our most important actions for decarbonization levers are included.

Climate adaptation measures

While our primary focus is on climate change mitigation, we recognize the importance of adaptation. We have taken initial steps by investing in insurance premiums to protect against physical risks associated with climate change. This proactive measure enhances our resilience in the face of climate-related challenges.

Resource availability and allocation

Our ability to implement these actions depends significantly on the availability and allocation of resources. Ongoing access to finance at an affordable cost of capital is critical for the execution of our strategies. This includes adjustments to supply and demand changes, related acquisitions, and significant research and development (R&D) investments. Ensuring resource availability is a priority to maintain progress toward our climate objectives. To achieve our climate mitigation goals, we are currently exploring state-of-the-art technologies available in the market, as they will be essential for enhancing our operational efficiency and implementing innovative solutions.

Monitoring and reporting

We have established mechanisms to monitor progress, ensuring alignment with climate objectives. Regular updates are provided to stakeholders. The collection of metrics related to climate protection has not been separately validated by an external party.

Our targets in connection with climate change mitigation and climate change adaptation (E1-4)

The goals outlined below concentrate on the sustainability matters of climate mitigation, energy efficiency. While we have not yet incorporated climate adaptation into our targets, we have made strides through our resilience and climate scenario analysis, which we plan to further develop. For detailed information on our methodologies, metrics, and progress against our targets, please refer to **E1-6**. Additionally, for a comprehensive overview of our decarbonization levers, see **E1-3**, and for an overview of our policies, see **E1-2**.

Scope 1 Absolute Emissions Target	
Reference to material impacts, risks and/or opportunities	Identifiers E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; Energy
Target	We want to reduce our direct greenhouse gas emissions (Scope 1) by 50% by 2030.
Reference value/year	1,827,000 tons (2020)
Methods	This climate target is based on SBTi criteria, the absolute contraction approach, and the Science-based Target Setting Tool provided by SBTi. In April 2022, the initiative validated and approved our target for 2030. This is a science-based target, compatible with limiting global warming to 1.5°C.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	Our Scope 1 and 2 reduction targets used to be combined, and are now separated.
Performance/Key figures	We monitor our Scope 1 on a quarterly basis using monthly data collected via our central EHS data collection tool. In 2024, we reduced our Scope 1 emissions by 378,315 tons of CO_2eq, bringing them down to 858,053 tons. We reduced our scope 1 emissions by 53% (base year 2020), achieving our target early, and we are working on stabilizing the results. The 1.5°C aligned reference target value for Scope 1 GHG emissions is 913,561 tons of CO_2eq. Please see **E1.6** for more details on our performance.

Scope 2 Absolute Emissions Target	
Reference to material impacts, risks and/or opportunities	Identifier E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; Energy
Target	We want to reduce our indirect greenhouse gas emissions (Scope 2) by 50% by 2030.
Reference value/year	325,000 tons (2020)
Methods	This climate target is based on SBTi criteria, the absolute contraction approach, and the Science-based Target Setting Tool provided by SBTi. In April 2022, the initiative validated and approved our target for 2030. This is a science-based target, compatible with limiting global warming to 1.5°C.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	Our Scope 1 and 2 reduction targets used to be combined, and are now separated.
Performance/Key figures	We monitor our Scope 2 emissions on a quarterly basis using monthly data collected via our central EHS data collection tool. The reduction of our Scope 2 emissions is progressing positively and meets expectations. In 2024, we reduced our Scope 2 emissions by 138 tons of CO_2eq, bringing them down to 227,070 tons, which is equivalent to a reduction of 30% compared to the base year 2020. The 1.5°C aligned reference target value for Scope 2 GHG emissions is 162,349 tons of CO_2eq. For more details on our performance, please refer to **E1.6**.

Scope 3 Intensity Emissions Target	
Reference to material impacts, risks and/or opportunities	Identifier E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation
Target	By 2030, we want to reduce our emissions along the entire value chain (Scope 3) by 52% in relation to our gross profit (to 230 metric tons CO_2eq per € million gross profit). We plan to achieve a significant reduction of absolute scope 3 emissions by 2030 compared with the base year 2020.
Reference value/year	480 metric tons CO_2eq per € million gross profit (2020)
Methods	The economic intensity target was set up based on SBTi criteria and the Science-based Target Setting Tool provided by SBTi. In April 2022, the Science Based Targets initiative (SBTi) validated and approved this target for 2030.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	No changes were made.
Performance/Key figures	We monitor our Scope 3 emissions annually. In 2024, we have achieved 359 metric tons CO_2eq per € million gross profit. The target setup is based on the Science Based Targets initiative (SBTi) criteria, which offers three approaches: Absolute Contraction Approach, Economic Intensity Approach, and Physical Intensity Approach.
	For our target, we selected the Economic Intensity Approach, which aligns with the SBTi GEVA (Gross Emissions per Value Added) methodology. The 52% reduction has been calculated using the Science-based Target Setting Tool provided by SBTi.

Renewable Energy Target	
Reference to material impacts, risks and/or opportunities	Identifier E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; Energy
Target	We want to cover 80% of our purchased electricity with renewable energies by 2030. By increasing the share of renewable electricity, we support our goal to reduce Scope 2 emissions. We assume that there will be enough renewable energy at an acceptable price point by 2030.
Reference value/year	No actual reference year as the target looks at overall coverage of the procured energy – year not applicable.
Methods	The methodology for achieving this target considers the varying ease of purchasing reliable "green" electricity products across different countries. In some regions, it is relatively straightforward to acquire such products, while in others, it presents significant challenges due to limited availability or capacity constraints. The 80% target reflects these considerations. This is not a Science based Target initiative (SBTi) approved target.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	No changes were made.
Performance/Key figures	In 2024, we have achieved 52.2% coverage of purchased electricity with renewable energies.

Climate Neutrality Target	
Reference to material impacts, risks and/or opportunities	Identifier E1-NI-01; E1-NI-02; E1-NI-03; E1-NI-04; E1-NI-05; E1-NI-07
Material sustainability matter	Climate change mitigation; Energy
Target	By 2040, we want to achieve climate-neutrality along the entire value chain.
Reference value/year	No actual reference year as the target looks at overall coverage of the procured energy – year not applicable.
Methods	After reaching our mid-term 2030 SBTi approved targets, we will continue to pursue our comprehensive approach to further reduce our GHG emissions along the entire value chain, based on our current transition plan at that time. We assume that our suppliers and clients will keep working on their own targets and fulfill them. We are aligning our methodologies with (inter)national policy goals such as the EU Green Deal. This is not a Science based Target initiative (SBTi) approved target.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	No changes were made.
Performance/Key figures	We monitor this target annually. Please see **E1.6** for more details on our performance.

We have considered future developments by continuously monitoring emerging trends and innovations, as detailed in our transition plan (see **E1-1**), which will inform our strategies and potentially impact both our GHG emissions and emissions reductions. We additionally report our Scope 1, 2 and 3 targets under **ESRS 2 (SBM-1)** as it is one of our strategic sustainability key indicators used to gauge the success of our climate mitigation efforts.

Energy consumption and mix (E1-5)

Understanding our energy consumption and the energy sources contributing to our energy mix is crucial for reducing our environmental impact. Below, we provide an overview of our current energy consumption, the share of renewable and non-renewable energy sources, and the steps we are taking to improve our energy efficiency. By analyzing our energy consumption and mix, we aim to identify opportunities for improvement to advance our commitment to climate neutrality and align with global sustainability targets. As per to the ESRS definition, all our business activities are considered to have a high climate-impact.

Energy consumption and mix

The following table outlines our total energy consumption in MWh, disaggregated by source:

in MWh	2024	2024 thereof: Merck KGaA
(1) Fuel consumption from coal and coal products		
(2) Fuel consumption from crude oil and petroleum products	46,448	7,866
(3) Fuel consumption from natural gas	1,148,361	59,260
(4) Fuel consumption from other fossil sources		
(5) Consumption of purchased or acquired electricity, heat, steam, and cooling from fossil sources	528,790	9,152
(6) Total fossil energy consumption	1,723,598	76,278
Share of fossil sources in the total energy consumption (%)	**72.0**	100
(7) Consumption from nuclear sources	98,936	161
Share of consumption from nuclear sources in total energy consumption (%)	**4.1**	–
(8) Fuel consumption for renewable sources, including biomass (also comprising industrial and municipal waste of biologic origin, biogas, renewable hydrogen, etc.)	31,242	–
(9) Consumption of purchased or acquired electricity, heat, steam, and cooling from renewable sources	524,673	–
(10) The consumption of self-generated non-fuel renewable energy	16,271	–
(11) Total renewable energy consumption	572,186	–
Share of renewable sources in total energy consumption (%)	**23.9**	–
Total energy consumption	**2,394,720**	76,439

Our sites collect energy data through our central reporting tool for EHS data (Environment, Health, and Safety). This centralized approach is intended to ensure consistent and accurate reporting across all sites.

The following methodological details apply to all energy consumption metrics:

- Fuel consumption from coal and coal products, crude oil and petroleum products, natural gas, and other fossil sources: Fuel consumption data are derived directly from reported figures, ensuring accuracy without reliance on estimates.
- Consumption of purchased or acquired electricity, heat, steam, and cooling from fossil sources: This includes energy sourced from third parties, tracked through contracts and invoices.
- Total consumption of fossil energy: This is calculated as the sum of all the fossil energy sources listed above.
- Consumption from nuclear sources: The calculation is based on estimates, utilizing data from the scientific online publication "Our World in Data."
- Fuel consumption for renewable sources, including biomass: This metric includes energy from renewable materials, collected at the sites.
- Consumption of purchased or acquired electricity, heat, steam, and cooling from renewable sources: This includes renewable energy sourced from third parties, also tracked through contracts and invoices.
- Self-generated renewable energy (excluding fuels): This refers to renewable energy generated on-site, such as solar or wind energy, determined through production metrics.

Energy production

The energy generation associated with our activities is summarized in the following table:

in MWh	2024	2024 thereof: Merck KGaA
Renewable energy production	43,110	5,842
Non-renewable energy production	1,066,229	473,124

The following methodological details apply to all energy generation metrics:

- Renewable energy generation: This metric includes energy generated from renewable sources such as solar, wind, and biomass. The data are collected through energy reports and production metrics from the sites, capturing the amount of renewable energy generated on-site.
- Non-renewable energy generation: This metric includes energy generated from non-renewable sources. The figures are based on actual generation data from the Darmstadt/Gernsheim sites and an estimate for other sites based on their reported energy consumption and an average energy generation efficiency value.

Energy intensity based on net sales

The energy intensity associated with our activities, is summarized in the table below:

in MWh/€ million	2024
Total energy consumption from activities in high climate impact sectors per net sales from activities in high climate impact sectors	113

- Total energy consumption: This figure represents the combined energy used across all activities. The data is directly sourced from energy usage reported by sites via an internal tool, ensuring accuracy without relying on external estimates.
- Net sales: The net sales figures are taken from our annual report, which amounted to € 21,156 million in the fiscal year 2024.
- Energy intensity calculation: Energy intensity is determined by dividing the total energy consumption (in MWh) by net sales (in million euros) generated. This metric enables the assessment of energy efficiency in relation to economic output, enabling meaningful comparisons over time and across operational units.

Our greenhouse gas emissions (gross and net) in the categories of Scope 1, 2 and 3 (E1-6)

Understanding our greenhouse gas emissions is crucial for assessing our environmental impact and enhancing our sustainability initiatives, particularly regarding our goal to reduce emissions. This section provides an overview of our gross greenhouse gas emissions across all three scopes, as well as our total greenhouse gas emissions. By analyzing these emissions, we aim to identify areas for improvement, set meaningful reduction targets, and work toward climate neutrality.

Biogenic CO_2 emissions

The following table outlines the biogenic CO_2 emissions not included in the gross GHG emissions calculations for the year 2024:

in t CO2eq	2024	2024 thereof: Merck KGaA
Gross Scope 1 GHG emissions	12,598	–
Gross Scope 2 GHG emissions	486	–

The methodologies for calculating biogenic CO_2 emissions are as follows:

- Gross Scope 1 GHG emissions: These emissions are calculated based on the total direct emissions from owned or controlled sources, excluding biogenic CO_2 emissions. Data are sourced from operational records and emissions inventories.
- Gross Scope 2 GHG emissions (market-based): This figure reflects the indirect emissions from the consumption of purchased electricity, heat, or steam, calculated using market-based methods. The data are collected from utility bills and energy procurement documents.
- Limitations and uncertainties include partially manual processes at the site level, which pose a risk of erroneous data input, and the early deadlines for year-end reporting, which make it necessary to rely partially on estimates.

Share and types of contractual instruments

The following table provides an overview of the share and types of contractual instruments that we used to procure energy in 2024. The table shows both bundled and unbundled instruments:

in %	2024	2024 thereof: Merck KGaA
Share of energy procured via bundled contractual instruments	19.2	–
bundled contractual instrument: Retail green electricity	5.9	–
bundled contractual instrument: Onsite Power Purchase Agreement (PPA)	–	–
bundled contractual instrument: GEC (Green Energy Certificate)	3.2	–
bundled contractual instrument: GO (Guarantees of Origin)	10.1	–
bundled contractual instrument: NFC (National Framework for Certification)	0.0	–
Share of energy procured via unbundled contractual instruments	26.3	–
unbundled contractual instrument: US-REC (U.S. Renewable Energy Certificate)	4.5	–
unbundled contractual instrument: VPPA (Virtual Power Purchase Agreement)	19.9	–
unbundled contractual instrument: GO (Guarantees of Origin)	–	–
unbundled contractual instrument: I-REC (International Renewable Energy Certificate)	1.8	–
unbundled contractual instrument: TIGR (Tradeable Instrument for Global Renewables)	0.1	–
Total share of procured energy via bundled and unbundled contractual instruments	**45.5**	–

The methodologies for calculating the share and types of contractual instruments are as follows:

- Share of energy procured via bundled contractual instruments: This metric includes the percentage of energy procured through bundled contracts, which provide both energy and associated renewable attributes (certificates). Data are collected from procurement contracts and energy invoices.
- Share of energy procured via unbundled contractual instruments: This metric includes the percentage of energy procured through unbundled contracts, which provide energy separately from their renewable attributes and renewable energy certificates of the same size will be procured separately. Data are collected from procurement contracts and energy invoices.

Assumptions made in calculating these metrics include:

- The classification of contractual instruments as bundled or unbundled is based on the definitions set forth in relevant regulatory guidelines, such as the Green House Gas Protocol for Scope 2, which provides a framework for renewable energy sourcing and accounting.

Gross Scope 1, 2 and 3 GHG emissions and total GHG emissions

The following table shows the gross GHG emissions from Scope 1, 2, and 3, as well as the data on total greenhouse gas emissions for the years 2020, and 2024. It includes milestones and targets, providing a comprehensive overview of our greenhouse gas emissions and the progress made toward achieving our sustainability goals. While our calculations indicate that Scope 3 emissions derived from primary data are minimal, we are committed to continuously improving our data collection processes.

	Retrospective		Milestones and targets	
in t CO_2eq	2020	**2024**	2030	Annual reduction rate until 2030 compared to base year in %
Scope 1 GHG emissions				
Gross Scope 1 greenhouse gas emissions	1,827,123	858,053	913,561	5.0
Percentage of Scope 1 GHG emissions from regulated emission trading schemes (in %)	4	8		
Scope 2 GHG emissions				
Gross location-based Scope 2 greenhouse gas emissions	381,640	385,483		
Gross market-based Scope 2 greenhouse gas emissions	324,698	227,070	162,349	5.0
Significant scope 3 GHG emissions				
Total Gross indirect (Scope 3) GHG emissions[1]	5,104,508	4,482,938		
Purchased goods and services (category 1)	3,040,000	2,470,278		
Cloud computing and data center services	–	–		
Capital goods (category 2)[2]	293,000	371,086		
Fuel and energy-related activities (category 3)	102,528	112,528		
Upstream transportation and distribution (category 4)	264,397	231,580		
Waste generated in operations (category 5)	85,047	26,901		
Business travel (category 6)	32,157	106,060		
Employee commuting (category 7)	89,571	77,061		
Upstream leased assets (category 8)[3]	–	–		
Downstream transportation (category 9)	8,435	7,922		
Processing of sold products (category 10)[4]	–	–		
Use of sold products (category 11)	1,163,923	1,021,008		
End-of-life treatment of sold products (category 12)[5]	23,351	55,816		
Downstream leased assets (category 13)[6]	1,678	1,722		
Franchises (category 14)	–	–		
Investments (category 15)	421	974		
Total GHG emissions				
Total GHG emissions (location-based)	7,313,271	5,726,474		
Total GHG emissions (market-based)	7,256,329	5,568,062		

[1] We plan to achieve a clear reduction of absolute scope 3 emissions by 2030 compared to the base year.

[2] The reported figures contain 95-97% of our total spend. The difference stems from smaller sites that are not integrated in our Group-wide purchase volume data. 2020 data are slightly over-reported (approx. 3%), as the currency conversion factor (USD to EUR) from 2021 was used. Non-categorized spends are distributed pro rate to category 1 and 2.

[3] Already covered under Scope 1 and 2 emissions.

[4] Our company produces a huge variety of intermediate products for various purposes. Due to their many applications and our customer structure, the associated greenhouse gas emissions cannot be tracked in a reasonable fashion.

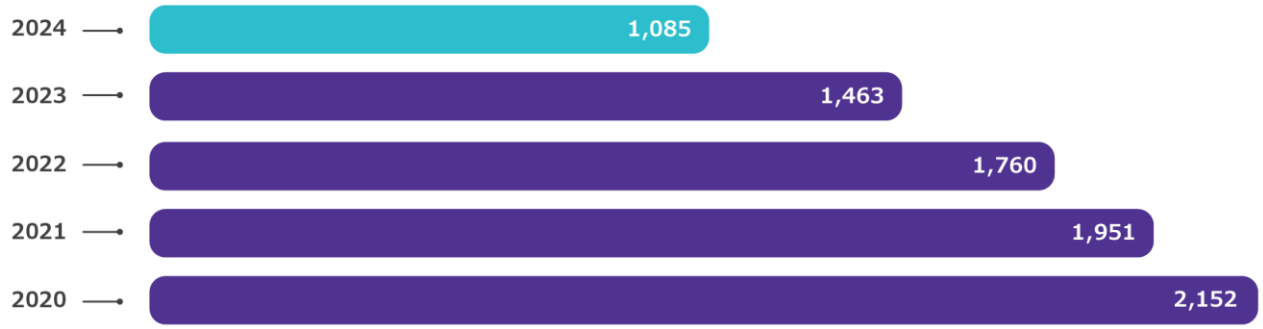
[5] This category is not relevant for us, as we do not operate franchises, i.e. businesses operating under a license to sell or distribute another company's goods or services. Out-licensing in the pharmaceutical sector is not regarded as franchising.

[6] Cloud computing, is a share of scope 3.1 emissions and reported there. It is considered negligible in regard to scope 3.1 emissions.

The GHG inventory covers the majority of our sites under operational control. Especially, the manufacturing sites causing the majority of GHG emissions are covered completely. We have two plants subject to EU-ETS at Darmstadt and Gernsheim in Germany, as well as the Ulsan site in South Korea, which is subject to an emission trading scheme.

Merck KGaA accounted for the following shares of total greenhouse gas emissions: In 2024, its Scope 1 greenhouse gas emissions amounted to 18,413 metric tons of CO_2eq. Its Scope 2 greenhouse gas emissions were 3,416 tons CO_2eq, calculated using the site-based method, and 6,704 tons CO_2eq, calculated using the market-based method. As Merck KGaA has no significant business activities, the Scope 3 greenhouse gas emissions are negligible.

Greenhouse gas emissions in metric kilotons of CO_2eq, Scope 1 and 2



GHG intensity per net sales

The following table outlines the GHG intensity per net sales for the fiscal year 2024:

in t CO_2eq/€ million	2024
Total GHG emissions (location-based) per net sales	271
Total GHG emissions (market-based) per net sales	263

The methodologies for calculating GHG intensity are as follows:

- Total GHG emissions: GHG emissions are calculated using both location-based and market-based methods. The calculations are derived from comprehensive emissions inventories that account for all relevant sources of greenhouse gas emissions across our operations.
- Net sales are equivalent to net sales as stated in the Annual Report, € 21,156 million.
- The GHG intensity is calculated by dividing the total GHG emissions (in metric tons CO_2eq) by the net sales (in million euros). This metric allows us to evaluate the efficiency of our operations in relation to our economic output.

In accordance with the Greenhouse Gas Protocol (GHG Protocol), we distinguish between the following sources when calculating our Scope 1 emissions:

- Stationary combustion: production unit, plant, setup of local plants, for example, through the use of oil or gas
- Mobile combustion: dispensing at own filling stations
- Process-related emissions: physical or chemical processes during internal production or through other industrial processes
- Diffuse emissions: coolants or other gases that are released intentionally or unintentionally

The data basis for emissions from stationary combustion as well as for fuels dispensed at our own filling stations is our energy bills in combination with the corresponding emission factors. We obtain the emission factors from the GHG Protocol. To calculate process-related emissions, we use internal production data in combination with the corresponding emission factors, which we obtain from the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). We account for diffuse emissions by mainly using data from the invoices for the maintenance of our plants and combining these with the corresponding emission factors that we obtain from the IPCC's Sixth Assessment Report.

All calculations are carried out in our central reporting tool for EHS data. In accordance with the GHG Protocol, we distinguish between the sources of purchased or acquired electricity, steam, heat, and cooling when calculating our location-based Scope 2 emissions. We consider steam and heat together.

The data basis for all four sources is made up of our energy bills in combination with the corresponding emission factors. We obtain the emission factors for purchased electricity from the International Energy Agency (IEA) and the U.S. Emissions & Generation Resource Integrated Database (eGRID). The emission factors for steam, heat, and cooling are sourced from the UK Department for Environment, Food & Rural Affairs (DEFRA). We also calculate the market-based Scope 2 emissions in accordance with the GHG Protocol in all four categories. We follow the hierarchy of the GHG Protocol regarding emission factors: We use supplier-specific emission factors reported by our sites, residual mix factors (AIB for Europe, Green-e for the United States), and location-based emission factors. All calculations are carried out in our central reporting tool for EHS data.

We report our Scope 3 emissions according to the 15 categories of the GHG Protocol:

Category 1 includes all upstream emissions from the extraction, production, and transportation of goods and services that were purchased or acquired in the reporting year. Emissions from products are calculated using a spend-based approach based on a procurement data management system (which integrates various ERP systems) and environmentally extended input-output (EEIO) data (source: US Environmentally-Extended Input-Output (USEEIO) Technical Content, United States Environmental Protection Agency). USEEIO provides emission factors on a spend basis for different industrial sectors and does not consider regional differences. Emissions from services are calculated with a spend-based approach based on the same procurement data management system. The calculation method takes into account the emission data of our main suppliers. The procurement system contains 95–97% of our total spend, meaning there is a minor underreporting. This gap is related to our subsidiaries that either do not have their own procurement system or have a very specific system (e.g., a small local ERP system). To further increase accuracy, we are working on a weight-based approach. Our target is to calculate these emissions based on supplier-specific data.

Category 2 includes all upstream emissions from the extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year. As with category 1, emissions are calculated using a spend-based approach based on a procurement data management system (which integrates various ERP systems) and environmentally extended input-output (EEIO) data (source: US Environmentally-Extended Input-Output (USEEIO) Technical Content, United States Environmental Protection Agency). USEEIO provides emission factors on a spend basis for different industrial sectors and does not consider regional differences. The procurement system contains 95–97% of our total spend, meaning there is a minor underreporting. This gap is related to our smaller subsidiaries that either do not have a system or have a very specific system (e.g., a small local ERP system). The target is to calculate these emissions based on supplier-specific data.

Category 3 includes emissions related to the production of fuels and energy purchased and consumed by the reporting company in the reporting year that are not included in category 1 or 2. Data on purchased and consumed fuels (mainly natural gas) and electricity, steam/heat, and cold, which form the basis for calculating category 3 emissions, are collected via our central EHS data management system. To determine upstream emissions of purchased fuels, we multiply the fuel quantities by the well-to-tank emission factors (source: DEFRA, WTT – fuels). Upstream emissions as well as transportation and distribution losses of purchased heat/steam and cold are calculated by multiplying the consumption figures with the respective emission factors

(source: DEFRA; WTT – heat and steam, WTT – heat and steam – district heat and steam, respectively DEFRA; WTT – heat and steam, WTT – distribution of district heat and steam, 5% loss for losses). To calculate emissions from the generation and transport and distribution (T&D) of minor quantities of purchased cold, we use the same emission factors as for heat/steam, as no specific factors are available. Upstream emissions from purchased electricity are determined by multiplying the consumption figures with the respective emission factors (source: DEFRA; WTT – overseas electricity [generation]). Here, electricity purchased from renewable sources is deducted (direct supply of renewable electricity as well as electricity covered by energy attribute certificates). Electricity T&D losses are determined based on the quantities of electricity purchased and country-specific loss factors. The data from the IEA provide the basis for country-specific electricity transmission and distribution losses. In this process, the electricity sourced from renewable sources (direct supply of renewable electricity) is deducted. Emissions from the generation of purchased electricity sold to end-users are not relevant for us because we do not sell electricity.

Category 4 includes the transportation and distribution of products purchased by the reporting company in the reporting year. This refers to transportation and distribution between the company's tier 1 suppliers and its own operations, where the vehicles and facilities are not owned or controlled by the reporting company. Additionally, category 4 includes the transportation and distribution of services purchased by the reporting company in the reporting year. This includes both inbound logistics and outbound logistics, such as for sold products, as well as transportation and distribution between the company's own facilities in vehicles and facilities not owned or controlled by the reporting company. To calculate emissions from these transportation activities, we use a mixed approach. Primary data from logistics service providers are provided by them and integrated into the reporting. If these data are not available, greenhouse gas emissions are calculated by a third-party provider using an energy-based bottom-up approach. For the Life Science business sector, shipment data from forwarders serve as the main data source, while for the Electronics business sector, delivery notes from our own ERP systems form the basis for calculation. For the Healthcare business sector, there are multiple sources: forwarder data as well as data from various ERP systems. These data are consolidated in internal systems together with primary data from suppliers/logistics service providers. The respective shipment data are sent to the third-party provider EcoTransIT and processed there. Processing steps include routing from origin to destination based on zip and port codes, determination of fuel consumption, energy and emission calculation, and summing up all section emissions per mode of transportation. For our Life Science business sector, no data on road transportation for the LATAM and Asia regions are available. Therefore, a spend-based approach is used to estimate these emissions. If data for the entire year is not yet available, appropriate extrapolations based on previous year data are conducted. Currently, we do not consider deliveries from tier 1 suppliers that are not directly paid by us but are delivered to us due to lack of data.

Category 5 includes emissions from the disposal and treatment of waste generated in facilities owned or controlled by us. This also includes the disposal of solid waste and wastewater by third parties. The calculation of emissions from waste generated in operations and disposed of by third parties is based on primary data from our manufacturing sites, collected annually via our central EHS data management system. These data are divided into various waste types, such as solvent waste and soil waste, and distinguished by waste disposal methods, such as waste-to-energy, landfill, or recycling. For the emission factors based on the carbon content of the waste, we use the "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain." This states that recycling and energy recovery are attributed to the organization that uses the recycled material or uses the waste to generate energy. This means emissions from these activities are not included in our greenhouse gas inventory. The carbon content factors are mainly taken from the "2006 IPCC Guidelines for National Greenhouse Gas Inventories." These data are then multiplied with each other. Emissions resulting from the transportation of waste materials are not taken into account. To calculate greenhouse gas emissions from wastewater treatment in third-party municipal or industrial wastewater treatment plants, we use primary data from our manufacturing sites, collected annually via our central EHS data management system. Wastewater quantities are multiplied by the DEFRA emission factor for water treatment.

Category 6 includes emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars.

- Air travel: Based on our flight booking and billing processes, our payment solution service provider supplies detailed data on all flights booked. Greenhouse gas emissions are calculated by atmosfair, a recognized non-governmental organization dealing with climate protection focused on travel.
- Rail travel: Rail travel is considered relevant in some European countries, such as Germany, France, and Spain. In non-European countries, it is considered rather negligible. Currently, data for rail travel are only available for Germany and is provided by Deutsche Bahn AG.
- Rental cars: Emissions data are provided by our global rental car providers on an annual basis. Data on other means of transportation, such as trams, taxis, and buses, are not available. Their impact on our overall emissions is expected to be negligible.
- Hotel accommodation: Emissions from hotel stays are calculated based on the number of hotel stays per country (source: internal ERP system) and the DEFRA emission factors for hotel stays.

Category 7 includes emissions from the transportation of employees between their homes and work. We conduct a global Employee Engagement Survey each year. The Covid-19 pandemic has changed working habits toward a more flexible remote working approach. Given this fact and our ambition toward more transparency and accuracy on greenhouse gas emissions, we have included commuting habits in the employee engagement survey as of 2023. This allows us to build our calculation on a solid basis and extrapolate to the global employee population. This is combined with the assumption of 220 working days derived from the "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain." Emission factors for modes of transport are taken from DEFRA, business travel, and include electric vehicles and working from home.

Category 8 includes emissions from the operation of assets that are leased and that are not already included in our Scope 1 or Scope 2 reporting. Emissions from this category are not relevant for our Scope 3 reporting because leased assets, such as rented offices, labs, or warehouses, are part of our Scope 1 and 2 GHG inventory.

Category 9 includes the transportation and distribution of products sold by the reporting company in the reporting year from the reporting company's operations to end consumers, if not paid for by the reporting company. This also includes retail and storage in vehicles and facilities not owned or controlled by the reporting company. The calculation of category 9 emissions is similar to that of category 4. The emissions are calculated by a third-party provider using an energy-based bottom-up approach. This way, we can provide emissions data for our Healthcare and Electronics business sectors. The downstream data of category 9 from the Life Science business sector is negligible. To ensure the effectiveness of logistic processes, the transport of Life Science products is organized and contracted by us and is therefore covered under category 4.

Category 10 includes emissions from the processing of sold intermediate products by third parties (e.g., manufacturers) after sale by the reporting company. We produce a wide variety of intermediate products for various purposes. Due to the range of potential applications and our customer structure, the related greenhouse gas emissions cannot be tracked in a practical manner. It is difficult to obtain reliable figures. We adhere to the recommendation of the "Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain" of the World Business Council for Sustainable Development, which states: "Chemical companies are not required to report Scope 3, category 10 emissions, since reliable figures are difficult to obtain, due to the diverse application and customer structure."

Category 11 includes emissions from the use of goods and services sold by the reporting company in the reporting year. Internal expert assessments of our extensive and very diverse product portfolio show that for us, "greenhouse gases and products that contain or form greenhouse gases that are emitted during use" are the main driver of greenhouse gas emissions in this category. "Products that directly consume energy (electricity) during use" contribute to a much lesser extent to the overall emissions. "Fuels and feedstocks" as well as indirect use-phase emissions are not relevant for us. "Indirect use-phase emissions" are optional and are not reported by us. Electronics business sector: Among our Electronics product portfolio, there are some specialty gases with high Global Warming Potential (GWP) that are emitted during the use phase. Emissions are calculated based on the technical expertise of internal experts on the percentage of gas quantities that escape the processes at our customers, abatement efficiency, sales volumes, and global warming potentials (source: IPCC, 6th Assessment Report). Besides this, some product control devices consume electricity. Emissions of these devices are calculated based on runtime, average lifetime, and an estimated global emission factor. Other product lines are negligible or do not contribute at all to the overall emissions within this category. Our Life Science business sector offers two product lines (Biology, Biomonitoring, Chemistry, LabWater, and Process Solutions portfolios) that consume electricity during the use phase. The calculation of emissions is based on internal expert estimations of the product energy consumption, sales volumes, and respective emission factors per country (source: IEA). Sales data covers approximately 90–95% of sales. Our Healthcare business sector offers some battery-based injection devices that fall under category 11. Emissions are calculated based on energy consumption, sales volumes, and the respective emission factors per country (source: IEA). Compared with other Scope 3 categories, the screening of the emissions in this category contains more uncertainties and is meant to provide an initial indication of the impact of these Scope 3 emissions.

Category 12 includes emissions from the waste disposal and treatment of products at the end of their life, sold by the reporting company in the reporting year. Emissions from the disposal of sold products and respective packaging materials are calculated based on sales data, the weight data of products and packaging material, average weighted emission factors based on statistical data on regional disposal methods, and DEFRA emission factors (source: DEFRA).

Category 13 includes emissions from the operation of assets owned by the reporting company (acting as lessor) and leased to other entities. In Darmstadt, we are the lessor of a number of residential and commercial buildings. Emissions are calculated based on building master data, such as energy demand from energy certificates, and respective emission factors. To split the energy demand into heating and electricity for residential and commercial buildings, we use data from the IEA. Emissions from heating energy are calculated using the fuel type and DEFRA emission factors. Emissions from electricity demand are calculated using the German grid emission factor provided by BDWE (Bundesverband der Energie- und Wasserwirtschaft e.V.).

Category 14 includes emissions from the operation of franchises. This category is not relevant for us as we do not operate franchises, i.e., businesses operating under a license to sell or distribute another company’s goods or services within a certain location. Out-licensing in the pharmaceutical sector is not regarded as franchising.

Category 15 includes emissions from the operation of investments, including equity and debt investments and project finance, in the reporting year, which are not included in Scope 1 or Scope 2. Emissions are calculated based on the direct share of capital, the respective annual revenue, and environmentally extended input-output (EEIO) data (source: US Environmentally Extended Input-Output (USEEIO) Technical Content, United States Environmental Protection Agency). USEEIO provides emission factors on a spend basis for different industrial sectors and does not consider regional differences.

Removal of greenhouse gases from the atmosphere and CO_2eq certificates (E1-7)

As part of our own business activities, we do not currently carry out any activities to remove or reduce greenhouse gases that we finance via CO_2eq certificates.

Our internal CO_2 pricing (E1-8)

While GHG emissions are generally considered in our R&D and product development processes, a dedicated carbon pricing scheme is applicable for major investment projects. In the respective CapEX projects, we use a shadow price of € 100 per ton of CO_2eq equivalent which is applied globally. This shadow price is informed by the guidance of EU ETS (the European Union Emission Trading System) on carbon price monitoring and was also determined through a peer review analysis. It ensures the integration of greenhouse gas emission criteria early in the project development stage and is used for CapEX projects exceeding € 10 million, and those over € 2 million with high sustainability impact.

As this carbon pricing scheme is geared towards avoiding or reducing GHG emissions in the future, it is not applicable to actual emissions in the current year. For the same reason, carbon pricing considerations do not impact the value of existing assets in the Financial Statements.

Pollution (E2)

Pollution of water

Our material impacts, risks and opportunities in connection with water pollution (E2 SBM-3)

As part of the materiality analysis, we identified impacts, risks and opportunities related to water pollution. Our disclosures focus on the following material impacts:

Pollution of water	
Identifier	E2-NI-01
Material impacts, risks and opportunities	Actual/potential negative impact
Time horizon	Medium-term
Value chain step	Own operations; downstream
Description	Manufacturing and/or handling of chemical and/or pharmaceutical substances can have a negative impact on water quality caused by the controlled release of these substances via wastewater or unintentionally by leakages, spills or other comparable events.

Our policies in connection with water pollution (E2-1)

EHS Policy	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-01
Material sustainability matter	Water pollution
Key contents	The basis of our operational environmental management is the Group-wide EHS policy (Environment, Health and Safety). The policy formulates our responsibility to minimize the negative environmental impact associated with our business activities and to protect the health and safety of our employees, customers, and contractors. It specifies our commitment to work in such a way that we reduce or eliminate risks to the environment, human health and safety. The policy is continually monitored and part of our EHS management system. We are certified according to ISO 14001. The compliance with the requirements of ISO 14001 is reviewed annually as part of external surveillance and/or recertification audits. We have established processes and procedures in order to comply with regulations. We provide mandatory EHS training courses for our employees.
Scope of application	The policy applies Group-wide to our own operations and to the upstream and downstream value chain.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy is based on the principles of the UN Global Compact and the Responsible Care® Global Charter. It is aligned with the ISO 14001 and 45001 standards.
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees and customers.
Availability	The policy is available internally on the intranet and publicly on our website.

Sustainable Water Management- Wastewater	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-01
Material sustainability matter	Water pollution
Key contents	The policy concerns water quality and aims to minimize the negative impact of our facilities on the environment. This policy defines the responsibilities and sets global guidelines for the risk-based approach for managing wastewater from our operations. Monitoring is secured via our EHS audit system, see policy "Corporate EHS Audit Process". Our operating sites establish programs to ensure compliance with local requirements and to prevent, detect and avoid unintended release of water-hazardous substances or monitor the routine discharge of all relevant water-hazardous substances. The sampling and analytical program shall be elaborated based on local regulatory requirements or local circumstances.
Scope of application	The policy applies Group-wide to our production sites and our research and development (R&D) facilities. Our internal stakeholders are the site manager/director or qualified, responsible employees to whom tasks are delegated, as well as EHS-managers and their staff and the employees at the sites. Our external stakeholder are all users of the receiving water as well as operators of downstream water treatment plants.
Accountability	Site managers/directors or qualified employees responsible for wastewater topics.
Third-party standards/initiatives	The policy considers the UN Sustainable Development Goal 6: "Clean Water and Sanitation" as well as the Common Antibiotics Manufacturing Framework of the AMR Industry Alliance. We are also a member of the AMR industry alliance.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

Spillage Control of Hazardous Substances	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-01
Material sustainability matter	Water pollution
Key contents	The policy sets a global framework for the storage, transfer, and handling of hazardous substances. It gives guidance on how facilities and technical equipment shall be designed, built, operated, and maintained in such a way that potentially polluting substances do not enter the environment. Monitoring is secured via our EHS audit system - see "Corporate EHS Audit Process" policy.
Scope of application	The policy applies to all legal entities of the Group that unload, store, transfer and handle hazardous substances.
Accountability	Site manager/director
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

Corporate EHS Audit Process	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-01
Material sustainability matter	Water pollution
Key contents	The policy describes how to identify and assess environmental, health and safety risks at our sites and to define suitable corrective actions. The policy also serves the purpose of checking compliance with EHS and regulatory requirements as well as monitoring the appropriate implementation of the EHS management system and its focus on continuous improvement. Regarding water pollution, we want to counter the negative effects that can arise on water quality if in the production and/or handling of chemical and/or pharmaceutical substances these substances are intentionally released in a controlled manner via wastewater or unintentionally disposed of improperly through leaks, spills or other similar incidents. Following the policy's requirements, we define an audit plan for the production, R&D and warehouse sites at intervals of three to five years. Previous audit results also determine the frequency of audits per site. We pay particular attention to the quantity and properties of the substances handled as well as the environmental aspects and effects. An audit report including identified gaps and mitigating actions is addressed to the site manager, who is primarily responsible for closing the gaps within an agreed time frame.
Scope of application	The policy applies to the Corporate Environment Health and Safety (SQ-E) function and all sites (incl. subsidiaries and affiliates controlled by Merck).
Accountability	Head of Corporate EHS
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

The policies related to pollution of water are regularly monitored and updated.

The EHS Policy (Environment, Health and Safety), and the policies Sustainable Water Management - Wastewater and Spillage Control of Hazardous Substances are geared toward mitigating impacts of our facilities on the environment and health related to pollution of water including prevention and control. The Corporate EHS Audit Process policy controls the implementation of the described policies.

As part of our EHS Policy we define objectives, programs and performance indicators related to the environment, health and safety at both Group and site level. In this way, we aim to continuously monitor and reduce injuries and accidents, energy and resource consumption and reduce waste generation. Our aim is to go beyond compliance with our EHS regulations by constantly reviewing their potential for improvement to further reduce our impacts. To prepare for emergencies, we take actions to minimize risk and prevent damage. This should enable us to prevent negative impacts on the environment, human health and safety and ensure the continuity of our business operations.

In accordance with our Spillage Control of Hazardous Substances policy, the good condition and integrity of storage facilities, tanks, containment facilities and the necessary equipment must be maintained and checked regularly.

As part of sustainable water management which includes incidents and emergency preparedness, our sites must have retention basins with an appropriate volume for used extinguishing water and/or for wastewater that cannot be treated in routine operations. In the event of a fire, a retention basin is designed to control and limit the impact on the environment by isolating potentially contaminated extinguishing water.

Our actions and resources related to water pollution (E2-2)

As part of our activities initiated in the 2020 financial, we implemented the following actions for our own production in our Healthcare, Life Science and Electronics business sectors. The actions aim to reduce water pollution resulting from routine production: by 2030, every water-polluting substance will be emitted at levels below its predicted no-effect concentration (PNEC, water reference value):

- We identified the wastewater relevance for each substance handled in production in the Healthcare and Life Science business sectors.
- In Healthcare, we completed risk assessments based on calculations for wastewater-relevant substances and continue to monitor the level of active pharmaceutical ingredients in our wastewater. For substances with concentrations above the water reference level we conduct laboratory and pilot tests to identify suitable mitigation measures, e.g., modernization measures in our wastewater treatment facilities.

For 2025, we are planning the following actions for the Life Science and Healthcare business sectors:

- We will continue to refine our risk assessments and our determination of water reference levels (PNEC).
- For our Healthcare business sector, we will assess analytical monitoring data to verify the outcome of risk assessments and the effectiveness of mitigation actions.

These assessments enable us to decide on necessary steps to reduce potentially harmful residues in our wastewater to levels below the established no-effect threshold, i.e. by adapting our wastewater treatment facilities.

Our water management efforts focus on our manufacturing sites as production generally poses a higher risk to aquatic ecosystems. A total of 41 sites with wastewater from production are affected in our Life Science business sector, located in China, Germany, France, UK, India, Ireland, Israel, Switzerland and the USA. For Healthcare, this affects 14 sites with wastewater from production globally, which are located in Brazil, China, Germany, France, Indonesia, Italy, Mexico, Switzerland and Spain. For our Electronics business sector, this affects 27 sites with wastewater from production located in China, Germany, France, India, Japan, South Korea, Taiwan and the USA. Our time horizon to close the actions is set for 2030. No remediation actions have been taken.

At the end of 2024, 41 sites of our business sector Life Science, 14 of Healthcare and 27 of Electronics were involved in the activity. 12 sites of our Life Science, three of our Healthcare and one of our Electronics business sector have ascertained that the concentrations of all water-hazardous substances in their wastewater are below the no-effect threshold.

In 2024, no significant capital expenditures (CapEx) or operating expenditures (OpEx) were allocated in relation to the actions of water pollution. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Our actions with regard to our wastewater do not extend to the downstream value chain.

Our targets related to water pollution (E2-3)

Wastewater from our production sites is treated and discharged into the receiving water bodies according to the respective license. By 2030, we aim to reduce potentially harmful residues in our wastewater to below the no-effect threshold. We initiated our activities in 2020 and have been measuring the progress every six months since then. To achieve this ambition, we have defined a series of project steps that we monitor centrally for each site in scope. These steps include the identification of relevant water-hazardous substances, assessment of the risk in the specific context, mitigation actions if necessary and monitoring to verify the efficiency of the mitigation actions. Beyond this ambition, we have not set any targets related to water pollution.

Our metrics related to water pollution (E2-4)

	2024		
Pollution of water - pollutants (in kg)	Estimated median	Estimated minimum	Estimated maximum
Total nitrogen	55,992	55,992	55,992
Total phosphorus	–	–	–
Arsenic and compounds (as As)	–	–	–
Cadmium and compounds (as Cd)	–	–	–
Chromium and compounds (as Cr)	–	–	–
Copper and compounds (as Cu)	–	–	–
Mercury and compounds (as Hg)	–	–	–
Nickel and compounds (as Ni)	59	59	59
Lead and compounds (as Pb)	–	–	–
Zinc and compounds (as Zn)	–	–	–
Alachlor	–	–	–
Aldrin	–	–	–
Atrazine	–	–	–
Chlordane	–	–	–
Chlordecone	–	–	–
Chlorfenvinphos	–	–	–
Chloro-alkanes, C10-C13	–	–	–
Chlorpyrifos	–	–	–
DDT	–	–	–
1,2-dichloroethane (EDC)	–	–	–
Dichloromethane (DCM)	–	–	–
Dieldrin	–	–	–
Diuron	–	–	–
Endosulphan	–	–	–
Endrin	–	–	–
Halogenated organic compounds (as AOX)	–	–	–
Heptachlor	–	–	–
Hexachlorobenzene (HCB)	–	–	–
Hexachlorobutadiene (HCBD)	–	–	–
1,2,3,4,5,6-hexachlorocyclohexane (HCH)	2	2	2
Lindane	–	–	–
Mirex	–	–	–
PCDD + PCDF (dioxins + furans) (as Teq)	–	–	–
Pentachlorobenzene	–	–	–
Pentachlorophenol (PCP)	–	–	–
Polychlorinated biphenyls (PCBs)	–	–	–
Simazine	–	–	–
Tetrachloroethylene (PER)	–	–	–
Tetrachloromethane (TCM)	–	–	–
Trichlorobenzenes (TCBs) (all isomers)	–	–	–
Trichloroethylene	–	–	–
Trichloromethane	–	–	–
Toxaphene	–	–	–
Vinyl chloride	–	–	–
Anthracene	–	–	–
Benzene	–	–	–
Brominated diphenylethers (PBDE)	–	–	–

	2024		
Pollution of water - pollutants (in kg)	Estimated median	Estimated minimum	Estimated maximum
Nonylphenol and Nonylphenol ethoxylates (NP/NPEs)	1	1	1
Ethyl benzene	–	–	–
Ethylene oxide	–	–	–
Isoproturon	–	–	–
Naphthalene	–	–	–
Organotin compounds (as total Sn)	–	–	–
Di-(2-ethyl hexyl) phthalate (DEHP)	–	–	–
Phenols (as total C)	–	–	–
Polycyclic aromatic hydrocarbons (PAHs)	–	–	–
Toluene	–	–	–
Tributyltin and compounds	–	–	–
Triphenyltin and compounds	–	–	–
Total organic carbon (TOC) (as total C or COD/3)	–	–	–
Trifluralin	–	–	–
Xylenes	–	–	–
Chlorides (as total Cl)	5,483,545	4,219,545	5,483,545
Asbestos	–	–	–
Cyanides (as total CN)	–	–	–
Fluorides (as total F)	–	–	–
Octylphenols and Octylphenol ethoxylates	–	–	–
Fluoranthene	–	–	–
Isodrin	–	–	–
Hexabromobiphenyl	–	–	–
Benzo(g,h,i)perylene	–	–	–

Each site determines the relevance of pollutants at the site level through measurement, calculation, or estimation. The specified parameters of the above list are determined locally through measurement, calculation, or estimation. Only values above the applicable threshold values are reported. When determining emissions through measurements, analytical methods required in licenses and permits take precedence. If no methods are specified, standardized and recognized analytical methods are applied for the analysis of a parameter in wastewater. These methods may depend on the legal framework. If no standardized method is available, laboratories use their own internally validated methods. Limitations include, for example, intrinsic limitations of the measurements as outlined in the respective validation documentation. In calculations, the applied method depends on the specific process in which a substance is handled. These calculations may be based, for example, on input/output analyses or reaction formulas. Similarly, in estimations, the applied method depends on the specific process in which a substance is handled. Estimations may be based, for example, on documentation and records such as the amounts used or mass balances. The values determined in this way are recorded in a central EHS data management system. Due to the multitude of sites and metrics, we refrain from detailed disclosure of all pollutants at site level. On a corporate level, the determination of the metric has not been validated by an external body. Many of our sites discharge their wastewater into municipal treatment plants, where substances are degraded before the water enters the environment. The degree of reduction depends on the technology used in the respective wastewater treatment plant and, in many cases, on the ambient temperature. We have established a reduction range for each pollutant based on scientific findings. This range is applied to the locally determined value and results in the values “Estimated minimum”, “Estimated median” and “Estimated maximum”.

The measurement of water pollution metric has not been validated separately by an external body.

Pollution of soil

Our main impacts, risks and opportunities related to soil pollution (E2 SBM-3)

As part of the materiality analysis, we identified impacts, risks and opportunities related to soil pollution. Our disclosures focus on the following material risks:

Pollution of soil	
Identifier	E2-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Medium-term
Value chain step	Own operations
Description	Production processes that were decommissioned a long time ago caused subsurface contamination in the past. Since then, regulatory restrictions regarding the management of subsurface contaminations have increased and are increasing. These stricter regulations are likely to increase our costs. This applies to all three business sectors.

Our policies related to soil pollution (E2-1)

EHS Policy	
Connection to material impacts, risks and/or opportunities	Identifier E2-R-01
Material sustainability matter	Pollution of soil
Key contents	The basis of our operational environmental management is the Group-wide EHS Policy (environment, health and safety). The policy formulates our responsibility to minimize the negative environmental impact associated with our business activities and to protect the health and safety of our employees, customers, and contractors. It specifies our commitment to work in such a way that we reduce or eliminate risks to the environment, human health and safety. The policy is continually monitored and part of our EHS management system. We are certified according to ISO 14001. The compliance with the requirements of ISO 14001 is reviewed annually as part of external surveillance and/or recertification audits. We have established processes and procedures in order to comply with regulations. We provide mandatory EHS training courses for our employees.
Scope of application	The policy applies Group-wide to our own operations and to the upstream and downstream value chain.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy is based on the principles of the UN Global Compact and the Responsible Care® Global Charter. It is aligned with the ISO 14001 and 45001 standards.
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees and customers.
Availability	The policy is available internally on the intranet and publicly on our website.

Management of Contamination at Sites

Connection to material impacts, risks and/or opportunities	Identifier E2-R-01
Material sustainability matter	Pollution of soil
Key contents	The policy clarifies how to assess and handle subsurface contaminations. The objective of this policy is to systematically identify, manage and report risks related to the subsurface (soil and groundwater). To this end, the subsidiaries report their processes to the Corporate Sustainability, Quality and Trade Compliance function (SQ) with regard to: • The level of knowledge on contamination: information on new contamination and significant updates (e.g., new requirements from regulators) • Procedures for the investigation, analysis, monitoring and evaluation of contamination • Decontamination/remediation work on soil, groundwater or the removal of hazardous substances • The site must ensure that all relevant original documents related to the contamination and remediation actions are available. SQ monitors all activities related to post-transaction liabilities, for example agreed remediation work and/or known contamination (EHS due diligence and post-transaction).
Scope of application	The policy applies to all locations worldwide.
Accountability	Site manager/director or qualified, responsible employees
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

Spillage control of Hazardous Substances

Connection to material impacts, risks and/or opportunities	Identifier E2-R-01
Material sustainability matter	Pollution of soil
Key contents	The policy sets a global framework for storage, transfer, and handling of hazardous substances. It gives guidance on how facilities and technical equipment shall be designed, built, operated, and maintained in such a way that potentially polluting substances do not enter the environment. Monitoring is secured via our EHS audit system - see "Corporate EHS Audit Process" policy.
Scope of application	The policy applies to all legal entities of the Group that unload, store, transfer and handle hazardous substances. All employees shall adhere to the specified rules.
Accountability	Site manager/director and qualified responsible employees
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

The policies related to pollution of soil are regularly monitored and updated.

We use our EHS Policy to define objectives, programs and performance indicators related to the environment, health and safety at both Group and site level. In this context, we aim to prevent new contamination at all our sites by strictly adhering to existing regulations as well as reducing and monitoring accidents and incidents. For this purpose, we implemented the Spillage Control of Hazardous Substances policy as a globally harmonized approach. As outlined in our Management of Contamination at Sites policy, we mitigate negative effects associated with existing soil pollution from historic activities through remediation by securing the subsoil and/or remediating existing underground contamination. In doing so, we reduce risks for potentially affected parties in the vicinity of the sites with regard to existing contamination from historic activities.

When it comes to the exposure of people, groundwater and surface water to hazardous substances, we act according to the ALARP principle: as low as reasonably practicable.

Our actions and resources in connection with soil pollution (E2-2)

The sites in Darmstadt and Gernsheim (Germany) as well as Norwood (USA) are affected by underground contamination because of historic and discontinued production processes. They are now the focus of our ongoing actions. We are in regular contact with environmental protection authorities on current topics; the frequency of this contact is based on the latest findings and actions.

Darmstadt site

At the Darmstadt site, more than 100 years of industrial use, including damage during World War II, resulted in soil and groundwater contamination. For this reason, the groundwater at the Darmstadt site is continuously collected by 32 remediation and process water wells, thus preventing the spread of groundwater contamination. By treating the removed water, we eliminate the pollutants prior to discharge into the surface water. Compliance with limit values is monitored. We also prevent potentially harmful environmental impacts from soil contamination at the site by carrying out extensive surface sealing in relevant areas. As part of our local groundwater remediation actions, regular exchange takes place with the soil protection authority on current issues; the frequency of this exchange is based on the latest findings and actions. These measures will be continued until new requirements require adjustment.

Gernsheim site

The surface of the Gernsheim site was elevated by backfilling with soil, construction waste and hexachlorocyclohexane (HCH), which was a byproduct of lindane production in the past and an authorized constructions material at that time. Between 1954 and 1972, the backfilling was approved by the authorities. HCH residues are now classified as substances with hazardous properties.

To prevent contact of the groundwater with the HCH residues, we are lowering the groundwater level at the Gernsheim site by extracting water from ten remediation and process water wells. The water from the wells is purified using a special treatment plant. In addition, the groundwater is monitored at 64 measuring points using an officially coordinated quality monitoring system. We systematically evaluate the data and submit it to the responsible environmental authority in annual reports. We take the necessary measures in the event of indications of possible harmful effects on the environment. In order to prevent possible harmful environmental effects from soil contamination, we also carried out extensive surface sealing in the relevant areas at the Gernsheim site. In addition, we are in exchange with environmental protection authorities on topics including technical questions and/or the development (fine-tuning) of the current water management (e.g., if the groundwater level changes due to changes in precipitation levels). These measures will be continued until new requirements require adjustment.

Norwood site

Our EMD Millipore Corporation site in Norwood has been used for the industrial production, storage, and distribution of organic and inorganic chemicals since the late 1940s. The former site owners filled a ravine in the southern part of the site with soil, construction waste and chemical waste containers.

Our key actions include containing the waste in the ravine and capturing contaminated groundwater runoff from the site to prevent human and environmental exposure to contaminants of concern (COCs). In addition, we covered the area professionally to minimize or eliminate the release of COCs from the deposits. We also use in-situ chemical oxidation (ISCO) injections to break down any pollutants released into the environment. These measures will be continued until new requirements require adjustment.

Monitoring our actions

Our ambition is to mitigate and prevent harmful effects from existing soil and groundwater contamination at all our sites by remediating the contamination and following safety rules and regulations. This should always be done in accordance with local regulations and in close cooperation with the relevant authorities. The actions are intended to help systematically identify, manage**,** and report risks associated with soil and groundwater contamination. Monitoring programs verify the effectiveness of the respective actions at each site. These monitoring programs are required by local authorities and determined in the respective license. All actions are monitored by our local qualified experts, and the progress and results are communicated to the authority in annual reports.

Affected stakeholders include EHS employees, local employees**,** and project managers. In addition, we count shareholders among our stakeholders in this respect. We have not set a time horizon for our actions; they are ongoing measures.

Efforts to prevent and monitor emissions to air, water and soil entail significant expense on our part, as does proper waste disposal. Therefore, we set up provisions for groundwater and soil remediation to ensure that we can execute all the necessary actions. As of December 31, 2024, our provisions for environmental protection totaled € 158 million, 96,6% of which was attributable to Merck KGaA, Darmstadt, Germany. We do not expect any significant change in the next reporting period. For details see “**Other provisions**” in the Consolidated Financial Statement.

In 2024, we allocated € 9 million of operating expenditures (OpEx) to soil pollution related measures, which are included in the respective income statement lines. No capital expenditure (CapEx) was allocated. For 2025, we intend to allocate € 10 million of OpEx and no CapEx.

Our targets related to soil pollution (E2-3)

Our ambition is to systematically prevent, identify, manage and report risks associated with soil and groundwater. Beyond this, we have not set any targets related to soil pollution. Further information on our actions can be found under E2-2 “Our actions and resources in connection with soil pollution”.

Substances of concern and substances of very high concern

Our material impacts, risks and opportunities related to substances of concern and substances of very high concern (E2 SBM-3)

As part of the materiality analysis, we identified impacts, risks and opportunities related to substances of concern (SoC) and substances of very high concern (SVHC). Our disclosures focus on the following material impacts and risks:

Substances of concern and substances of very high concern	
Identifier	E2-NI-02
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Medium-term
Value chain step	Upstream
Description	Many of our chemical products have intrinsic hazardous properties. A potential material impact is located at our supplier level. We assume that we have potential for negative impacts in our upstream value chain. This applies to all three business sectors.

Substances of concern and substances of very high concern	
Identifier	E2-R-02
Material impacts, risks and opportunities	Risk
Time horizon	Long-term
Value chain step	Upstream; own operations
Description	Substances of concern and substances of very high concern are subject to stricter regulations, which can pose a risk to our business opportunities and increase costs. In particular, the EU Chemicals Strategy for Sustainability (CSS) describes regulatory actions to transition to a toxic-free environment, aiming to limit the use of substances of concern and substances of very high concern to essential uses. The substitution of potentially banned/restricted chemicals with safe and sustainable chemicals is necessary and costly. Additional costs can also arise in the case of increased requirements for occupational health and safety and the environmental protection.

Our policies related to substances of concern and substances of very high concern (E2-1)

M-SPOT - Merck Sustainable Portfolio Transformation	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-02; E2-R-02
Material sustainability matter	Substances of concern and substances of very high concern
Key contents	We perform a portfolio sustainability assessment or PSA (Merck Sustainable Portfolio Transformation M-SPOT) in accordance with the PSA framework of the World Business Council for Sustainable Development (WBCSD). This methodology is intended to assess the sustainability performance aspects of our products in relation to several dimensions including chemical risks and regulatory trends. These assessments consider SVHC and SoC criteria in a risk-based approach and also assess future regulatory trends to account for business risks arising from future bans and restrictions. According to our M-SPOT policy, an identified chemical risk that may result in customers being unable to handle the product safely, must be reduced as quickly as possible. Our products are only sold to industrial and professional users who are generally well trained and receive all the necessary information they need to handle our products safely, such as our safety data sheets (SDS) or further digital solutions. This is why we consider a risk-based approach, as also used in our PSA methodology, to be appropriate to manage potential impacts. In the event of a risk being identified in the assessment of chemical risk or regulatory trends, the product would receive a negative rating.
Scope of application	The policy applies to all three business sectors. As part of the PSA method, we compare our products with the most relevant competitor products on a global level (regionalization would be an exception) along the entire value chain and in various dimensions such as water consumption, emissions or packaging. The stakeholders are customers and, for example, also investors who have an interest in reducing risks associated with a non-sustainable portfolio. Internal stakeholders include our business sectors and the Corporate Sustainability, Quality and Trade Compliance unit (SQ).
Accountability	Management of the individual business sector and the Head of SQ.
Third-party standards/initiatives	Our policy considers the World Business Council for Sustainable Development and the Chemical Industry Methodology for Portfolio Sustainability Assessments (PSA) dated Oct 26, 2018.
Consideration of stakeholder interests	Internal stakeholders actively contributed to the development of the policy in meetings and review cycles.
Availability	The policy is available internally on the intranet.

Umbrella - Sustainability in R&D	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-02; E2-R-02
Material sustainability matter	Substances of concern and substances of very high concern
Key contents	The policy is relevant for the development of new products and the steering of the R&D portfolio: Each Research and Development (R&D) project will regularly complete and update a sector-specific sustainability scorecard. The scorecards are based on the Design for Sustainability (DfS) framework implemented in the business sectors as DfS Life Science, DfS Healthcare and Sustainability in R&D Electronics (SURE). The scorecards ensure a holistic approach to designing products and processes that aim to take into account the well-being of people and the environment over the entire life cycle of a product. The questions in the scorecards are assigned to five sustainability criteria: substances of concern, emissions, water, waste and human progress. Controls to avoid critical substances and replace them with safer alternatives are part of the Umbrella implementations in the business sectors.
Scope of application	The policy applies to all active R&D projects that result in a new product and were started in the year 2023 or later. The aim is to achieve a completion rate of at least 95% of the number of projects in scope. The assessment is carried out along the entire value chain and takes into account the effects on upstream, own and downstream activities. The stakeholders are customers and also investors who have an interest in reducing risks associated with a non-sustainable portfolio. Internal stakeholders are our business sectors' R&D departments and the SQ department.
Accountability	Management of the individual business sectors and Head of SQ
Third-party standards/initiatives	None
Consideration of stakeholder interests	Internal stakeholders actively contributed to the development of the policy in review cycles.
Availability	The policy is available internally on the intranet.

Occupational Health and Safety Protection Concepts for Handling Hazardous Substances	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-02; E2-R-02
Material sustainability matter	Substances of concern and substances of very high concern
Key contents	The policy describes our Group-wide process for identifying personal and environmental protection actions when handling hazardous substances. It includes protection concepts that may involve technical, organizational, or personal actions to reduce exposure at the workplace, release into the environment and loss of product. Hazardous substances can only be handled using equipment that provides the degree of protection corresponding to the occupational exposure limit value and the physico-chemical properties of the substance. When selecting protection concepts, we apply the hierarchy of the following controls: Substitution, Technology, Organization and Personnel (S-T-O-P). In order to successfully protect employees and the working environment, we often have to combine several control actions. As part of the technical actions, we use equipment and ventilation to contain and/or control the release of hazardous substances into the working environment. With these actions, we aim to reduce the risk of employee exposure, release into the environment and/or physical hazards (such as dust explosion, ignition of flammable vapors). Monitoring is secured via our EHS audit system; see the "Corporate EHS Audit Process" policy.
Scope of application	The policy applies Group-wide to all business areas and Group functions and all new projects or plants and projects involving the refurbishment of existing plants or facilities. This also applies if the site used is not the property of our Group.
Accountability	Managing director or site manager/director
Third-party standards/initiatives	We are guided by the STOP principle, which is described, for example, in the German standard TRGS 500 of the Hazardous Substances Ordinance and represents a standard approach for the safety and health protection of employees. The evaluation of substitution options that we use is formulated, among other things, in the TRGS 600 standard and is also prescribed by section 6 (1) of the German Hazardous Substances Ordinance. On an EU level, Council Directive 98/24/EC of April 7, 1998, on the protection of the health and safety of workers from the risks related to chemical agents at work specifies in Art. 6 (2) that substitution has the highest priority of the various measures that can be taken to protect workers.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

EHS Fire protection	
Connection to material impacts, risks and/or opportunities	Identifier E2-NI-02; E2-R-02
Material sustainability matter	Substances of concern and substances of very high concern
Key contents	The policy describes the minimum requirements for fire protection systems at our sites. It includes requirements for the retention of extinguishing water and technical actions that must be implemented to prevent the flow of fire extinguishing water from areas where hazardous substances are handled or stored, or the flow of flammable/combustible/ignitable liquids into adjacent areas. Appropriate means of retaining fire extinguishing water must be provided locally or centrally on the premises or in the building (whichever is applicable) in order to prevent damage to the environment. This also includes fire extinguishing water retention for foam-based fire protection systems. The EHS staff provide support and guidance. Local legislation must be reviewed along with the policy. Whichever requirement is stricter must be followed. Audits are carried out under the responsibility of the managing directors and site managers/directors to monitor the implementation of the procedure.
Scope of application	The policy applies Group-wide at sites. We implement the requirements described in our regular office, laboratory, supply, production and storage rooms and also in general use areas.
Accountability	Managing director or site manager/director
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available internally on the intranet.

The policies related to substances of concern and substances of very high concern are regularly monitored and updated.

There are no specific policies that explicitly address the adverse effects of substances of concern and substances of very high concern. However, any EHS-related policy used to mitigate the impact of hazardous substances in our operations on human health and the environment inherently mitigates the negative impact of subgroups of hazardous substances, e.g., substances of concern and substances of very high concern. As part

of our EHS Policy, we define objectives, programs and performance indicators related to the environment, health and safety at both Group and site level. In this way, we aim to continuously monitor and reduce injuries and accidents and the volume of waste. Our aim is to go beyond compliance with EHS regulations by constantly reviewing their potential for improvement. We take actions to minimize risk and prevent damage to minimize negative impacts on the environment, human health and safety and ensure the continuity of our business operations (see “Sustainable Water Management – Wastewater” and “Spillage Control of Hazardous Substances” in section “**water pollution**”).

The policy “Occupational Health and Safety Protection Concepts for Handling Hazardous Substances” describes carrying out a substance-related substitution test for alternative substances or processes to protect employees from hazardous substances. Substitution is the first component of the STOP principle of the EHS protection actions. In addition to substituting a hazardous substance with a less hazardous substance, substitution also includes reviewing process activities to identify whether equipment or activities can be replaced with a less dangerous piece of equipment or activities. Examples include: Substituting a hand-sieving process with a process that utilizes mechanical equipment; incorporating an online analytical test instead of taking a sample and subsequently testing it in a laboratory; or replacing a dispensing step with a direct, closed transfer. Each of our legal entities that handles hazardous substances must carry out and document a substitution check before applying technical, organizational or personal protective actions.

With the help of our M-SPOT and Umbrella programs, we identify products containing SoC/SVHC and aim to avoid their use in improved and new products. More information regarding our M-SPOT and Umbrella programs can be found under “Our actions and resources related to substances of concern and substances of very high concern”.

Our actions and resources related to substances of concern and substances of very high concern (E2-2)

Increasing transparency through product assessments

We are performing a portfolio sustainability assessment or PSA (Merck Sustainable Portfolio Transformation, M-SPOT). This methodology is intended to contribute to the transparency of the sustainability of our products. We are currently establishing a corresponding baseline and are monitoring progress centrally in a defined governance set-up, including quality checks of product assessments. By the end of 2024, products accounting in total for more than 35% of the product-related sales were assessed.

For 2025, we plan to have products assessed that account for around 80% of the product-related sales of the Electronics and Healthcare business sectors. Due to the extensive product range in the Life Science business sector, we committed to achieving the 80% goal for Life Science by the end of 2029. Based on the results, we will begin defining measures in 2025. At the beginning of 2026, we will start implementing these measures and establish initial SMART goals for the portfolio transformation. Our business sectors are currently the main stakeholder. Our actions do not extend to upstream value chain engagements.

Integrating sustainability in research and development

We have introduced Umbrella for the development of new products and the management of the R&D portfolio: For each R&D project, a sector-specific sustainability scorecard must be filled out and updated regularly. At the end of 2024, more than 95% of all relevant R&D projects throughout the company were covered by a sustainability scorecard defined by Umbrella.

For 2025-2027, we plan to set specific improvement objectives for the management of the R&D portfolio by focusing on projects with a positive economic and environmental outlook. We assume that we will implement this within the set timeframe. Our actions should contribute to a good data base for portfolio management while also helping us to gradually build up a more sustainable product and R&D portfolio. All business sectors have scorecards in place and have integrated them in their project-management process. This leads to a more sustainable portfolio of new products. Our actions can be used worldwide for all business sectors.

In 2024, no significant capital expenditures (CapEx) or operating expenditures (OpEx) were allocated in relation to the actions M-SPOT and Umbrella. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Our targets related to substances of concern and substances of very high concern (E2-3)

At the current stage, there are no explicit corporate targets defined concerning SoC and SVHC.

Our metrics related to substances of concern and substances of very high concern (E2-5)

Substances of concern

In the following table, we report on the amounts of substances of concern, volumes of substances of very high concern are not included in the information provided.

in metric tons		2024				
Nature of hazard class	Hazard class (Category)	Sum of substances generated or used during production or that are procured	Sum of substances that leave facilities as products, or as part of products or services	Leave facilities as products	Leave facilities as part of products	Leave facilities as services
Environmental hazards	Persistent, mobile and toxic or very persistent, very mobile properties	–	–	–	–	–
	Persistent, bioaccumulative and toxic or very persistent, very bioaccumulative properties	–	–	–	–	–
	Chronic hazard to the aquatic environment (categories 1 to 4)	8,016.1	6,273.4	2,194.4	4,079.0	–
	Endocrine disruption for the environment	–	–	–	–	–
Health hazards	Carcinogenicity (categories 1 and 2)	8,916.0	7,538.2	1,633.7	5,904.6	–
	Germ cell mutagenicity (categories 1 and 2)	1,244.7	960.5	444.1	516.4	–
	Reproductive toxicity (categories 1 and 2)	6,920.1	6,089.4	1,242.8	4,846.6	–
	Endocrine disruption for human health	–	–	–	–	–
	Respiratory and skin sensitization (category 1)	1,406.1	1,263.6	831.3	432.2	–
	Specific target organ toxicity, single exposure (categories 1 and 2)	11,003.4	7,938.7	7,325.2	613.5	–
	Specific target organ toxicity, repeated exposure (categories 1 and 2)	7,321.6	6,353.5	1,305.6	5,047.9	–
Other hazards	Hazardous for the ozone layer	1.4	1.1	1.1	0.02	–
	Negatively affects the re-use and recycling of materials in the product in which it is present, as defined in relevant Union product-specific ecodesign requirements	–	–	–	–	–
	Total volume per path[1]	33,415.2	26,732.3	12,439.2	14,293.1	–

[1] Actual total volumes per path, avoiding duplications of volumes for substances with more than one hazard class.

Substances of very high concern

In the following table, we report on the amounts of substances of very high concern.

in metric tons		2024				
Nature of hazard class	Hazard class (Category)	Sum of substances that are generated or used during production or that are procured	Sum of substances that leave facilities as products, or as part of products or services	Leave facilities as products	Leave facilities as part of products	Leave facilities as services
Environmental hazard	Persistent, mobile and toxic or very persistent, very mobile properties	0.8	–	–	–	–
	Persistent, bioaccumulative and toxic or very persistent, very bioaccumulative properties	1.8	1.0	0.2	0.7	–
	Chronic hazard to the aquatic environment (categories 1 to 4)	114.2	81.5	36.7	44.8	–
	Endocrine disruption for the environment	381.5	175.5	64.4	111.1	–
Health hazard	Carcinogenicity (categories 1 and 2)	184.0	121.8	55.2	66.6	–
	Germ cell mutagenicity (categories 1 and 2)	55.0	32.2	28.7	3.5	–
	Reproductive toxicity (categories 1 and 2)	7,939.4	5,904.7	2,521.5	3,383.2	–
	Endocrine disruption for human health	6.7	4.4	3.9	0.6	–
	Respiratory and skin sensitization (category 1)	100.8	78.5	32.6	45.9	–
	Specific target organ toxicity, single exposure (categories 1 and 2)	1.1	1.3	1.3	0,01	–
	Specific target organ toxicity, repeated exposure (categories 1 and 2)	58.2	42.2	37.3	4.9	–
Other hazard	Hazardous for the ozone layer	–	–	–	–	–
	Negatively affects the re-use and recycling of materials in the product in which it is present, as defined in relevant Union product-specific ecodesign requirements	–	–	–	–	–
	Total volume per path[1]	8,492.6	6,194.9	2,623.8	3,571.1	–

[1] Actual total volumes per path, avoiding duplications of volumes for substances with more than one hazard class.

We use the following metrics to calculate the volumes of substances of concern (SoC) and substances of very high concern (SVHC) (in metric tons).

Substances qualifying as SoC/SVHC: The handled substances that qualify as SoC/SVHC were identified on the basis of the list of a leading-edge commercial chemical regulatory compliance content provider for enterprise resource planning (ERP) systems, which was updated in July 2024. Additional handled substances assigned to group entries with harmonized classifications have been identified and added to the list. Amendments to the harmonized classification or newly identified substances of very high concern in the second half of the year will be taken into account for the 2025 reporting year.

Materials handled consisting of or containing SoC/SVHC: All materials that are handled in our own operations (generated/procured which includes used materials) and contain or consist of identified SoC/SVHC according to the ERP system are listed along with their composition. Materials containing substances for which the harmonized classification is not valid (e.g., due to particle size limits) are excluded from further analysis. We assume that the list of identifiers for 2024 is complete and correct and that relevant materials are up to date in the ERP system.

Volumes generated/procured (including used volumes) and volumes leaving facilities as products, part of products or services: Volumes of individual SoC/SVHC in all relevant materials identified that are generated or procured or leave facilities as products (substances), parts of products (mixtures or articles) or as services (substances, mixtures and articles specifically booked for services) are calculated based on the relevant composition information and per substance assigned to the respective hazard classes. Intercompany sales are excluded. Total volumes of SoC/SVHC generated or procured and total volumes per hazard class are calculated for reporting on SVHC and other SoC. Our assumptions are the same as those described under “Materials handled consisting of or containing SoC/SVHC”. Substances generated have been defined as manufactured in line with the EU REACH legislation and guidance. This includes isolated intermediates and excludes purification of substances. Substances used have either been generated or have been procured for further use. The information provided for SoC excludes SVHC substances as these are presented in a separate table.

The measurement of substances of concern and substances of very high concern metric has not been validated separately by an external body.

Water and Marine Resources (E3)

Our material impacts, risks and opportunities related to water and marine resources (E3 SBM-3)

As part of the double materiality analysis, we identified one impact related to water and marine resources. Our disclosures relate to the following material impact:

Water withdrawal	
Identifier	E3-NI-1
Material impacts, risks and opportunities	Actual/potential negative impact
Time horizon	Medium/long-term
Value chain step	Own operations
Description	The withdrawal of water reduces its availability in the natural environment and for other water users along the value chain. In our own operations, we require water for our manufacturing operations, especially in the Electronics business sector for Surface Solutions.

Our policy related to water and marine resources (E3-1)

Sustainable Water Management – Water Use	
Connection to material impacts, risks and/or opportunities	Identifier E3-NI-1
Material sustainability matter	Water withdrawal
Key contents	Sustainable Water Management is our program on the responsible use of resource water. The corporate Water Use standard is our Group-wide policy and aims to minimize the negative environmental, health and safety impact of our facilities worldwide. It sets out our water efficiency target and defines global guidelines for the responsible use of water and reducing our water footprint. The Merck Sustainability Board (MSB) is responsible for monitoring and controlling. In this respect the MSB Charter stipulates that the board regularly reviews the implementation status, the progress toward target achievement, and the corresponding key figures of business sectors, including their contribution to our general sustainability strategy goals. Monitoring the achievement of goals is first checked by the business sectors, followed by quarterly checks by the Greenhouse Gas steering group and the MSB.
Scope of application	The policy applies Group-wide at all sites, including those in areas at water risk and high water stress. It applies for all water use activities within our own operations, including water withdrawal, water use and water discharge.
Accountability	Managing director, site manager, or qualified employee.
Third-party standards/initiatives	The policy considers the UN Global Compact and the UN Sustainable Development Goal 6: "Clean Water and Sanitation".
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders. By requesting our sites to minimize water withdrawal, we consider the interests of external stakeholders.
Availability	Our policy is available internally on the intranet.

The policy related to water and marine resources is regularly monitored and updated. Our policy requires our sites to use water as efficiently as possible and to consider it as environmental aspect. All sites shall strive to optimize existing water-related processes and apply innovative solutions for water use in new or significantly modified processes. Water-saving measures are subject to a cost-benefit analysis. Also, sites always need to take into account the associated energy costs and CO_2 emissions for water efficiency projects. All our sites shall trace their entire water flow transparently from the point of extraction, through the various steps of processing, use and treatment, to the point of discharge. Water withdrawal should be measured using water meters and documented in our recording program. The sites are required to ensure provision of clean drinking water, sanitary facilities and hygienic conditions to employees and guests on the site. Our policy does not address water treatment as a measure for sustainable water procurement. Water is generally not polluted by being withdrawn from the freshwater system or wells. We report on our policies for preventing water contamination through the use of chemicals under "**Our policies in connection with water pollution (E2-1)**".

Our water management system includes sites located in areas at water risk and high water stress. These sites must comply with local legislation and meet internal requirements, such as the Group target on water efficiency. Since water risk and water stress pose risks both to the environment and to our business, these sites in particular are requested to use water in a responsible way. Furthermore, they have to monitor developments in their local contexts and adapt their water use accordingly.

We do not have policies or practices on sustainable oceans and seas. The design of products and services addressing water-related issues and the preservation of marine resources is also not regulated by the Group-wide Water Use policy. This is in the responsibility of the business sectors and the respective research and development (R&D) departments.

Our actions in connection with water and marine resources (E3-2)

We are currently implementing several actions in our Life Science and Healthcare business sectors to help achieve our water efficiency target.

Actions within Life Science on water efficiency and water reduction

In our Life Science business sector, we implemented water conservation projects In the reporting year which are intended to contribute to our water efficiency target and aim to reduce water withdrawal. The largest of these is the reduction of drinking water use for process applications in Altdorf, Switzerland, with the aim of reducing water withdrawal by 70,000 cubic meters per year, starting in the second quarter of 2025 onwards. At other sites, for example, we set up wastewater recovery for process systems, converted single-pass cooling through the use of vacuum pumps, and improved cooling towers. When developing any new projects, we determine the extent to which we can further improve water efficiency.

In 2024, we implemented actions in our own operations (including manufacturing sites, labs, and warehouses) at our following sites: Altdorf and Buchs (Switzerland); Cleveland, Ohio (USA); Carlsbad, California (USA); Norwood, Ohio (USA); and Visalia, California (USA); Mumbai (India); Molsheim (France) and Nantong (China). Carlsbad, Visalia and Nantong are located in areas at water risk and high water stress.

The projects aim to reduce water withdrawal at our existing sites as well as reclaim and reuse water; as such, they contribute to our Group-wide sustainability goal. When developing projects, we take financial viability into account and will continue to do so in the future.

Initiatives within Healthcare for sustainable water management

In 2024, we started to implement actions for sustainable water management at our Healthcare site in Aubonne, Switzerland. These consist of two main actions: the optimization of purified water, which was completed in 2024 and is estimated to result in total water withdrawal savings of 15,000 cubic meters per year from 2025; and the ongoing replacement of outdated plant components to be completed by 2026. Through this, we expect to save 30,000 cubic meters per year from 2026 onwards.

New technical guideline for Healthcare on water circularity (Water Circularity Guideline)

In 2024, we created a technical guideline for the Healthcare business sector that aims to provide a framework for sustainable water management and circular economy. By setting criteria for the reduction, reuse and recycling of water, the guideline aims to contribute to both our water efficiency target, while reducing potentially harmful residues in our wastewater to below the no-effect threshold (predicted no-effect concentration, PNEC, water reference level) by 2030. More information can be found under "**Our targets related to water pollution (E2-3)**".

The guideline will apply from 2025 and is to be used as a technical guideline at 20 sites of our Healthcare business sector in Brazil, China, Germany, France, Indonesia, Italy, Japan, Mexico, Spain, Switzerland and Uruguay. The guideline therefore also applies to sites in areas at water risk and high water stress. Specific actions on areas at high water stress are included as part of the guideline. The guideline is primarily intended for our own manufacturing activities, such as production, R&D facilities and laboratories, as well as warehouses, distribution centers, and offices.

Study on water cycle management at the Healthcare site in Jakarta

We completed a study on wastewater treatment at the Healthcare site in Jakarta, Indonesia, at the end of 2024. The aim of the study was to enable the reuse of treated wastewater for the cooling tower system, replacing tap water as the current freshwater source. Through this, we plan to reduce water withdrawal and will reclaim and reuse water.

We therefore examined the expansion of the wastewater treatment plant on-site to identify opportunities for the removal of active pharmaceutical ingredients (API) in accordance with the approval requirements for the quantity and quality of the wastewater. Reusing treated wastewater is estimated to reduce freshwater usage by 11,000 cubic meters per year. We plan to implement the identified actions at the site by 2026. By doing so, we contribute to our Group-wide water efficiency target at a site that is located in an area with high water stress. We collaborate with the responsible authorities as part of the approval process.

As we remove the APIs from the water to level below the PNEC values, we expect to lower the environmental impact. This can promote the regeneration of aquatic ecosystems and water bodies.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated to the actions related to water and marine resources. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Our target related to water and marine resources (E3-3)

Water efficiency	
Reference to material impacts, risks and/or opportunities	Identifier E3-NI-1
Material sustainability matter	Water withdrawal
Target	Compared with the 2020 baseline, we aim to achieve a 50% reduction in our water efficiency ratio, calculated as total water withdrawal per net sales (to 396 m^3 per € million net sales) by 2030. The target covers the complete water withdrawal of our company. The Water Use policy supports the achievement of this target by providing detailed requirements for water use.
Reference value/year	Water withdrawal of 792 m^3 per € million net sales in 2020.
Methods	We developed the target based on a key figure that is recognized and widely used in various industries and in external reporting. The ratio to our net sales reflects the growth of the company. We chose 2020 as our base year to align this target with other existing environmental targets. The application of scientific principles was not necessary to set the target. No external stakeholders were involved in the creation of the target.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	No changes were made.
Performance/Key figures	In 2024, we achieved a water efficiency of 588 m^3 per € million net sales. We continuously monitor the degree of target achievement through quarterly reviews, analogous to the controls described for our Water Use policy. We have not yet set any interim targets.

The scope of our voluntary target is at Group level and covers all our legal entities and sites. In our efforts to conserve water, we pay particular attention to sites in areas where water is scarce. To determine whether a site is located in a water stress area, we apply a water risk factor of the World Resources Institute (WRI) Aqueduct Water Risk Atlas.

Our metrics related to water withdrawal (E3 MDR-M)

The measurement of any water withdrawal related metric has not been validated separately by an external body.

Water withdrawal

Our operational sites (manufacturing and warehousing) and our larger dedicated R&D and office sites are required to record relevant water volumes (total water withdrawal) in our central Environment, Health and Safety (EHS) data management system. The on-site recording methods vary both in terms of the data source, such as measurement (via flow meters or volume counters), meter reading or billing, and the frequency (monthly, quarterly or annually).

Smaller R&D and office locations are not requested to document in the central EHS data management system due to their relatively low water withdrawal (mainly for sanitary use, estimated approx. 2% of the total water volume). Their water volume is estimated based on the number of employees.

Water withdrawal in areas at water risk, including areas at high water stress

As previously described, we determine whether a site is located in a water stress area via a water risk factor of the WRI Aqueduct Water Risk Atlas. We therefore compare the geodata of our sites with the information in the WRI Aqueduct Water Risk Atlas. We defined a site as being located in a water risk area if the respective total water risk factor in WRI Aqueduct is 3 or higher (“high: 3-4”; “extremely high: 4-5”). At the same time, we apply the definition of high water stress as given in the ESRS glossary annex. Although we operate sites in areas at water risk and high water stress, our respective water withdrawal is low and of no relevance for the respective local environment.

Water efficiency

We assess our water efficiency based on the total water withdrawal per net sales. We report water efficiency under **ESRS 2 (SBM-1)** as it is one of our strategic sustainability key indicators.

Water withdrawal metrics

		Milestone and target year
	2024	2030
Water withdrawal (m^3)	12,430,923	
Water withdrawal in areas at water risk, including high water stress (m^3)	1,056,170	
Water efficiency (m^3 per € million net sales)	588	396

Of the total water withdrawal, 797,418 m^3 was attributable to Merck KGaA.

Biodiversity and Ecosystems (E4)

General information related to biodiversity and ecosystems

As part of our sustainability strategy review, we identified biodiversity to be an integral part of our defined strategic focus area of water and resource use. In addition, the topic of biodiversity is also linked to our strategic focus areas of sustainable innovations and technologies for our customers, a sustainable and transparent supply chain, climate change, and emissions. Our initial steps to determine the link between our business activities and their impact on biodiversity were also a decisive factor for this classification. A key component of this was gaining a better understanding of the existing frameworks such as the Taskforce on Nature-related Financial Disclosures (TNFD) and the Science Based Targets Network (SBTN). On this basis, we developed our roadmap for biodiversity. The aim of our roadmap is to integrate biodiversity into our business activities. The roadmap is divided into six focus areas to understand factors including dependencies as well as financial risks and opportunities in the context of biodiversity, which will enable us to formulate specific objectives for the future.

We have not yet comprehensively analyzed the resilience of our strategy and business model with regard to biodiversity and ecosystems; this is planned for 2025. In the current reporting year we wanted to gain a better understanding of biodiversity in the context of our business activities based on data analyses.

We have carried out initial assessments for relevant individual aspects relating to biodiversity, such as water withdrawal. For example, we use a water risk factor to determine whether a production site is located in a water stress area. Further information can be found in "**Water and Marine Resources (E3)**". In 2022 we carried out a qualitative assessment of climate risks and dependencies, which included upstream and downstream risks and dependencies as well as activities in our own operations. We supplemented this qualitative assessment with a quantitative climate scenario analysis in 2023 and 2024, which focused on upstream activities and our own operations. These assessments identified climate-related risks and opportunities considering two climate pathways: a 1.5°C scenario and a 4°C scenario, over different timeframes (2030 and 2050). Further information on our climate resilience analysis can be found in "**Climate Change (E1)**". To date, we have not identified any transitory or physical risks and opportunities in connection with biodiversity and ecosystems.

Taking into account the future requirements of society, our stakeholders and our own ambitions, we plan to develop and implement a biodiversity strategy for all business sectors and their supply chains. Affected communities have not yet been taken into account.

Our material impacts, risks and opportunities related to biodiversity and ecosystems (E4 SBM-3)

We conducted a materiality analysis in accordance with ESRS 1 and analyzed our value chain and the respective impacts, risks and opportunities (IROs). The identified IROs were then assessed accordingly. As a result, we identified one potential negative impact for the topic of biodiversity. The process for determining IROs is described under **ESRS-2 IRO-1**. Our biodiversity reporting focuses on the following impact:

Direct impact drivers of biodiversity loss - Land-use change, fresh water-use change, and sea-use change	
Identifier	E4-NI-01
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Mid-term (3-5 years)
Value chain step	upstream; own operations
Description	As a manufacturer of chemical and pharmaceutical products, we withdraw water and other resources and produce wastewater as well as solid waste in our entire value chain. This can have an impact on the condition of ecosystems on land and water.

In order to gain a better understanding of the influence of our sites on biodiversity and to monitor their development, we analyze the environment around our sites in relation to key biodiversity areas on a regular basis using data from the Integrated Biodiversity Assessment Tool (IBAT). We took the ecosystem's performance into account in our analysis. This enables us to determine both the number and the area of sites located in the vicinity of key biodiversity areas. At the same time, this analysis serves to prepare the determination of relevant influencing factors with regard to land use change, freshwater and marine use change. According to IBAT, key biodiversity areas are defined as areas worldwide that are of crucial importance for the conservation of biodiversity in terrestrial, freshwater and marine ecosystems. IBAT's assessment is based on the "World Database of Key Biodiversity Areas", which assigns characteristics from five categories to key biodiversity areas: irreplaceability, threatened biodiversity, geographically limited biodiversity, ecological integrity, and biological processes. The required information is mainly provided by the national governments and may be incomplete. Furthermore, this process has not yet been completed in all countries. IBAT uses the data to identify the key biodiversity areas. The method has only been validated by the external body responsible for quality assurance, IBAT.

For our analysis, we selected the sites that are classified as production sites according to ISO 14001. To determine whether a production site is close to a key biodiversity area, IBAT analyzes the surrounding area within a radius of one kilometer. The chosen radius to be used depends on the industry sector. As a chemical-pharmaceutical company, we can limit the radius for the analysis so that no production sites of other companies are included in the zone to be analyzed. The result of our analysis is that 10 of our 108 production sites worldwide, with a cumulative area of 135 hectares, are located within a one-kilometer radius of key biodiversity areas. Determining the proximity to a key biodiversity area gives us an initial indication of potential impacts on biodiversity. Based on this initial indication, we will carry out more in-depth analyses in 2025 in order to develop further specific parameters.

Based on the Taskforce on Nature-related Financial Disclosures (TNFD) framework, we conducted a further preliminary analysis to identify and assess our influence and dependence on water use and land use. We used purchasing data from 2023 for this. An external software solution was used to analyze this data and create a profile for the respective region. These profiles gave us a first impression of the regions in which we have a dependence as well as influence on biodiversity. We were able to identify a possible dependence and influence on water and land use in Asia and in North and South America.

The following table shows the production sites located near key biodiversity areas as analyzed by IBAT and their area.

Production Site	Location	Country	Site Area (in ha)[1]
Merck Performance Materials S.A.S	Trosly-Breuil	France	1
Merck Surface Solutions GmbH	Gernsheim	Germany	95
Sigma-Aldrich Chemie GmbH	Steinheim	Germany	7
Merck Performance Materials GmbH	Wiesbaden	Germany	2
Merck Millipore Ltd.	Cork	Ireland	1
Merck Electronics Ltd.	Shizuoka	Japan	7
Merck Ltd.	Tokyo	Japan	1
Merck Performance Materials Ltd.	Poseung	South Korea	2
Merck S.L.U.	Mollet del Vallès	Spain	16
Merck S.L.U.	Tres Cantos	Spain	1

[1] Figures in hectares rounded.

The analyses described give us indications of our influence and dependencies regarding biodiversity. However, we cannot make any statement based on this data as to whether we have negative ecological impacts on affected areas, in the form of soil degradation, soil sealing and desertification, or whether they affect threatened species. Therefore, we plan to conduct further analyses to determine our actual dependence and influence on biodiversity.

Our sites worldwide are ISO 14001 certified, which means that our production processes are designed and carried out in such a way as to exclude negative impacts on biodiversity in normal business operations as far as possible. We have also taken precautions to prevent negative impacts on the environment, also on biodiversity, in the event of incidents.

Our policies related to biodiversity and ecosystems (E4-1; E4-2)

Supplier Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier E4-NI-01
Material sustainability matter	Land-use change, fresh water-use change, and sea-use change
Key contents	The policy describes the expectations to our suppliers and sales intermediates regarding to human and labor rights, occupational health and safety, ethics, business integrity, protection of the environment, animal welfare, as well as continuous improvement and supplier management. A standardized process has been set up to ensure that our suppliers recognize the policy. Group Procurement is responsible for integrating sustainability requirements into the relevant phases of our procurement and supplier management processes. Since 2023, the policy has been reflected in the General Terms & Conditions of Purchase.
Scope of application	The policy applies globally to all our providers of goods and/or services ("Suppliers") and to sales intermediates (e.g., dealers, distributors, wholesalers, and resellers).
Accountability	Chief Procurement Officer and Group General Counsel.
Third-party standards/initiatives	The policy considers, amongst others, the UN Global Compact, the United Nations Guiding Principles on Business and Human Rights, the ILO core labor standards, the EU Conflict Minerals Regulation (EU) 2017/821, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Sec. 1502, and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas, the Green House Gas Protocol, ISO 50001 on Energy Management, the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Ellen MacArthur Foundation, the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, the ETS123 Appendix A and the US ILAR guide's last edition.
Consideration of stakeholder interests	The policy was developed by considering the interest of internal stakeholders and external experts.
Availability	The policy is available internally on the intranet and publicly on our website. The policy is referred to in our orders via a link to the General Terms and Conditions of Purchase; it is also embedded in new or amended contracts.

Access to Genetic Resources	
Connection to material impacts, risks and/or opportunities	Identifier E4-NI-01
Material sustainability matter	Land-use change, fresh water-use change, and sea-use change
Key contents	The policy defines the roles and responsibilities, as well as the procedure to be followed when accessing and using genetic material. The aim is to ensure compliance with Access and Benefit Sharing (ABS) obligations. In terms of biodiversity, the policy covers land-use change, freshwater-use change and sea-use change. We support all the objectives of the Convention on Biological Diversity (CBD), including the third objective of fair and equitable sharing of the benefits arising from the use of genetic resources. We are committed to complying with the ABS obligations as defined in the Nagoya Protocol and the corresponding national laws. We support the development of processes and procedures for complying with the ABS obligations. We also work continuously to ensure that our processes and procedures are implemented within the framework of the quality management system.
Scope of application	The policy applies to our upstream value chain and research and development functions at the Group-wide level. The policy regulates all activities that use genetic material, including genetic resources, associated traditional knowledge, derivatives and/or digital sequence information. All countries that provide genetic resources or traditional knowledge, and their relevant authorities, are required to comply with our policy.
Accountability	Head of Group Corporate Sustainability and appointed persons in the business sectors (Regulatory Managers).
Third-party standards/initiatives	We support the general principles of the CBD, in particular its third objective: the fair and equitable sharing of the benefits arising from the utilization of genetic resources and traditional knowledge – in accordance with the provisions of the Nagoya Protocol, an international supplementary agreement to the CBD. Furthermore, our policy is aligned with relevant EU regulations (including Official Journal of the European Union C313, Volume 59, 27 August 2016, 2016/C 313/01; Regulation (EU) No. 511 of the European Parliament and of the Council of 16 April 2014).
Consideration of stakeholder interests	When setting the policy we considered the interests of internal and external stakeholders.
Availability	The policy is available internally on the intranet.

The policies related to biodiversity and ecosystems (E4) are regularly monitored and updated.

Our Group policy on Access to Genetic Resources is directly linked to immediate factors that contribute to the loss of biodiversity. These include changes in land use, water use and sea-use. The policy explains the procedure that we are obliged to follow when using genetic material or genetic resources and regulates access to genetic resources and the fair and equitable sharing of the benefits arising from the use of genetic resources. When we use genetic material, including genetic resources for research projects, we aim to return the commercial benefit to the ecosystem in a fair and reasonable way. Furthermore, our policy on Access to Genetic Resources promotes the conservation and sustainable use of genetic resources. Our aim is to support research that contributes to the conservation of biological diversity and the protection of species. So far, we have not included the social consequences of impacts related to biodiversity and ecosystems. The policy is based on the provisions of the Nagoya Protocol.

It is not only our business sectors that have an impact on the ecological system through their business activities – the impact of our suppliers' manufacturing and production must also be taken into account. Therefore, we expect our suppliers to take appropriate actions to protect the environment. In accordance with our Supplier Code of Conduct, our suppliers are responsible for ensuring the protection of biodiversity and ecosystems as well as the natural environment in which they operate, including air, water, land, natural resources, flora, fauna, people, and their interactions. The sourcing of materials that could lead to the loss of biodiversity (e.g., genetic diversity, species diversity, or ecosystems diversity) or deterioration of ecosystem conditions must be avoided. Our suppliers are called upon to implement and maintain an environmental policy.

We are obliged to comply with a multitude of laws and regulations both at the sites at which we operate and in our supply chain. We have implemented policies related to water, pollution, emissions, and waste and monitor these to help minimize our impact on ecological systems. Our policies and ISO certifications help us to ensure that our production sites comply with regulations to protect ecosystems. We plan to implement a biodiversity policy from 2025 onwards which specifically refers to our activities in land, water and sea use.

Our business activities may have a potentially negative impact on ecosystems. That is why we are working on a "biodiversity roadmap". This includes a biodiversity policy that addresses topics such as direct biodiversity loss, such as land use change, freshwater and marine use change, as well as sustainable agriculture and water use management, sustainable seas and deforestation. The policy is to come into effect in 2025. The provisions of the biodiversity policy will be integrated into the existing policies that are relevant to biodiversity-related topics. We are also working on implementing the Deforestation Regulation adopted by the European Commission for 2026.

Our actions and resources related to biodiversity and ecosystems (E4-3)

The Group Corporate Sustainability unit is responsible for developing and shaping the biodiversity strategy. It is also responsible for integrating the strategy into the company's objectives, identifying and assessing risks, and cooperating with various stakeholders. Group Corporate Sustainability is also responsible for preparing reports on our impact on biodiversity and the progress made in implementing the objectives.

In the reporting year, our actions relating to biodiversity focused on deepening our understanding of our impact on biodiversity and ecosystems in addition to the certification of one of our sites. The actions listed below are ongoing and have no fixed completion date.

Certification of one site

The Swiss Nature and Economy Foundation recertified our site in Vevey, Switzerland, and recognized the site as a pioneer for its commitment to biodiversity. This recertification confirms that at this site we are contributing toward maintaining and protecting the ecological system by planting native trees and plants. We do not use any crop protection products, but instead use goats to control the growth of brambles and weeds. To protect wildlife on our site, we monitor 53 species, build reptile and insect refuges, reserve areas for the preservation of endangered species, and have five beehives in place that require minimal human intervention.

Benefit sharing action

We source algae from Brittany for a RonaCare® product from our Electronics business sector. In this region, we financially supported the Regional Marine Fisheries and Aquaculture Committee to preserve the algae stocks and to assess and understand the ecological functioning of algae in Brittany. In doing so, we implemented a benefit sharing action as part of our Group policy Access to Genetic Resources and successfully completed a case with the German Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN) in accordance with current EU regulations.

Gaining knowledge of our impact on biodiversity

The Taskforce on Nature-related Financial Disclosures (TNFD) is an initiative that has developed a framework for organizations such as companies to assess and disclose their nature-related risks and opportunities. The TNFD places a significant emphasis on biodiversity, recognizing that the loss of biodiversity can pose substantial risks to businesses, including supply chain disruptions, regulatory changes and reputational damage. On the basis of this framework, we have taken the first steps toward a financial quantification of our biodiversity dependencies. Our ultimate objective is to use these data for our resilience analysis and to incorporate them in our business strategy.

As a first step, we analyzed the environment around our own sites using data from the Integrated Biodiversity Assessment Tool (IBAT). In a second step, we worked to analyze impacts and dependencies in our business sectors and supply chain. The aim was to gain a comprehensive understanding of how our supply chain can affect biodiversity. We used data from purchasing to gain an overview of the locations of our relevant suppliers in relation to our spending. We then compared this data with IBAT data and are now able to understand the biodiversity context of our suppliers' locations. We plan to take this data into account in our supply chain management and continue this action during 2025. In a third step, we aim to carry out a final evaluation by the end of 2025.

Since our actions in 2024 focused mainly on understanding our impact on biodiversity, we are not currently making use of compensation. Instead, we are concentrating on avoidance, minimization and restoration. Nevertheless, we are discussing in external committees how we can include compensation in our actions in the future.

We have not included indigenous knowledge and nature-based solutions in our actions. In the coming years, we will further refine our actions.

In 2024, no significant capital expenditures (CapEx) or operating expenditures (OpEx) were allocated to the biodiversity actions. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Our targets and impact metrics related to biodiversity and ecosystems (E4-4; E4-5)

We did not set any biodiversity targets for the reporting year and are therefore unable to report on the performance and effectiveness of such biodiversity targets. We initially focused on understanding our impacts, risks and opportunities related to biodiversity. In 2025, we will be working on the implementation of a biodiversity roadmap. For this roadmap, we plan to consider targets at the interfaces with nature, operational targets and business model or implementation targets. Targets at the interface with nature relate directly to nature or to certain influencing factors (e.g., the amount of water used in water stress areas), to the state of nature (e.g., the state of biodiversity in the vicinity of a site) or to the extent and quality of an ecosystem service (e.g., available water). Operational targets refer to indicators that relate to nature but do not directly assess the impact or dependence on nature. An example of this is water efficiency in industrial processes. Business model or implementation targets relate to the implementation of actions (e.g., the share of the supply chain that is certified) and to changes in the business model (e.g., the degree of circularity). Our planned targets are to be confirmed by the Merck Sustainability Board in 2025.

Resource Use and Circular Economy (E5)

Our material impacts, risks and opportunities related to resource use and the circular economy (E5 SBM-3)

We conducted a materiality assessment according to ESRS 2 by analyzing our value chain and the respective impacts, risks, and opportunities. These IROs were assessed accordingly. As a result, we identified three negative impacts, one positive impact, and two risks for the topic of resource use and circular economy. The description of the management of impacts risks and opportunities can be found under **ESRS 2 IRO-1**. Our disclosure focuses on the following impacts and risks:

Resource inflows, including resource use	
Identifier	E5-NI-01
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; own operations
Description	As an industrial manufacturing company, we procure and utilize a wide range of materials and chemicals. Despite initiatives to reuse and recycle, the majority of our resource inflows consist of virgin materials. This contributes contributing to the depletion of natural resources.

Resource outflows related to products and services; waste	
Identifier	E5-NI-02
Material impacts, risks and opportunities	Actual/potential negative impact
Time horizon	Medium-term
Value chain step	Downstream
Description	The manufacturing of our products creates a negative environmental footprint owing to the use of a large variety of resources. As to resources outflows, especially in the end-of-life phase, we generate a significant amount of waste.

Waste	
Identifier	E5-NI-03
Material impacts, risks and opportunities	Actual/potential negative impact
Time horizon	Medium-term
Value chain step	Downstream; own operations
Description	The use of chemical and pharmaceutical products is generally associated with a high risk of improper use, wrong disposal and, particularly in developing countries, with weak waste management systems. In the end-of-life phase in particular, we generate a significant amount of waste.

Resource outflows related to products and services	
Identifier	E5-PI-01
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Own operations
Description	In 2024, we launched the circularity rate, a new performance indicator that allows us to measure our circular waste practices and meet our related target. This initiative prompted changes in our production and disposal processes to minimize or avoid the generation of outflows and waste.

Resource inflows, including resource use	
Identifier	E5-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Medium-term
Value chain step	Upstream; own operations
Description	We use critical raw materials and minerals extracted for the manufacture of various products. Most of these raw materials are sourced from China; most of them are also processed there. Due to growing demand and ongoing environmental degradation, a shortage of these materials could pose a significant risk to manufacturers in our upstream supply chain and to our own operations. This is applicable to our Electronics business.

Resource inflows, including resource use	
Identifier	E5-R-02
Material impacts, risks and opportunities	Risk
Time horizon	Short-term
Value chain step	Upstream; own operations
Description	Our dependence on suppliers of certain critical raw materials can lead to increased competition, rising material and manufacturing costs or even disruption of the supply chain or reputational damage. Problems in the supply chain could arise, for example, with helium or finite elements due to the progressive depletion of the environment. Certain solvents and catalysts, such as palladium, make up a significant part of the cost structure. Price increases for these raw materials put the margins of our products at risk. This is applicable to our Electronics business.

Our policies relating to resource use and the circular economy (E5-1)

Supplier Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier E5-NI-01
Material sustainability matter	Resource inflows, including resource use
Key contents	The policy describes the expectations to our suppliers and sales intermediates with regard to human and labor rights, occupational health and safety, ethics, business integrity, protection of the environment, animal welfare, as well as continuous improvement and supplier management. A standardized process has been set up to ensure that our suppliers recognize the policy. Group Procurement is responsible for integrating sustainability requirements into the relevant phases of our procurement and supplier management processes. Since 2023, the policy is reflected in the Terms & Conditions of Purchase which are linked to our Purchase Orders.
Scope	The policy applies globally to all our providers of goods and/or services ("Suppliers") and to sales intermediates (e.g., dealers, distributors, wholesalers, and resellers).
Accountability	Chief Procurement Officer and Group General Counsel
Third-party standards/initiatives	The policy considers, amongst others the UN Global Compact, the United Nations Guiding Principles on Business and Human Rights, the ILO core labor standards, the EU Conflict Minerals Regulation (EU) 2017/821, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Sec. 1502, and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas, the Green House Gas Protocol, ISO 50001 on Energy Management, the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Ellen-MacArthur Foundation, the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, the ETS123 Appendix A and the US ILAR guide's last edition.
Consideration of stakeholder interests	The policy was developed with the involvement of internal stakeholders and external experts.
Availability	The policy is available internally on the intranet and publicly on our website. The policy is referred to in our orders via a link to the General Terms and Conditions; it is also embedded in new or amended contracts.

EHS Policy	
Connection to material impacts, risks and/or opportunities	Identifier E5-NI-02
Material sustainability matter	Resource outflows related to products and services; waste
Key contents	The basis of our operational environmental management is the Group-wide EHS policy (Environment, Health and Safety). The policy formulates our responsibility to minimize the negative environmental impact associated with our business activities and to protect the health and safety of our employees, customers, and contractors. It specifies our commitment to work in such a way that we reduce or eliminate risks to the environment, human health and safety. The policy is continually monitored and is part of our EHS management system. We are certified according to ISO 14001. The compliance with the requirements of ISO 14001 is reviewed annually as part of external surveillance and/or recertification audits. We have established processes and procedures to ensure compliance with regulations. We provide mandatory EHS training courses for our employees.
Scope	The policy applies Group-wide to our own operations and to the upstream and downstream value chain.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy is based on the principles of the UN Global Compact and the Responsible Care® Global Charter. It is aligned with the ISO 14001 and ISO 45001 standards.
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees and customers.
Availability	The policy is available internally on the intranet and publicly on our website.

Waste Management Standard	
Connection to material impacts, risks and/or opportunities	Identifier E5-NI-02, E5-NI-03
Material sustainability matter	Resource outflows related to products and services; waste
Key contents	The policy forms the framework for our waste management. It aims to ensure that our waste streams are properly managed to reduce environmental impact, ensure regulatory compliance, and minimize short and long-term liability risks. Mandatory EHS training is provided for employees. We have robust processes in place to ensure compliance. External waste disposal companies are regularly reviewed and approved by the site's EHS department - depending on the volume of waste, the hazards of the materials, the environmental and liability risks associated with the waste in question and the waste disposal company. It is recommended that audits be carried out every three to five years.
Scope	The policy applies Group-wide to all our locations. The scope of application primarily includes Group Environment, Health, and Safety (EHS) and site management in our own business and extends to all waste management contractors in the upstream and downstream value chain.
Accountability	EHS Manager, Site Manager/Director, qualified, responsible employees to whom tasks are delegated.
Third-party standards/initiatives	The policy is based on applicable laws and standards, specifically the Circular Economy Action Plan (COM/2020/98), Green Deal (COM/2019/640), Directive on Packaging and Packaging Waste (94/62/EC), and Waste Framework Directive (2008/98/EC).
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	Our Policy is available internally on the intranet.

Guidebook on Sourcing Strategies	
Connection to material impacts, risks and/or opportunities	Identifier E5-NI-01, E5-R-01
Material sustainability matter	Resource inflows, including resource use
Key contents	The policy defines the binding requirements for sustainable procurement. It provides a description of best practices for proven processes in the procurement strategies.
Scope	The policy applies Group-wide to our own operations in Global Procurement and in the upstream value chain to all our providers of goods and/or services.
Accountability	Head of Procurement Office Governance & Processes
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	Our Policy is available internally on the intranet.

Design for Sustainability Policy	
Connection to material impacts, risks and/or opportunities	Identifier E5-PI-01, E5-NI-02
Material sustainability matter	Resource outflows related to products and services
Key contents	The policy describes a holistic approach for the design of products and processes that aims to consider the well-being of people and the environment over the entire life cycle of a product. The sustainability assessment is used to define the sustainability targets for the product development project. It requires input from researchers, product managers, Environment, Health, and Safety (EHS), quality specialists, manufacturing, procurement, and marketing teams to maximize the positive impact and value of the product. Potential sustainability improvements are quantified and tracked in the DfS scorecard. Our Sustainability Analysis Guideline and Process document guides product development teams through completing the sustainability analysis activities and deliverables in our internal R&D system. The guideline and the process for sustainability analysis are carried out by product development teams. The guideline therefore relates to product sustainability and product innovations.
Scope	The policy applies worldwide to all our Life Science locations. The scope of application includes primarily Life Science units of R&D, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS), Procurement in our own business and extends to all providers of goods and/or services in the upstream value chain, and direct customers in the downstream value chain.
Accountability	The unit Sustainability and Social Business Innovation in Life Science
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders and experts.
Availability	Our Policy is available internally on the intranet.

SMASH Packaging Policy	
Connection to material impacts, risks and/or opportunities	Identifier E5-NI-01
Material sustainability matter	Resource inflows, including resource use
Key contents	Under the umbrella of Life Science's SMASH Packaging program, we are working to improve the sustainability properties of our packaging: We are optimizing resources, using more sustainable materials, and striving for a circular economy. The policy is built upon four pillars: SHRINK: Reduce amount of packaging; SECURE: Achieve zero-deforestation; SWITCH: Improve plastic sustainability; SAVE: Maximize recycling.
Scope	The policy applies worldwide to all our Life Science locations. The scope of application includes primarily Life Science units of R&D, Packaging Engineers, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS) and Procurement teams in our own business and extends to all providers of goods and/or services in the upstream value chain, and direct customers in the downstream value chain.
Accountability	The Sustainability and Social Business Innovation unit in Life Science
Third-party standards/initiatives	Our policy is based on applicable laws and standards, specifically the Circular Economy Action Plan (COM/2020/98), Green Deal (COM/2019/640), Directive on Packaging and Packaging Waste (94/62/EC), and Waste Framework Directive (2008/98/EC).
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders and experts.
Availability	Our Policy is available internally on the intranet.

The policies related to resource use and the circular economy are regularly monitored and updated. According to our Supplier Code of Conduct, suppliers must demonstrate that they deal with resource use and circular economy principles – for example by reusing products and materials such as packaging and/or developing and introducing recyclable products (e.g., via the cradle-to-cradle approach). They must also have systems and processes in place to manage and control the storage, recycling, reuse, or disposal of waste. In particular, hazardous waste must be adequately managed, controlled and treated prior to release into the environment.

Against the backdrop of our Design for Sustainability (DfS) policy, we have set ourselves the target of reducing the negative impact of products throughout their entire life cycle. To support our development units in dealing with negative product-related factors, we have introduced scorecards for sustainable design in all our business areas (see also the information on the Umbrella initiative below in “Our actions” section). Our scorecards are developed as part of annual reviews.

We are also helping to achieve waste targets and promote circular solutions with our SMASH Packaging program. For example, we are working to reduce the amount of packaging (SHRINK), achieve zero-deforestation (SECURE), improve plastic sustainability (SWITCH), and maximize recycling (SAVE).

Our actions and resources related to resource use and the circular economy (E5-2)

Actions are being implemented in all our business sectors to optimize the use of resources and promote recycling management. The sustainability assessments are implemented across all business sectors using a sustainability scorecard. Our Green Speed tool is also available to all business sectors. In our Life Science business sector, we are implementing our SMASH Packaging program, and in our Healthcare business sector, we are implementing our sustainable packaging program. In our Electronics business sector, we are implementing the following measures: solvent recycling in the organic light-emitting diodes (OLEDs) production, and optimized specialty gases.

Sustainable product development under one umbrella

As part of the Umbrella initiative, we bundle specific scorecards for each of our three business sectors that assess sustainable design as early as product development and that contain measurable criteria for the entire product life cycle of our global portfolio. Our objective is to steer our portfolio in the area of research and development (R&D) and develop more sustainable products and innovations, as well as minimize the detrimental impacts of production, usage, and disposal. The R&D sustainability assessments are performed in all three business sectors and include various sustainability matters throughout the value chain. In terms of circular economy, the key focus is on waste treatment and reduction, along with minimizing material usage in products and services. While the specific scorecard questions vary for each business sector, we consistently evaluate the potential of alternative methods for reducing production waste. We aim to further integrate crucial aspects of circular economy and dematerialization in the years ahead, with an emphasis on easing the burden on the environment by using materials more efficiently. This can improve the overall results on the scorecards. The sector sustainability unit, including R&D, product management, environmental, health and safety (EHS), quality, production, procurement, and marketing, are stakeholders in this endeavor. In the Electronics business sector, the scorecard helps us to identify strengths and areas for improvement in our **development projects**. In the reporting year, we carried out the sustainability assessment for more than 99% of all R&D initiatives, including all newly launched projects. In this context, we also introduced a semi-annual quality review in the reporting year, which gives our process additional precision. This comprehensive sustainability assessment creates transparency regarding the sustainability aspects of our innovation portfolio. The Umbrella initiative is anticipated to continue over the long-term.

Tool for the evaluation of chemical products

We want to make research and production as environmentally friendly as possible and have therefore developed our innovative **GreenSpeed tool**. This innovative tool allows us to automatically evaluate the sustainability of our chemical products during manufacturing, facilitating efficient and eco-friendly production methods. It tracks crucial metrics such as water usage, solvent consumption, energy expenditure, and greenhouse gas emissions, with the greenhouse gas emissions estimate derived from process mass intensity (PMI), or the total resources utilized to produce one kilogram of the final product.

The affected stakeholder groups of GreenSpeed include employees, customers, suppliers, and investors. We are in the process of enhancing the tool by adding modules to account for the impacts of specific production waste. In the next three to five years, we aim to make GreenSpeed available for the purpose of testing to other user groups inside and outside the company. We aim to launch a pilot project to implement GreenSpeed assessments within the Umbrella initiative, which should lead to a more reliable quantification of the environmental impact at an early stage of the R&D process. The assessment of chemical products using our GreenSpeed tool is anticipated to continue over the long-term.

Life Science: Sustainable packaging

Through our SMASH Packaging program in Life Sciences, we strive to enhance packaging sustainability, optimize resource efficiency, and promote circularity. SMASH Packaging is built on four key pillars: SHRINK, SECURE, SWITCH, and SAVE. Our goal is to achieve the following:

- SHRINK (Reduce the amount of packaging): We aim to reduce the packaging weight per sales unit by 10% by 2030. We are therefore concentrating on reducing the amount of corrugated cardboard, wood, glass and/or plastic packaging materials by replacing them with lighter or reused materials, or removing excess materials dunnage, etc.
- SECURE (Achieve zero deforestation): We aim for 100% of our fiber-based packaging to use deforestation-free packaging. We are therefore transitioning all packaging materials made from wood/paper fiber to recycled materials or materials obtained from certified or verified deforestation-free sources.
- SWITCH (improve plastic sustainability) and SAVE (maximize recycling): We aim to design packaging that is 100% in line with our principals of circular product development. That is why we are focusing on: increasing the recyclability and the amount of recycled content in packaging materials, as well as providing material labeling and/or disposal guidance to facilitate recycling or responsible disposal.

2030 is the time horizon for our SMASH Packaging actions and resources. The affected stakeholders include our Sustainability and Social Business Innovation unit, packaging engineers, and the Procurement, Quality, R&D, and Product Management units.

Healthcare: sustainable packaging

With the help of the MPact initiative, we are working on packaging solutions to reduce our overall environmental impact. The three main objectives are to reduce greenhouse gas (GHG) emissions; to reduce the use of packaging materials while increasing the recycling rate of packaging; and to examine the extent to which secondary and tertiary packaging made of plastic can be replaced by 2030. In preparation for the European Packaging and Packaging Waste Regulation (PPWR), we are analyzing its requirements to ensure appropriate alignment and compliance in the coming years.

In 2024, we focused on: (1) creating an understanding of the available levers and the regulatory landscape beyond the EU regulation on packaging waste; (2) creating a framework for sustainability that goes beyond CO_2; and (3) defining a common target, roadmap and global guidelines to enable a coordinated approach by the operational packaging units. MPact is designed to help achieve our 70% circularity target by 2030 and reduce the risk from materials of concern (or potential concern) and to reduce greenhouse gas emissions. The actions will be implemented over the next five to ten years and apply to the Healthcare business sector.

Healthcare: fertility pen take-back program

In 2024, our Healthcare business sector has continued working in a consortium for the Returpen fertility pen take-back pilot project in **Denmark**. The project is an important building block in our ambition to make our Fertility portfolio more sustainable – from manufacturing to our patients. The project was started in Denmark in 2023 with the aim of achieving a return rate of 25% of injection pens. This gives patients the opportunity to return used fertility injection pens to fertility clinics so that they can be recycled. Together with the consortium partners, we have signed a letter of intent to work together on the **recycling** of plastic, glass and metal components. The aim is to recycle 75% of the injection pens returned as part of the pilot projects. Our take-back pilot program is anticipated to continue over the long-term.

Electronics: optimized specialty gases

For our broad portfolio of specialty gases - which includes etching, cleaning, deposition, and dopant gases - we are looking for material solutions with optimized etching performance and low global warming potential (GWP). For specific customer applications, we implement actions to reduce greenhouse gases, optimize the use phase and dispose of products and packaging responsibly. By doing so, we want to contribute to reducing our customers' scope 1 emissions. Our actions apply worldwide to our customers and partners in our semiconductor value chain. The “optimized specialty gases” action is anticipated to continue over the long-term.

In 2024, no significant operating expenditures (OpEx) were allocated to the “Optimized specialty gases”. However, we allocated € 6 million of capital expenditures (CapEx) which are included in the respective lines of the balance sheet. For 2025, we do not intend to allocate any significant OpEx or CapEx.

Electronics: solvent recycling in our OLED production

One example of circularity in our production processes and along our value chain is the optimization of the production of organic light-emitting diodes (OLED) at our site in Darmstadt, Germany. The aim of this project is to help reduce CO_2 emissions and improve resource efficiency by recycling solvents even more effectively, reprocessing materials internally and enabling our customers to return old products. Therefore, we are striving to make greater use of digital technologies to further improve our processes. Our solvent recycling initiative in OLED production is anticipated to continue over the long-term.

In 2024, except of “Optimized specialty gases“, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated to the above mentioned actions in relation to resource use and the circular economy. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Our targets in relation to resource use and the circular economy (E5-3)

Our waste target for 2030 is to further reduce our own production-related waste or direct it towards material recovery. In addition, we have set further, non-quantifiable goals with the intention of continuously improving and advancing our sustainability measures. These goals are meant to express our commitment to establish a positive impact or reducing a negative impact in terms of resource use and the circular economy. With all of our targets and actions mentioned herein, we contribute to selected UN Sustainability Development Goals (SDGs). In our overarching **sustainability strategy**, the SDGs 9, 12 and 17 are highlighted under the focus area "Water and resource intensity".

Reducing the environmental impact of waste

Reference to material impacts, risks and/or opportunities	Identifier E5-NI-02, E5-NI-03, E5-PI-01
Material topic	Waste
Target	We aim to achieve a circularity rate of 70% throughout the company as part of our waste target 2030.
Reference value/year	Circularity rate of 64.1% in 2022.
Methods [MDR-T.80f]	Our circularity rate is calculated as waste and avoided waste divided by total waste and avoidance in metric tons. All production waste from all our sites is included in the calculation. Waste-to-energy is excluded from this calculation as it is not considered as recycling. The scope of measurement includes production waste but excludes one-time effects from specific waste streams such as sludge from wastewater treatment facilities (subject to disposal restrictions by regulators), construction and demolition waste, and soil waste, which can rarely be avoided and must be disposed of in accordance with clearly prescribed methods. These targets are set based on conclusive scientific evidence. These targets are set based on conclusive scientific evidence.
Consideration of stakeholders	Our Sustainability Board and business sectors are involved in setting targets, with final approval granted by the Executive Board.
Changes from the previous year	No changes were made.
Performance/Key figures	In 2024, the circularity rate amounted to 69.2%.

We report the circularity rate under **E5** and **ESRS 2 (SBM-1)** as it is one of our strategic sustainability key indicators used to measure our circular waste practices and meet our related target.

Our waste target for 2030 requires the reuse and material recycling of waste, which can then be reused as non-virgin materials. The avoidance of waste is tracked through the reduced use of raw materials and contributes to our ambitions. In addition, recycling of waste for reuse reduces the use of virgin materials. We adhere to the waste hierarchy for our waste treatment options. The term waste hierarchy refers to a framework that prioritizes waste management strategies according to their environmental impact. We follow the order below:

- Prevention: Reducing waste generation at the source.
- Minimization: Reducing the amount of waste produced.
- Reuse: Finding ways to use items more than once before disposal.
- Recycling: Processing waste materials to create new products.
- Recovery: Extracting energy or material from waste.
- Disposal: Safely disposing of waste that cannot be managed through the above methods.

This means prioritizing treatment options that are higher up the waste hierarchy. Our top priority is the prevention of waste. This hierarchy guides our sustainability efforts and emphasizes the importance of minimizing waste and maximizing resource efficiency. Our Waste Goal 2030 relates to prevention, reuse, and recycling.

Life Science: sustainable packaging

As part of SMASH Packaging in our Life Science business sector, we continue to make progress on our targets for more sustainable packaging. We are striving to reduce packaging weight by a total of 6,300 metric tons (SHRINK) by 2030. In the reference year 2020, the packaging weight was around 63,000 metric tons. In 2024, we implemented packaging improvements that save over 396 metric tons of packaging material annually. To stop deforestation (SECURE), we aim to use up to 100% deforestation-free fiber-based packaging by 2030. In the reference year 2020, 66% of our fiber-based packaging was produced in a deforestation-free manner. In 2024, 81.6% of fiber-based packaging was deforestation-free. By using packaging that is either recyclable or reusable or contains recycled materials (SWITCH & SAVE), we aim to develop 100% of our product packaging in line with our packaging circularity principles by 2030. In the reference year 2020, 49% of our product packaging met these principles. In 2024, 46.4% of product packaging aligned with our packaging circularity principles.

Reducing the weight of direct and shipment packaging includes reducing the amount of corrugated cardboard, wood, glass, and/or plastic packaging materials, for example, by reducing weight, substituting materials, reusing or removing excess filler material. We are converting all wood fiber packaging materials to recycled, certified or verified deforestation-free sources. The circular design principles of SMASH are also embedded into our DfS framework, which considers environmental impacts at every stage of the product life cycle during product development. Circular packaging is packaging that is either recyclable or reusable or contains recycled materials. This target is measured by dividing the total amount of circular packaging in metric kilotons by the total amount of packaging in metric kilotons. 2024 progress on the SHRINK and SECURE targets were on track as expected. 2024 progress on our SWITCH & SAVE target was below expectations compared to the 2020 baseline due to limited availability of data.

We measure our progress on the SHRINK, SECURE, SWITCH & SAVE targets based on the weight of materials avoided or converted annually. We additionally measure progress based on the weight of CO_2 equivalents (CO_2eq) avoided. All projects are reviewed individually and regularly after milestones are reached or following completion. In doing so, environmental impacts are measured and converted into CO_2eq. We monitor progress against these targets semi-annually and report annually to the leader of the Sustainability and Social Business Innovation unit in Life Science. These targets are set based on conclusive scientific evidence. Key functions in all areas of the company are committed to the overarching goal of reducing our ecological footprint by aiming to achieve climate neutrality by 2040 and decreasing our resource consumption. Key stakeholders involved in this target include Life Science R&D, Packaging Engineers, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS) and Procurement units. SHRINK relates to the first level of the waste hierarchy, i.e. prevention. SWITCH & SAVE relates to the following waste hierarchy treatment options including prevention, reuse and recycling. The scope and scale of this target have been set on a voluntary basis and are not legally required.

Life Science: sustainability in product development

In the Life Science business sector, in the beginning of 2024 we set the target for 95% of product development projects to have an active DfS scorecard by the end of 2024. As of the first quarter of 2023, 78% of the product development projects had an active DfS scorecard. By the end of 2024, 99.7% of product development projects had an active DfS scorecard.

We implement DfS scorecards in the product development process across the entire product life cycle with the aim of integrating and considering key impact areas, including circular economy and dematerialization. This target is measured based on product development projects with an active DfS scorecard divided by the total number of product development projects. Progress on this target is measured and reviewed annually and the target for the following year is set. “Product development project” refers to the individual, internal process through which new products can be added to our Life Science portfolio. Our progress towards this target exceeded our expectations in the reporting year 2024. This target is set based on conclusive scientific evidence.

Key functions in all areas of the company are committed to the overarching goal of reducing our ecological footprint by aiming to achieve climate neutrality by 2040 and decreasing our resource consumption. Key stakeholders involved in this DfS scorecard target include Life Science R&D, Packaging Engineers, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS) and Procurement units. The individual Life Science business areas and franchises receive quarterly updates on their individual area's targets. Life Science reports quarterly updates to the Group Corporate Sustainability unit to contribute to the Group-wide Umbrella initiative. Our Design for Sustainability ambition relates to multiple layers of the waste hierarchy, including prevention, reuse and recycling.

Life Science: data quality in our sustainability scorecard

At the beginning of 2024, our Life Science business sector set the goal that 95% of our product development projects will have a DfS scorecard by the end of 2024. As of the first quarter of 2024, the data quality was assessed at 50%. By the end of 2024, the data quality of DfS scorecards was 97.4%.

We implement DfS scorecards in the product development process across the entire product life cycle with the aim of integrating and considering key impact areas, including circular economy and dematerialization. This target is measured by the number of product development projects that meet the data quality requirements divided by the total number of product development projects. Progress on this target is measured and reviewed annually and the target for the following year is set. "Product development project" refers to the individual, internal process through which new products can be added to our Life Science portfolio.

Our progress towards this target exceeded our expectations in the reporting year 2024. This target is set based on conclusive scientific evidence. Key functions in all areas of the company are committed to the overarching goal of reducing our ecological footprint by aiming to achieve climate neutrality by 2040 and decreasing our resource consumption. Key stakeholders involved in this target include Life Science R&D, Packaging Engineers, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS) and Procurement units. The individual Life Science business areas and franchises receive quarterly updates on their individual area's targets. Life Science reports quarterly updates to the Group Corporate Sustainability unit to contribute to the Group-wide Umbrella initiative. The scope and magnitude of this goal have been set on a voluntary basis and are not required by legislation.

Life Science: more sustainable products

In our Life Science business sector, we will develop 10,000 more sustainable products with the help of the DfS scorecard by the end of 2030. In 2022, we started with 19 product alternatives developed with the DfS scorecard. In the reporting year 2024, 880 more sustainable products were developed using DfS scorecards.

We implement DfS scorecards in the product development process across the entire product life cycle with the aim of integrating and considering key impact areas, including circular economy and dematerialization. Products with significant sustainability characteristics are labeled as "**Greener Alternative Products**" in our portfolio. Progress on this target is measured and reviewed annually. Our progress towards this target exceeded our expectations in the reporting year 2024. This target is set based on conclusive scientific evidence.

Key functions in all areas of the company are committed to the overarching goal of reducing our ecological footprint by aiming to achieve climate neutrality by 2040 and decreasing our resource consumption. Key stakeholders involved in this DfS scorecard target include units of Life Science R&D, Packaging Engineers, Product Management, Quality & Regulatory, Environment, Health, and Safety (EHS) and Procurement. Individual Life Science divisions receive quarterly updates on their individual targets. Life Science reports quarterly updates to the Group Corporate Sustainability unit to contribute to the Group-wide Umbrella initiative.

The Design for Sustainability ambition relates to the first layer of the waste hierarchy, i.e. prevention. The scope and magnitude of this target have been set on a voluntary basis and are not required by legislation.

Our resource inflows (E5-4)

Metrics related to resource inflows

Resource inflows (in metric tons)	2024
Total weight of products and technical and biological materials used	12,878,998
Share of biological materials used to manufacture our products and services (including packaging) that is sustainably sourced (in %)	32.6
Absolute weight of secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture products and services	739,400
Share of secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture products and services (in %)	5.7

Overall total weight of products and materials used to manufacture products and services

Our assessment is based on the total weight of products in metric tons used to manufacture the products during the reporting period. We do not use approximations or assumptions for this metric. Our procured materials and products (including packaging materials) are used at the respective sites, depending on the sector and production process. The procured materials and products are subdivided into subgroups such as raw materials, biologics and chemicals. In our Life Science and Healthcare business, biologics include, for example, enzymes, proteins, peptides, oligonucleotides, and culture media. We do not procure any materials for our Electronics business listed under the procurement category of biologics.

Chemicals includes, for example:

- organic basics and solvents such as ethanol, toluene and acetone
- organic fine chemicals such as phosphorus, boron and sulfur components
- inorganic basics such as caustics NaOH, salts (e.g., sodium and potassium) and bromine
- inorganic fine chemicals such as precious metals (silver, gold, Pd, Rh, Ru, Os, Ir, Pt and compounds)
- critical raw materials such as tungsten powder, titanium, lithium, and aluminum (definition based on the European list of critical raw materials 2023)

In our Life Sciences and Healthcare business sectors, raw materials include, for example, antibiotics, amino acids, analgesics, vitamins, emulsifiers and surfactants, starches and sugars, lactoses and celluloses.

Packaging materials can be broadly categorized into glass, metal, plastic, paper and timber packaging. The packaging materials and supplies in our Healthcare business include, for example, films to produce blisters, plastic trays and folding boxes made of cardboard. The packaging materials in our Life Science and Electronics business include, for example:

- glass packaging such as tubing for ampoules, syringes and vials
- printed paper packaging such as corrugated board, folding boxes for ampoules and micro-flutes
- metal packaging such as cans, caps, seals, and stainless-steel containers
- plastic packaging such as stretch or shrink films, foam parts, plastic bulk containers and big bags
- composite packaging such as fiber drums

The complete data of the resource inflows is based on invoicing data.

Percentage of biological materials used for the sustainable production of products and sustainably sourced within products, packaging, and services

The assessment is based on the percentage of biological materials used to manufacture the company's products and services that come from sustainable sources. We calculate the fluctuation rate as follows: (biological materials used to manufacture the company's products and services that is sustainably sourced)/(overall total weight of materials used during the reporting period) x 100.

We use an approximation for this indicator. In our purchasing process, we distinguish between material categories, but there is currently no label for specific material types (e.g., biological). Consequently, only an approximation based on industrial and internal resources is made today.

We do not maintain a specific certification scheme to confirm the sustainable sourcing of biological materials. Our suppliers must adhere to our Supplier Code of Conduct, which emphasizes ethical behavior, labor rights, and environmental responsibility. We include a corporate responsibility clause in procurement contracts to support these principles and encourage supplier participation in training offered by the Together for Sustainability Academy, which focuses on sustainability best practices. We regularly assess suppliers to gauge their progress in sustainability initiatives and promote continuous improvement. Additionally, to optimize resource efficiency, we apply the cascade principle in material usage, ensuring that materials are processed for maximum value, reused, or recycled, and utilized for energy only at the end of their life cycle. We also take this principle into account with our avoidance activities within our production facilities by applying the hierarchy of the circular economy law.

Weight in absolute value of secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture the company's products and services (including packaging)

The assessment is based on the weight in absolute value of secondary reused products used to manufacture the company's products (including packaging). We do not use approximations or assumptions for this indicator.

Weight in percentage of secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture the company's products and services (including packaging)

The assessment is based on the percentage of secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture the company's products and services (including packaging). We calculate the fluctuation rate as follows: (secondary reused or recycled components, secondary intermediary products and secondary materials used to manufacture the company's products and services (including packaging))/(overall total weight of materials used during the reporting period) x 100. We use an approximation for this indicator. In our purchasing process, we distinguish between material categories, but there is currently no label for specific material types (e.g., recycled). Consequently, only an approximation based on industrial and internal resources is made today. The measurement of resource inflows metric has not been validated separately by an external body.

Our resource outflows (E5-5)

We are enhancing our commitment to integrating circular mechanisms in the development and production of key products while encouraging our suppliers to adopt similar practices. This approach aims to improve resource efficiency, and material recovery while creating sustainable supply chains.

Key products that bring us closer to a circular economy:

- Our packaging solutions for specialty gases, thin films, and select patterning products from Semiconductor Materials are intentionally crafted for repeated use. Reusable packaging types include a range of cylinder sizes and tube trailers for bulk specialty gases, smaller stainless steel and quartz containers for thin films, and high-density polyethylene totes and drums for patterning. Once Electronics customers have emptied the containers, they are sent back to our facility for thorough cleaning, refurbishment, and refilling. This approach effectively minimizes container waste, reduces the need for new production, and lowers the related resource consumption.

- OLED materials – Optimization of production across the value chain demonstrates our commitment to circularity in Electronics. By improving our solvent recycling, reprocessing materials internally, and facilitating the return of end-of-life products from our customers, we can reduce the product carbon footprint of these materials.

- The production sites of our Healthcare business sector have continued their zero-landfill initiative initiated in 2023, aiming to eliminate the direct disposal of production waste in landfills. Emphasis has been placed on waste avoidance strategies, such as reusing pallets and implementing deblistering to prevent non-circular disposal of tablets. Waste segregation has also been enhanced to improve recycling efforts compared to non-circular disposal routes. We collaborate with other pharmaceutical companies in the fertility pen take-back program. Additionally, Healthcare's MPact program focuses on promoting packaging circularity (see E5-5 for more information on "metrics related to recyclable content in packaging"), while efforts continue toward developing guidelines and establishing priorities. Key projects in recent years include reducing the grammage of certain cardboard packaging and downsizing packaging formats (e.g., Slim Pack).

- Bio-based solvents portfolio – Switching from petroleum-based solvents to bio-based solvents helps our Life Science customers reduce their carbon footprint. We will continue to add new bio-based solvents to our portfolio in 2025 – not only for our customers but also for our own applications in manufacturing. In 2024, our diverse portfolio of bio-based solvents helped our Life Science customers avoid over 47 metric tons of CO_2eq.

- Increasing recyclability of packaging materials – Wherever possible, our Life Science business is replacing expanded polystyrene (EPS) with molded components made of cellulose and recycled paper pulp. While EPS provides high insulation and cushioning for products, it is a petroleum-based material that takes hundreds of years to naturally decompose. As options for recycling EPS are limited, it is typically incinerated or sent to landfill. Our molded pulp components can be easily recycled with other paper materials and compacted together for storage and transport. We use molded pulp inserts to pack a variety of liter bottle configurations in shipping boxes. In 2024, our Life Science business avoided the use of over 3.1 million EPS inserts globally.

The assessment of recyclability or the recyclable content is applied to our entire portfolio. The products were categorized into groups. The recyclable portion of these product groups was quantified and weighted based on their respective sales share and then added up. The contribution of each individual product group to the sum parameter of the recyclable portion is thus based on sales.

Metrics related to recyclable content in packaging

97.7% represents the proportion of recyclable content in packaging in the actual year 2024. We do not manufacture our own packaging but only purchase it. The recyclable portion of all our packaging is determined based on the procurement data. The quantification is based on mass. The recyclable content is defined based on the technical feasibility of the recycling process. Recycling carried out by the customer and the final recycling rates are not quantified or considered here. The measurement of recyclable content in packaging metric has not been validated separately by an external body.

Metrics related to resource outflows – waste

Resource outflows - Waste (in metric tons)	2024	2024 thereof: Merck KGaA
Waste generated	161,143	64,234
Hazardous waste diverted from disposal due to preparation for reuse	–	–
Hazardous waste diverted from disposal due to recycling	22,177	82
Hazardous waste diverted from disposal due to other recovery operations	12,539	75
Non-hazardous waste diverted from disposal due to preparation for reuse	–	–
Non-hazardous waste diverted from disposal due to recycling	70,636	47,403
Non-hazardous waste diverted from disposal due to other recovery operations	9,974	554
Total waste by weight diverted from disposal	115,326	48,114
Hazardous waste directed to disposal by incineration	27,320	5,670
Hazardous waste directed to disposal by landfilling	639	231
Hazardous waste directed to disposal by other disposal operations	1,588	–
Total hazardous waste combining all waste treatment types	29,548	6,058
Non-hazardous waste directed to disposal	16,269	10,219
Non-hazardous waste directed to disposal by incineration	11,502	10,219
Non-hazardous waste directed to disposal by landfilling	4,766	–
Non-hazardous waste directed to disposal by other disposal operations	–	–
Non-recycled waste	68,330	16,749
Share of non-recycled waste	42	26
Hazardous waste	64,264	6,058
Total radioactive waste	–	–
Total amount of waste directed to disposal	45,817	16,120
The total amount of hazardous waste summing all three recovery operation types: preparation for reuse; recycling; and other recovery operations.	34,717	157
The total amount of non-hazardous waste summing all three recovery operation types: preparation for reuse; recycling; and other recovery operations.	80,610	47,957

Our Waste Management Standard regulates the key principles for effective and sustainable waste management, emphasizing the need to identify opportunities to minimize waste and maximize the use of recyclable and reusable materials wherever possible. Action plans are adopted to describe the possibilities and actions needed for example to regulate materials until they are confirmed as waste or materials that are diverted from the disposal operations. Processes that aim to recover materials or energy from waste, beyond traditional recycling, are of growing importance.

Within these processes, we:

- collect and aggregate relevant waste disposal data
- document waste disposal transactions with external service providers
- categorize waste as hazardous or non-hazardous in accordance with the Waste Management Standard
- control and verify waste data by a designated individual (e.g., EHS manager)
- enter these data into a database. The decentralized requirements stipulate the collection and reporting of data as per central guidelines, ensuring accuracy and validity through controls while adhering to a central timeline for reporting data.

For the quantitative waste indicator “Preparation for reuse”, we report 0 metric tons for the reporting year. This is due to the fact that we document all products and materials that are prepared for reuse under avoidance. Since these materials never reach waste status, they do not contribute to the total waste volume. The quantities are assessed quarterly and documented in our systems.

The documentation of waste streams and their classification is carried out on the basis of predefined waste categories. In addition to the distinction between hazardous and non-hazardous waste, more detailed information on the type of waste is recorded and waste categories such as electronic waste, waste from wastewater treatment plants or organic solvents are tracked individually. Among the waste to be disposed of, the following waste categories are significant for the company's value-adding activities:

- waste from production (excluding solvents, as these are listed in a separate category): Examples are used chemicals such as acids, bases or biohazardous waste
- waste from wastewater treatment plants (e.g., different types of sludges from effluent treatment or wastewater that is disposed of as waste)

Among the waste that is not to be disposed of, the following waste categories are significant for the company's value-adding activities:

- organic non-halogenated solvents (Halogen <5%): Our broad product portfolio and diverse manufacturing methods result in the creation of various types of solvent waste, primarily arising from synthesis-, purification-, cleaning- and distillation activities. These solvents and solvent mixtures include acetone, heptane and toluene, as well as other organic solvents.
- non-hazardous paper and cardboard waste
- non-hazardous household and similar waste (e.g., waste from office spaces and canteens, waste to be composted).
- non-hazardous plastic waste

We do not use approximations or assumptions for waste diverted from disposal or waste directed to disposal for various disposal operations. The data collected is based on production data and the quantities reported by the respective disposal companies. The measurement of resource waste metric has not been validated separately by an external body.

Metrics related to our own resource outflows

Expected durability of Healthcare products

The expected durability of Healthcare products represented 3.1 years in the reporting year 2024. To define this indicator, we use the maximum durability of the individual Healthcare products. These are quantified on the basis of their respective share of sales and then added up. The contribution of each individual product to the sum parameter of the total durability is thus based on sales. We do not use approximations or assumptions for this indicator. The durability of the individual Healthcare products is clearly defined and publicly available. For the industry average, we select comparable drugs from other pharmaceutical companies and average their shelf life across all treatment categories.

Our product portfolio encompasses offerings from all three business segments: Life Science, Healthcare, and Electronics. When considering essential factors such as product design, operational processes, and environmental conditions, the disclosure requirements for expected durability of products have limitations. We do not use any approximations or assumptions. Instead, the information of the individual products is clearly defined and publicly available for Healthcare products because of their determined longevity, resilience, and robustness. These products are quantified based on their respective share of sales and then added up. The contribution of Healthcare product to the sum parameter of the total durability is thus based on sales.

Product repairability in Life Science and Electronics

The product repairability in Life Science is 51.0% in the reporting year 2024. In Electronics, product repairability amounts to 100.0% in the reporting year 2024. The repairability is either taken as given (and thus rated as 100%), not given (and thus rated as 0%) or not applicable (and thus not included in the rating).

The disclosure requirements for product repairability has limitations. The respective rating distinguishes between (1) repairability as given (and thus rated as 100%), (2) not given (and thus rated as 0%), or not applicable. Healthcare products are excluded from this rating because they lack mentionable serviceability, maintainability, and reusability.

Proportion of recyclable content in Healthcare products

The proportion of recyclable content in Healthcare products was not quantified in 2024. The assessment of recyclability or the recyclable content is applied to our entire product portfolio. The products were categorized into groups. The recyclable portion of these product groups was quantified and weighted based on their respective sales share and then added up. The contribution of each individual product group to the sum parameter of the recyclable portion is thus based on sales. We estimate the recyclable content of products in the Healthcare sector to be 0% since the processing infrastructure for primary packaging is currently only being established, and contaminated packaging can only be recycled in very special cases. The actual active ingredients, when quantified by mass, make up a smaller share and, according to our assumptions, do not contain any recyclable content. The recyclable content is defined based on the technical feasibility of processing. The recycling carried out by the customer and the final recycling rates are not quantified or considered here.

Proportion of recyclable content in Life Science and Electronics products

In the business sectors Life Science and Electronics, we examined the theoretically recyclable products. For Life Science, the share of recyclable content in the reporting year amounted to 18.0% and for Electronics it amounted to 9.0%. The assessment of recyclability or the recyclable content is applied to our entire portfolio. The products were categorized into groups. The recyclable portion of these product groups was quantified and weighted based on their respective sales share and then added up. The contribution of each individual product group to the sum parameter of the recyclable portion is thus based on sales. The recyclable content is defined based on technical feasibility for processing. The recycling carried out by the customer and the final recycling rates are not quantified or considered here.

The measurement of our own resource outflows metrics has not been validated separately by an external body.

Social

Own Workforce (S1)

Our employees are at the heart of advancing human progress. They tackle complex challenges and cultivate a culture of innovation and inclusion. We encourage our workforce to pursue careers that resonate with their individual aspirations, skills and interests. This will not only boost employee satisfaction but also unlock our collective potential across the Group.

Our Group Human Resources (HR) unit supports all business sectors and enabling functions as regards our human capital. We want to ensure that that we involve our employees in our workforce strategies in alignment with Group-wide HR guidelines. This commitment includes implementing attractive compensation models and benefits that reflect our dedication to nurturing talent and fostering a diverse and inclusive workplace.

The insights we gather from understanding workforce impacts are essential to our strategic planning and business model evolution. Our Chief Human Resources Officer leads the HR function, overseeing initiatives that create an environment where every employee feels valued and appreciated. This inclusive approach enhances overall performance and leads to positive outcomes for our customers, patients and partners.

To reinforce our commitment to Diversity, Equity, Inclusion, and Belonging (DEIB), we have established a centralized Diversity, Equity & Inclusion Council. Comprising high-ranking executives from across our sectors, this council ensures that inclusion initiatives are woven into our company-wide strategy. It champions equity and inclusion, sets strategic targets, and empowers managers to meet their responsibilities, aligning workforce dynamics with our business objectives.

Understanding and addressing workforce impacts is crucial for cultivating an inclusive culture that enhances employee engagement and drives our strategic direction. We continually adapt our business model to reflect the needs and aspirations of our workforce, and thereby, we position ourselves for sustainable growth and success.

Definition of our own workforce

Our own workforce consists of employees and non-employees. Employees include all persons who are employed on a full-time or part-time basis, have a permanent or fixed-term formal employment contract with one of our subsidiaries and are paid via the payroll of the respective business sectors.

Non-employees include apprentices, interns and working students. In the case of apprentices and interns, the purpose of their employment is to gain vocational training or an educational background; in the case of working students, their status as student outside of the company is taken into account. External employees or persons who do not have a formal employment relationship with a subsidiary of the Group also fall into the category of non-employees. These include contractors (self-employed persons) as well as people employed by a third party who are engaged in ‘employment activities’ (NACE Code N78) for us.

Workers in our upstream and downstream value chain who are or can be potentially impacted by activities connected to our own operations and value chain, including through our products or services, as well as through our business relationships do not count as non-employees. Our reporting regarding workers in our value chain can be found under **S2**.

Our material impacts, risks and opportunities related to our own workforce (S1 SBM-3)

As part of the materiality analysis, we assessed our impacts, risks and opportunities (IROs) in relation to our own workforce and identified material IROs in the areas of working conditions as well as equal treatment and opportunities for all. In this analysis, all people in our own workforce who could be materially impacted were in scope.

Our disclosures refer to the following material impacts and risks in relation to working conditions:

Adequate wage; Collective bargaining, including rate of workers covered by collective agreements; Secure employment; Working time	
Identifier	S1-NI-01
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Medium term
Value chain step	Own operations
Description	Merck is a company with numerous employees around the globe. We operate sites in countries and markets where adequate working conditions are not mandated by national or local laws. While we are committed to granting these rights, potential disregard of adequate working conditions can have a negative impact. Many workers are covered under collective bargaining agreements that protect workers' rights and establish wages.

Work-life balance	
Identifier	S1-NI-02
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Medium term
Value chain step	Own operations
Description	Poor working conditions and a negative working environment negatively impact the quality and the productivity of employees' work. A poor work-life balance may be detrimental to employees' physical, mental and emotional well-being.

Health and safety	
Identifier	S1-PI-01
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Own operations
Description	The health and well-being of employees is crucial for companies. Companies with special focus and actions to promote or improve employees' health and well-being could have a positive impact on the health of individual employees. We recognize that employee well-being is essential for both a positive workplace culture and enhanced business performance. To support this, we have implemented a comprehensive global employee health strategy.

Health and safety	
Identifier	S1-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Medium term
Value chain step	Own operations
Description	Pandemic risk, esp. new Covid-19 waves Viral or bacterial pandemics pose a serious threat to people's lives. Such scenarios also pose economic risks for our company, for example due to lower demand from customers or failures in the supply system. Experience with the Covid-19 has shown that companies that are not prepared to ensure the safety and health of their employees during a pandemic can incur high costs.

In the following tables, we show our identified material impacts regarding equal treatment and opportunities for all:

Employment and inclusion of persons with disabilities	
Identifier	S1-NI-03
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Short term
Value chain step	Own operations
Description	Companies tend toward less diverse workforces and to not focus on diversity. This could lead to a low representation of minority groups, such as people with disabilities.

Gender equality and equal pay for work of equal value	
Identifier	S1-NI-04
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Medium term
Value chain step	Own operations
Description	In principle, pay discrepancies for equal work may exist between genders.

Diversity	
Identifier	S1-PI-02
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Own operations
Description	In the company's own operations, a positive impact is being made based on our continuous efforts and initiatives to build an inclusive culture in which employees feel welcome and valued.

Training and skills development	
Identifier	S1-PI-03
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Own operations
Description	We believe we have a positive impact within our own business on the topic of employee development as a result of building social capital through employee training and personal development opportunities.

We perceive our identified material negative impacts regarding adequate wages, collective bargaining, secure employment, working time, work-life balance as well as gender equality and equal pay for work of equal value as widespread in the context in which we operate. However, we believe the material negative impact regarding employment and inclusion of persons with disabilities is related to potential individual incidents.

We did not identify any material impacts on our own workforce that may arise from transition plans for reducing negative impacts on the environment and achieving greener and climate-neutral operations.

The identified material risk of a pandemic (S1-R-01) arises from external factors and is not linked to any impacts or dependencies on our own workforce, nor does it arise from our strategy or business model. Beyond the risk of a pandemic, we have not identified any further material risks related to working conditions or equal treatment and opportunities for all. At this stage, we are actively working to gain insights into how individuals with specific characteristics may experience varying levels of risk.

Based on our human rights risk analysis, we have not identified any significant net risk in relation to incidents of forced and compulsory labor as well as child labor for our operations.

Our policies related to our own workforce (S1-1)

We aim to manage the identified material impacts and risks related to our own workforce with the following policies:

Social and Labor Standards Policy	
Connection to material impacts, risks and/or opportunities	Identifier S1-NI-01; S1-NI-02; S1-PI-01; S1-R-01; S1-NI-03; S1-NI-04; S1-PI-02; S1-PI-03
Material sustainability matter	Working conditions: secure employment; working time; adequate wages; collective bargaining; work-life balance; health and safety Equal treatment and opportunities for all: employment and inclusion of persons with disabilities; gender equality and equal pay for work of equal value; diversity; training and skills development
Key contents	The policy defines our commitment to human rights and upholding international social and labor standards throughout our operations. It specifies our endeavors to foster a respectful and safe working environment while promoting accountability and compliance with labor standards in the following areas: Forced labor, modern slavery and human trafficking: We prohibit all forms of forced or compulsory labor and emphasize ethical recruitment practices. Child labor: We do not use child labor and we support protective actions for young workers. Freedom of association and collective bargaining: We recognize the right of employees to organize and bargain collectively. Fairness and respect: We promote diversity and prohibit discrimination in the workplace. Occupational health and safety: We are committed to protecting employees from work-related illnesses and accidents. Working time and remuneration: We ensure appropriate remuneration and compliance with local laws regarding working hours. Parental leave: We offer support for employees during and after childbirth.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Managing Directors of our legal entities
Third-party standards/initiatives	The policy is based on the International Bill of Human Rights, the UN Guiding Principles on Business and Human Rights, the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work and its follow-up, the ILO Convention on Safety and Health at Work and the ILO Declaration on Multinational Enterprises. We are also committed to ethical recruitment and the employer pays principle.
Consideration of stakeholder interests	When setting the policy, we involved internal stakeholders such as our internal HR country heads and employees from our legal department.
Availability	The policy is available internally on the intranet and publicly on our website

Human Rights Charter	
Connection to material impacts, risks and/or opportunities	Identifier S1-NI-01; S1-NI-02; S1-PI-01; S1-R-01; S1-NI-03; S1-NI-04; S1-PI-02; S1-PI-03
Material sustainability matter	Working conditions: secure employment; working time; adequate wages; collective bargaining; work-life balance; health and safety Equal treatment and opportunities for all: employment and inclusion of persons with disabilities; gender equality and equal pay for work of equal value; diversity; training and skills development
Key contents	The policy outlines our commitment to respecting human rights and supporting its realization across our operations, supply chain, and business relationships. It addresses specific human rights issues such as social and labor standards, access to health, product stewardship, research ethics, privacy, supply chain and business relationships, investment decisions, communities, security, and bribery and corruption. Additionally, the policy describes our overarching human rights due diligence process including the handling of concerns and grievances.
Scope of application	The policy applies Group-wide to all employees at our own operations. Furthermore, we expect our business partners and other parties linked to our operations, products and services to respect human rights and practice human rights due diligence as articulated in our policy.
Accountability	Executive Board
Third-party standards/initiatives	The policy is based on the International Bill of Human Rights; the UN Guiding Principles on Business and Human Rights (UNGP); the principles of the UN Global Compact; the ILO Declaration on Fundamental Principles and Rights at Work and its follow-up, and the ILO Declaration on Multinational Enterprises.
Consideration of stakeholder interests	When setting the policy, we considered the interests of external stakeholders such as trade unions, industry associations, and representatives of potentially impacted groups. We also considered the knowledge of internal topic experts.
Availability	The policy is available internally on the intranet and publicly on our website.

Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-01; S1-R-01; S1-NI-03; S1-NI-04; S1-PI-02; S1-PI-03
Material sustainability matter	Working conditions: health and safety Equal treatment and opportunities for all: employment and inclusion of persons with disabilities; gender equality and equal pay for work of equal value; diversity; training and skills development
Key contents	The policy guides our workforce in conducting business ethically - in line with our company values and the law. It outlines our commitment to respect human rights, our principles in the workplace and for dealing with external business partners, customers, consumers and end-users. The policy also addresses our principles of responsible business conduct, for example product safety, patient safety and the conduct of clinical studies. Furthermore, the policy describes various reporting methods for employees if they suspect that internal or external rules are being breached.
Scope of application	The policy applies Group-wide to all employees at our own operations. It also applies to downstream business activities and relations with external stakeholders, such as consumers and end-users.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy follows the principles of the UN Global Compact.
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders and experts.
Availability	The policy is available in 22 languages – internally on the intranet and publicly on our website.

Group Policy Statement on Compliance with Human Rights and Environmental Due Diligence Obligations	
Connection to material impacts, risks and/or opportunities	Identifier S1-NI-01; S1-NI-02; S1-PI-01; S1-R-01; S1-NI-03; S1-NI-04; S1-PI-02
Material sustainability matters	Working conditions: secure employment; working time; adequate wages; collective bargaining; health and safety Equal treatment and opportunities for all: employment and inclusion of persons with disabilities; gender equality and equal pay for work of equal value; diversity
Key contents	The policy emphasizes our commitment to human rights and environmental standards, detailing the processes and actions in place, such as risk management, preventive measures and remedial action, to uphold these principles across our operations and supply chain.
Scope of application	The policy applies Group-wide to all employees at our own operations and to the upstream and downstream value chain.
Accountability	Human Rights Officer
Third-party standards/initiatives	The policy is based on the ILO core labor standards; the UN Global Compact; the International Covenant on Civil and Political Rights; the International Covenant on Economic; Social and Cultural Rights; the UN Guiding Principles on Business and Human Rights; and the OECD Guidelines for Multinational Enterprises.
Consideration of stakeholder interests	When setting the policy, we considered expertise from an external legal consultancy as well as our internal topic experts.
Availability	The policy is available internally on the intranet and publicly on our website.

Flexible Working Guideline	
Connection to material impacts, risks and/or opportunities	Identifier S1-NI-01; S1-NI-02
Material sustainability matter	Working conditions: working time; work-life balance
Key contents	With this policy, we want to take account of today's dynamic working world and create a high degree of working flexibility in our organization. The aim is to promote agility in collaboration and harmonize mobile working with our work culture in the offices.
Scope of application	The policy applies Group-wide to all employees at our operations.
Accountability	HR Performance, Rewards and Recognition unit.
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees by incorporating employee feedback gathered from our annual engagement survey and insights from local benchmarking within the employee market.
Availability	The policy is available internally on the intranet.

EHS Policy	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-01; S1-R-01
Material sustainability matter	Working conditions: health and safety
Key contents	The basis of our operational environmental management is the Group-wide EHS policy (Environment, Health and Safety). The policy formulates our responsibility to minimize the negative environmental impact associated with our business activities and to protect the health and safety of our employees, customers, and contractors. It specifies our commitment to work in such a way that we reduce or eliminate risks to the environment, human health and safety. The policy is continually monitored and part of our EHS management system. We are certified according to ISO 14001. The compliance with the requirements of ISO 14001 is reviewed annually as part of external surveillance and/or recertification audits. We have established processes and procedures to ensure compliance with regulations. We provide mandatory EHS training courses for our employees.
Scope of application	The policy applies Group-wide to all employees at our own operations and to the upstream and downstream value chain.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy is based on the principles of the UN Global Compact and the Responsible Care® Global Charter. It is aligned with the ISO 14001 and ISO 45001 standards.
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees and customers.
Availability	The policy is available internally on the intranet and publicly on our website.

Group Employee Health Standard	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-01; S1-R-01
Material sustainability matter	Working conditions: health and safety
Key contents	The policy defines a systematic Group-wide recognition for the health of our employees. Protecting, maintaining, and promoting the individual health and well-being of our employees is an integral part of the way we work.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Chief Sustainability Officer
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees through, among other things, an exchange with the works council as well as through our diverse, international, and cross-functional teams.
Availability	The policy is available internally on the intranet.

Contractor EHS Management Standard	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-01
Material sustainability matter	Working conditions: health and safety
Key contents	The policy defines binding requirements for local management systems and their processes in order to manage contractors while working on our premises safely. This comprises five steps: (1) selection of the respective company, (2) work planning, (3) work execution, (4) monitoring, and (5) evaluation.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Managing Director or site manager
Third-party standards/initiatives	None
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders and experts.
Availability	The policy is available internally on the intranet.

Safety Culture Excellence Standard	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-01
Material sustainability matter	Working conditions: health and safety
Key contents	The policy describes our efforts to create a culture of safety excellence by ensuring methods are in place to continuously improve and maintain the safety culture, including evaluating gaps, setting local targets, developing plans, and implementing actions.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of our employees through, among other things, a cross-functional team.
Availability	The policy is available internally on the intranet.

Diversity Equity Inclusion Belonging (DEIB) Policy	
Connection to material impacts, risks and/or opportunities	Identifier S1-NI-03; S1-NI-04; S1-PI-02
Material sustainability matter	Equal treatment and opportunities for all: employment and inclusion of persons with disabilities; gender equality and equal pay for work of equal value; diversity
Key contents	The policy introduced in 2024 creates a company-wide framework for DEIB activities within the organization, to foster an inclusive culture where all employees can thrive, regardless of their backgrounds. The policy outlines management responsibilities in driving DEIB initiatives and includes commitments to equal opportunity and non-discrimination, with specific aspirations for achieving gender parity in leadership by 2030, increased ethnic diversity and fostering an inclusive culture for all employees.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Chief Diversity, Equity and Inclusion Officer
Third-party standards/initiatives	The policy is based on the fundamental conventions of the International Labour Organization (ILO).
Consideration of stakeholder interests	When setting the policy, we considered expertise from the Diversity, Equity and Inclusion Council, the legal team, our internal topic experts and external best practice examples.
Availability	The policy is available internally on the intranet and publicly on our website.

Group Standard – People Development and Learning	
Connection to material impacts, risks and/or opportunities	Identifier S1-PI-03
Material sustainability matter	Equal treatment and opportunities for all: training and skills development
Key contents	The policy sets the framework within which our employees can develop. It takes a holistic view of the development opportunities within our company, particularly in the following areas: development and career planning, feedback tools, development and learning solutions.
Scope of application	The policy applies Group-wide to all employees at our own operations.
Accountability	Chief Human Resources Officer
Third-party standards/initiatives	None
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders.
Availability	The policy is available internally on the intranet.

The policies related to our own workforce are regularly monitored and updated.

Our Human Rights Charter, the Social and Labor Standards Policy and our Human Rights Policy Statement all follow the principles of the UN Guiding Principles on Business and Human Rights as well as the International Labour Organization Declaration on Fundamental Principles and Rights at Work. In the policy statement, we additionally commit to the OECD Guidelines for Multinational Enterprises. Furthermore, all three documents explicitly address trafficking in human beings, forced labor and child labor.

The Human Rights Charter is our overarching company directive that articulates our overall commitment to upholding human rights, including labor rights. It interlinks and complements our existing rules and regulations pertaining to human rights. We expect our employees as well as our suppliers and all companies with which we have business ties to comply with the Charter.

As a signatory to the UN Global Compact since 2005, we endeavor to prevent the risk of human rights violations as far as possible across our own sites and our supply chain. That is why we integrate human rights due diligence into our business processes. Our approach to human rights due diligence encompasses six main components:

- Policy commitment: Human Rights Charter and Human Rights Policy Statement
- Identifying human rights risks and violations
- Addressing our impacts via defined responsibilities and management processes
- Training and capability building on human rights throughout the organization and beyond
- Reporting on human rights due diligence activities
- Ensuring effective grievance mechanisms are in place

We view our human rights due diligence approach as an ongoing process that requires continuous adaptation and improvement.

We are constantly expanding our internal communication and engagement to better embed our commitment to human rights across the Group. For example, the implementation of the Social and Labor Standards Policy includes open dialogue and cooperation between employees and management. Furthermore, our cross-sectoral human rights working group exchanges information on activities and the latest developments in the areas of business and human rights. As an active member of the Business & Human Rights Peer Learning Group within the UN Global Compact Network Germany, we discuss challenges, current issues, experiences, and successful approaches in exercising human rights due diligence with other companies.

We have a Group-wide complaints mechanism in place for reporting human rights and environmental concerns, enabling employees and external stakeholders to report their potential concerns anonymously and free of charge via telephone or a web app. If we identify a violation of human rights or environmental obligations at our own operations or in our supply chain, we aim to take immediate action. We address violations in our own operations directly, while for supply chain issues we collaborate with suppliers, potentially resulting in suspension or termination of relationships in severe cases.

Our commitment to equal opportunity and non-discrimination is set out in our Human Rights Charter, the Code of Conduct, the Social and Labor Standards Policy as well as the DEIB Policy. These documents form a framework that aims to eliminate discrimination, including harassment, and promote equal opportunities. The Social and Labor Standards Policy specifically covers the following grounds for discrimination: racial and ethnic origin, color, sex, sexual orientation, gender identity or expression, disability, age, religion, political opinion, social origin, or any other forms of discrimination prohibited by law.

Furthermore, with our DEIB Policy, we recognize the immeasurable value of diversity and embrace the rich mix of our people. We strive for equitable outcomes and work to identify and eliminate barriers that may hinder our employees' contributions or ability to thrive, creating access to opportunity and advancement. We are committed to fostering a truly inclusive culture for all employees. Thereby, we are dedicated to nurturing an environment in which all employees have a strong sense of belonging, and fostering a culture where we care about one another, everyone feels welcome and everyone's voices are heard. Based on this shared understanding, we pledge to our people, our partners, our patients and our industry to move the needle on our DEIB efforts, with robust aspirations in three focus areas: gender, culture and ethnicity as well as inclusion. Additionally, our position papers on DEIB affirm that our company is committed to the inclusion of people with disabilities and does not tolerate any form of discrimination, physical or verbal harassment, or intolerance.

We have established various reporting channels to ensure employees have a clear point of contact if they believe that they have experienced harassment or discrimination in the workplace or any other violations of our standards. Their first points of contact are their supervisors, HR or compliance teams, and they can also use the anonymous compliance hotline. All complaints are treated confidentially, and investigations are conducted by independent personnel. If violations are confirmed, we strive to implement appropriate preventive and remedial actions.

We are committed to going beyond EHS regulatory compliance by establishing a culture of continuous improvement and health and safety excellence. Our EHS Policy spells out our overall commitment to operating in a manner that reduces or eliminates risk to the environment, human health and safety. The complementary Safety Culture Excellence Standard describes our Group-wide approach to occupational health and safety including workplace accident prevention. Furthermore, we have a health and safety management system in place that covers the prevention of workplace accidents and is part of our globally integrated management system that comprehensively addresses quality, environmental, health, and safety aspects.

Our processes for engaging with our own workforce and employees' representatives about impacts (S1-2)

We recognize that our workforce is a vital stakeholder in shaping our sustainability strategies and practices. To ensure that the perspectives of our employees are taken into account in our decisions as regards working conditions as well as equal treatment and opportunities for all, we have implemented the following processes:

Engagement surveys

We aim to increase employee engagement and promote individual accountability by creating regular opportunities for dialogue and participation within the company. In addition to topic-specific pulse surveys, our primary method is the annual global Employee Engagement Survey (EES), which serves as the central feedback channel for all our employees. The confidential survey allows employees to share their views on various aspects, such as employee satisfaction, leadership, workplace-related topics, (mental) health, and work-life balance. In some countries and markets, it also includes voluntary self-identification questions related to disabilities, LGBTQIA+ affiliation, and ethnic origin, helping us to foster a more inclusive environment for underrepresented groups. The EES results provide valuable data points for managers, employees and Human Resources to reassess past and ongoing efforts and develop new measures and initiatives that promote a culture of trust and collaboration in the workplace. By incorporating employee feedback, we aim to ensure that our decisions and activities align with the needs and perspectives of our workforce. The operational responsibility for the EES lies with our Chief Human Resources Officer.

Our Euroforum

The Euroforum serves as our key dialog platform to facilitate exchange between employer and employee representatives at a European level. It represents employees in all EU countries as well as Switzerland, Norway and the United Kingdom, although not all entitled countries send delegates. The members of the Merck Euroforum represent employees in their respective countries and bring relevant topics to the Euroforum. For information and consultation, we maintain close contact with the Executive Committee, which represents our Euroforum. All delegates meet at least once a year during the forum's annual meeting where they participate in internal consultations and social dialogue with senior management. The Euroforum thereby maintains direct access to top management, fostering transparency and trust through open communication with the Executive Board. It advocates for employees' interests and facilitates knowledge sharing and best practices among European sites. The forum's focus includes the current global economic situation, employment rates and significant changes within our company affecting multiple countries, holding regular exchanges and additional meetings as required.

The Chair and Co-Chair of the Euroforum are responsible for ensuring that engagement regarding transparency and trust is not only encouraged but also effectively implemented. Their leadership plays a crucial role in integrating the insights gained from these engagements into the company's strategic approach.

FutURe project

We care for our employees throughout all life phases and want to ensure that different generations, with their different preferences and work styles, feel represented and included. Through the FutURe project in Europe, we aim to engage younger generations in shaping a future that prioritizes justice, equality and sustainable development. As part of the project, we engage an internal advocacy group of employees under 30 and conduct regular surveys among this target group. Thereby, we aim to capture the voices, desires, and priorities of young people and ensure that young people are actively involved in discussions that affect their future. Furthermore, quarterly roundtables and collaboration with senior leaders, including our CEO, serve to foster dialogue and influence organizational policies and practices to better align with the expectations of younger employees. This strategic approach is designed to enhance diversity, inclusion and representation, while positioning us as a pioneer in addressing the next generation's needs. This initiative is led by the Head of China & International, Healthcare.

Employee networks

We support multiple internal DEIB employee groups and networks, which focus on the following nine clusters: well-being, disability, international interests, generational issues, LGBTQIA+ rights, women, veterans, cultural and ethnic diversity, and further inclusion issues. These groups and networks foster a strong sense of belonging for all members and their allies, and their perspectives play a crucial role in informing our decisions and activities aimed at managing workforce impacts. By advocating for an inclusive and safe work environment, these networks contribute, for example, to promoting qualified women within the company and help propose solutions for attracting, retaining, and developing employees of color or other cultural and ethnic groups, or propose initiatives that support employees with disabilities. Engaging in regular discussions with the global DEIB team about their insights aims to ensure that our strategies align with the needs and experiences of our diverse workforce, ultimately enhancing our corporate culture and effectiveness. Our Chief Diversity, Equity and Inclusion Officer is responsible for our global DEIB strategy and for steering its related activities.

Learning needs analysis

We conduct an annual online survey to determine most important learning needs of our employees. The survey asks for feedback on required skills, knowledge, behaviors, and learning experiences, thereby giving us a comprehensive understanding of our employees’ perspectives. Group HR is responsible that this analysis occurs and that their results are taken into consideration to inform the development of learning catalogs at both global and regional levels, thus shaping our approach to learning and development. The current process, driven by HR, emphasizes HR-owned learning content and portfolios, such as soft skills and other cross-functional topics including change management and project management that support our High-Impact Culture.

Additionally, we request feedback from all participants regarding the quality of their training sessions. The insights gained from these feedback surveys are critical in managing relationships with training providers and trainers.

Our processes to remediate negative impacts and channels for our own workforce to raise concerns (S1-3)

We are committed to addressing and remediating potential material negative impacts on our employees. Therefore, we have established a general approach that involves multiple reporting channels to enable employees to raise any concern or to report any perceived violations of our standards. Their first points of contact are their supervisors, HR or compliance units, and they can also make anonymous calls to our compliance hotline. It can be reached via our website and is available in more than 40 languages. Information on reporting channels and investigation procedures as well as general information such as on protection of retaliation is available to all employees in the Whistleblowing and Investigations Standard. This standard was updated in 2023 and rolled out to all employees worldwide via a training request. Every new employee is also assigned this standard as mandatory training. More information can be found under "**Corporate culture (G1)**".

Protecting complainants from potential retaliation following a complaint is a central concern for us, to which we dedicate ourselves with utmost care. We have a compliance case management procedure in place to systematically process the reports. This helps us to assess the effectiveness of the remedies provided while also aiming to address and resolve any substantiated complaint appropriately. All complaints are treated confidentially, and investigations are conducted by independent personnel. If violations are confirmed, we strive to implement appropriate preventive and remedial actions. Our grievance system is also designed with the aim of adhering to the established effectiveness criteria for non-judicial grievance mechanisms, as set out in the UN Guiding Principles on Business and Human Rights in order to be legitimate, accessible, predictable, fair, and transparent. Through our complaint mechanisms, we strive to create a supportive work environment where employees can raise concerns without fear of retaliation and where their needs are addressed effectively.

Additionally, we have further processes in place to address potential negative impacts on our employees:

Working time

We respect the right to rest and leisure and, in particular, to a reasonable limit on working hours and regular paid leave. As far as possible, we offer our employees various flexible working models to enable them to achieve a good work-life balance. We are guided by locally applicable regulations on working hours and believe that overtime should in principle be voluntary and not be demanded on a regular basis. Certain operational circumstances may, however, require overtime. Overtime may be requested to meet short-term business requirements and where permitted by national law and/or a relevant collective agreement. All employees receive at least one day off per seven-day period.

Work-life balance

We value the individuality of our employees and take their different life situations into consideration. We therefore support our employees worldwide with various offers ranging from parental leave and childcare to support in caring for relatives in need of care.

We want to provide the best possible support for our employees who perform care work. Our services range from daycare centers in Darmstadt and Mumbai to emergency childcare services in the United States and Germany as well as special networks and leave of absence opportunities for those who take on care duties for elderly or sick relatives. With our Colleagues Supporting Colleagues initiative, parents and carers can provide each other with valuable support. In addition to paid maternity leave of at least eight weeks worldwide, we offer further options for paid parental leave in many countries and markets for people who are directly involved in childcare in their environment.

Occupational safety training

Experience shows that most workplace accidents can be prevented through proper conduct. It is therefore crucial that our employees are qualified and trained in EHS issues. We not only inform them but also actively involve them, for example during inspections or when selecting personal protective equipment. In doing so, we aim to continuously improve occupational health and safety. Training as part of our BeSafe program, for example, is carried out at our locations worldwide in accordance with local regulations.

Equal pay for work of equal value

Gender equality is a fundamental aspect of our DEIB strategy. We are dedicated to ensuring equitable compensation for all employees. To achieve this, we have established a robust approach to pay equity that includes continuous monitoring of salary information and regular analyses to identify and address any pay disparities. When necessary, we implement individual salary adjustments to uphold equity.

We also prioritize training for our HR department as well as people managers on pay equity, empowering them to make informed and unbiased salary decisions. To assess the effectiveness of our initiatives, we evaluate the outcomes of our salary adjustments and monitor the adjusted global gender pay gap over time. This ongoing commitment enables us to drive meaningful improvements in pay equity across our organization.

Employment and inclusion of people with disabilities

We provide reasonable accommodations for individuals with disabilities to ensure their inclusion throughout the employee life cycle, including the application process, hiring, training, professional development and advancement, to their eventual exit, in accordance with local laws. This includes providing training and education for employees on the topic of disabilities. Furthermore, we offer networking and peer support opportunities with our I'M Able Employee Resource Group (ERG), our Colleagues Supporting Colleagues initiative, our local inclusion officers, and employee representatives in countries and markets where applicable. In 2024, we revised a toolkit that provides guidelines and practical examples for our site managers to make our sites more accessible. Our AID-IT4YOU initiative ensures accessibility as a key consideration in all our digital initiatives and products.

We are dedicated to further building our roadmap for disability inclusion, using the Disability Equality Index®, and engaging in industry-wide initiatives such as the Inclusion Action Plan of the German Mining, Chemical, and Energy Industrial Union (IG BCE). As a signatory of the CEO Letter on Disability Inclusion, we support Disability:IN and have formalized our commitments in a new global position paper on the inclusion of people with disabilities.

Our actions related to our employees (S1-4)

We have implemented comprehensive processes to identify and address potential and actual negative impacts on our employees. These include regular impact assessments, stakeholder engagement initiatives and data analysis to monitor workforce well-being and job satisfaction. With our approach, we aim to develop and implement targeted action plans, such as enhanced health support programs and inclusion training, aimed at mitigating identified material impacts and risks. We continuously evaluate the effectiveness of these actions through feedback mechanisms and specific indicators, thereby aiming to ensure transparency and accountability in our reporting.

We prioritize the well-being of our workforce and are committed to ensuring that our practices do not cause or contribute to material negative impacts on our employees. We implement rigorous policies and procedures across all business functions, including procurement, sales and data use, to uphold high ethical standards and protect our workforce. Our procurement practices include thorough supplier assessments to ensure compliance with labor standards and human rights, while our sales strategies are guided by principles that prioritize employee welfare and customer integrity. In managing data, we aim to adhere to strict privacy and security protocols, safeguarding employee information and promoting responsible use of data.

In instances where tensions arise between the prevention or mitigation of material negative impacts and other business pressures, we adopt a balanced approach that emphasizes dialogue and collaboration. We engage relevant stakeholders to assess the situation, considering both the potential impacts on our workforce and the broader business objectives. This commitment to open communication enables us to make informed decisions that align with our values while maintaining operational effectiveness. Ultimately, we strive to maintain a work environment that not only meets business targets but also fosters a culture of respect, safety and well-being for all employees.

To date, we have not taken any measures to mitigate negative impacts on our workforce related to the transition to a greener, climate-neutral economy as we have not identified any such impacts. Since we understand the significance of addressing potential challenges related to a greener transition, we remain committed to monitoring external developments that may affect our workforce and plan to evaluate the need for future actions as the situation evolves.

In the following, we report on our actions that we use to manage our material impacts and risks with regard to our own workforce. Unless stated differently in the description of the individual actions, in 2024, no significant capital expenditures (CapEx) or operating expenditures (OpEx) were allocated to the following actions in relation to our own workforce. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Fertility Benefit Program

As part of our additional services, we continued the Group-wide roll-out of our Fertility Benefit Program in 2024, building on the policy we implemented in 2023. Through this program, we offer employees and their partners reimbursement for fertility treatments in addition to support through both internal and external sources The benefit program is now available in all countries and markets in which we operate. Key actions included introducing a payment process for fertility treatments in each country and market, providing access to knowledge and educational resources and publicizing the launch date in order to fully implement the benefit in each country and market. Furthermore, the benefit applies not only to all employees regardless of their marital status, gender identity, or sexual orientation, but also to their partners, subject to local legislation. This program forms part of our benefits strategy and approach to Diversity, Equity, Inclusion and Belonging.

BeHealthy Toolbox

As part of our global health employee strategy BeHealthy, we again offered various health promotion services in the reporting year, including training courses, self-tests, risk analyses, checklists, and advice on mental, physical and workplace-related health, for example on healthy shift work or ergonomics. Our Mindfulness Community comprises a group of employees, including the Mindfulness Ambassadors, who regularly exchange ideas on the topic of mindfulness, a stress management technique. We aim to anchor the topic in the workforce, and several mindfulness sessions are available globally to attend every week. We also held information campaigns and events on various health topics, such as mental health, movement and community engagement.

With the Employee Assistance Program (EAP), which HR offers as part of the BeHealthy Toolbox, we offer a confidential telephone counseling service, providing an independent and holistic support program for our employees. Employees can turn to the EAP for help with numerous issues. It offers short-term counseling and support for stress, anxiety, depression, relationship problems, or other personal or work-related problems.

Another core element of our health strategy is a mandatory training for managers to promote a health-oriented leadership culture. We aim to continuously improve the concepts and related materials we provide to managers for this purpose and plan to complete the rollout to 95% by the end of 2026.

We use the annual Employee Engagement Survey to calculate our healthiness index and track the effectiveness of our actions. This is intended to show the health status of our employees throughout the Group. We also measure the implementation progress of the BeHealthy strategy by the extent to which our employees use the BeHealthy Toolbox and participate in the Mindfulness Community.

Analysis of pay differences

In alignment with our company values of integrity and respect, we are committed to pay equity, a crucial aspect of our DEIB strategy. We started our journey toward a global gender pay equity analysis in 2021. In the first step, we analyzed ten of our largest countries and markets, covering approximately 80% of our total workforce. In 2023, we extended the analysis to all countries and markets globally except the US, which is subject to different legislation. In 2024, we conducted the analysis for the US.

Helping diverse talent flourish

To enhance diversity within our organization, we have established comprehensive programs aimed at supporting female talent, increased the number of women in management roles and undertaken a focused external search for potential female candidates. We also aim to attract international talent and individuals from underrepresented ethnic backgrounds, providing them with development opportunities. Our initiatives include training led by ERGs and setting standards for the executive recruitment team to encourage internal mobility and the hiring of managers from diverse backgrounds. In 2024, we launched campaigns focused on self-identification to help us gain deeper insights into our internal demographics. Additionally, we offer mentoring, sponsorship and talent development programs targeting individuals in STEM fields, such as through the McKinsey Connected Leaders Academy and the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc (GEM) in the United States, PyGirls in Germany and Diverse Minds in Science in China. New hires also receive information about our ERGs during the onboarding process.

Daily commitment to inclusion

Our framework for education, tools and best practices sharing regarding diversity, equity, inclusion, and belonging, combined with empowerment. This supports intentional inclusion within our organization. To maximize our leaders' effectiveness in building diverse and inclusive teams, we offer the Inclusive Leadership Workshop. The workshop combines global leadership interactions, peer coaching, continuous self-reflection, and leadership accountability. It is mandatory for all our leaders. Furthermore, psychological safety is a core topic of our leadership development programs. In addition, we offer numerous opportunities for all employees to learn how to be more inclusive colleagues, reduce unconscious bias at work and foster psychological safety. Employees in selected countries such as the United States and Canada have been required to complete Preventing Workplace Harassment training. Additionally, in 2024, we started to roll out a mandatory e-learning to our employees in all countries and markets, as permitted by law.

Individual development

In 2024, we introduced MyGrowth, an initiative for our development into a competency-oriented organization. Based on a growth mindset and our AI-driven platform, MyGrowth represents a commitment to development that enables employees to shape their own careers at our company. By providing access to tailored learning opportunities, mentorship programs and internal job prospects, MyGrowth promotes a continuous learning culture that aligns employee growth with the strategic needs of the company. In 2024, we allocated significant operating expenditures (OpEx) to our MyGrowth action plan. No capital expenditure (CapEx) was allocated. The OpEx amount is reported under **G1 Corporate culture**.

Continuous advancement of learning and development

Our global Learning & Development experts are currently revising our global learning and development landscape with the aim of improving our employees' learning experience. The objective is to develop a refined training standard, establishing well-defined roles and responsibilities for managing learning content, overseeing the portfolio, and coordinating the learning processes across all business sectors and enabling functions. We want to implement this strategic approach throughout the company over the next three to five years.

Roles and responsibilities

Group HR is responsible for advising all business sectors and Group functions on matters concerning personnel issues, for example topics related to recruiting, vocational training and advanced training. Across all our sites, HR employees work with leaders from various functions and business sectors to employ strategies that engage our people in line with Group-wide HR guidelines and requirements, including attractive compensation models and social benefits.

The Chair of the Executive Board and CEO is responsible for Group HR. Our Chief HR Officer, who leads the HR function and oversees all our HR activities, reports directly to the Chair of the Executive Board and CEO. Our Business Services unit oversees the operational tasks of HR work, such as drafting contracts and payroll accounting. The Chief Financial Officer is responsible for this unit. Our Chief Diversity, Equity and Inclusion Officer is responsible for our global DEIB strategy and for steering its related activities.

Our health and safety management system is the responsibility of Corporate Sustainability, Quality and Trade Compliance (SQ), which in turn reports to the Member of the Executive Board and CEO of Healthcare. SQ sets occupational safety objectives, oversees the respective initiatives globally and conducts internal EHS audits. Local EHS managers and their teams work towards ensuring that our individual sites comply with all occupational health and safety laws and regulations. The EHS managers also implement local projects, campaigns, and on-site programs.

Our targets related to our employees (S1-5)

We have set the following measurable outcome-oriented targets for our material sustainability matters related to our employees. The targets were developed in an internal interdisciplinary process.

Lost Time Injury Rate (LTIR)	
Reference to material impacts, risks and/or opportunities	Identifier S1-PI-01
Material sustainability matter	Working conditions: health and safety
Target	Our target is to reduce our lost time injury rate (LTIR) to below 1.0 by the end of 2025.
Reference value/year	1.2 (2021)
Methods	The LTIR measures all work-related accidents resulting in injuries worldwide that have resulted in at least one day of missed work per one million hours worked. We determine the Group-wide LTIR both for our employees and non-employees. It is one of our strategic key indicators which is monitored by the Merck Sustainability Board.
Consideration of stakeholders	When setting safety targets, we take the employee perspective into account, aiming to protect their safety with a reduced LTIR. We continuously consider internal stakeholders while monitoring our performance.
Changes from the previous year	No changes were made.
Performance/Key figures	Our LTIR amounts to 1.2.

Gender equity: Women in leadership	
Reference to material impacts, risks and/or opportunities	Identifiers S1-NI-04; S1-PI-02
Material sustainability matter	Equal treatment and opportunities for all: gender equality and equal pay for work of equal value; diversity
Target	As women represent half of the population and talent pool of our employee base, we want to ensure gender equity in leadership positions. We aim to achieve gender parity in management positions by 2030.
Reference value/year	36% (2021)
Methods	To calculate the share of women in leadership, we consider the number of women from middle and top management (role level 4+) in relation to the total number of middle and top management employees. The share of women in leadership is one of our strategic key indicators, monitored by the Merck Sustainability Board and the Diversity, Equity & Inclusion Council. The Council is responsible to integrate DEIB activities into the company's strategy and to identify areas for improvement to develop targeted initiatives.
Consideration of stakeholders	We have involved internal stakeholders such as the HR department, Employee Resource Groups, the Diversity, Equity & Inclusion Council, and Executive Board when setting the aspiration, and are in continuous communication with affected internal stakeholders when tracking progress.
Changes from the previous year	No changes were made.
Performance/Key figures	We maintained a stable share of women in leadership (middle and top management, role 4+) with 39.0%.

Culture and ethnicity: Share of underrepresented racial and ethnical groups in US leadership	
Reference to material impacts, risks and/or opportunities	Identifier S1-PI-02
Material sustainability matter	Equal treatment and opportunities for all: diversity
Target	We identified the United States as one of our most important markets for two reasons: Firstly, a significant share of our employees works in the United States and secondly, we generate a significant amount of net sales there. We aim to become an employer of choice for people of all ethnic backgrounds in the United States. Therefore, by 2030, we want to increase the proportion of managers (middle and top management, role 4+) from underrepresented ethnic groups to 30%.
Reference value/year	21% (2021)
Methods	To calculate the share of underrepresented racial and ethnical groups in US leadership, we consider the number of employees in middle and top management (role level 4+) who voluntarily provide information on their ethnicity in relation to the total number of employees in the US. The indicator is monitored by the Diversity, Equity & Inclusion Council. The Council is responsible to integrate DEIB activities into the company's strategy and to identify areas for improvement to develop targeted initiatives.
Consideration of stakeholders	We have involved internal stakeholders such as the HR department, Employee Resource Group, the Diversity, Equity & Inclusion Council, and the Executive Board when setting the aspiration, and are in continuous communication with affected internal stakeholders when tracking progress.
Changes from the previous year	No changes were made.
Performance/Key figures	The proportion of managers (middle and top management, role 4+) from underrepresented ethnic groups in the United States amounted to 24.1%.

Culture and ethnicity: Global share of nationals from Asia, Latin America, Middle East & Africa in leadership	
Reference to material impacts, risks and/or opportunities	Identifier S1-PI-02
Material sustainability matter	Equal treatment and opportunities for all: diversity
Target	We intend to increase the proportion of people from Asia, Latin America, and the Middle East and Africa (MEA) in management positions (middle and top management, role 4+) to 30% by 2030. This target is particularly important to us given the strong share of our Group sales in countries and markets in Asia, Latin America and MEA.
Reference value/year	16% (2021)
Methods	To calculate the share of nationals in leadership from Asia, Latin America and MEA, we consider the number of employees in middle and top management (role level 4+) from underrepresented nationalities in relation to the total number of employees. The indicator is monitored by the Diversity, Equity & Inclusion Council. The Council is responsible to integrate DEIB activities into the company's strategy and to identify areas for improvement to develop targeted initiatives.
Consideration of stakeholders	We have involved internal stakeholders such as the HR department, Employee Resource Groups, the Diversity, Equity & Inclusion Council, and the Executive Board when setting the aspiration, and are in continuous communication with affected internal stakeholders when tracking progress.
Changes from the previous year	No changes were made.
Performance/Key figures	The proportion of people from Asia, Latin America, and MEA in management positions (middle and top management, role 4+) amounted to 18.2%.

Inclusion: Participants in Inclusive Leadership Workshop (ILW)	
Reference to material impacts, risks and/or opportunities	Identifier S1-NI-03
Material sustainability matter	Equal treatment and opportunities for all: employment and inclusion of people with disabilities
Target	We are increasingly striving to create an inclusive culture for all employees. To achieve this, we rolled out training courses to help leaders reflect on how they can lead more inclusively. All people managers are required to complete the Inclusive Leadership Workshop by 2026.
Reference value/year	37% (2021)
Methods	To calculate the proportion of participants in ILW, we consider the number of participants in relation to the total number of employees who are people managers. The indicator is monitored by the Diversity, Equity & Inclusion Council. The Council is responsible to integrate DEIB activities into the company's strategy and to identify areas for improvement to develop targeted initiatives.
Consideration of stakeholders	We have involved internal stakeholders such as the HR department, Employee Resource Group, the Diversity, Equity & Inclusion Council, and the Executive Board when setting the aspiration and are in continuous communication with affected internal stakeholders when tracking progress.
Changes from the previous year	No changes were made.
Performance/Key figures	The participation rate amounted to 95.0%.

We have not set measurable, outcome-oriented targets in accordance with ESRS requirements for the material sustainability matters of adequate wages, collective bargaining, secure employment, working time, work-life balance, or training and skills development. Nevertheless, we track the effectiveness of our policies and measures related to these sustainability matters through engagement processes (see **S1-2**) or by monitoring progress with specific indicators (see **S1-6**, **S1-8**, **S1-10**, **S1-13**).

Our metrics related to our employees

Unless otherwise stated, we report our employee-related figures in headcount and as of December 31, 2024. The actual number of employees is defined as the number of people ('heads') who work for us, considering only active employees based on their status. All active regular employees count as one person. Regular employees include those working either full-time or part-time and have either a limited or unlimited formal contract with one of our subsidiaries. Non-employees are not included.

For the employee breakdown by gender, we use the following three gender categories: 'female', 'male', and 'other' (including 'not reported'). To determine the gender, we use information provided in accepted identification documents in the country of location of the employee. The country breakdown only consists of countries where we employ 50 or more employees representing at least 10% of our total number of employees.

The measurement of any employee-related metric has not been validated separately by an external body.

Characteristics of our employees (S1-6)

In the following table, we show the total number of employees, broken down by gender:

	2024[1]	2024 thereof: Merck KGaA
Male	35,168	2,248
Female	27,245	1,467
Other	144	–
Total employees	**62,557**	**3,715**

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

The following table displays the number of employees in each country where we have 50 or more employees representing at least 10% of our total number of employees. We determine the employee's country allocation by the work location of the respective employee.

	2024	2024 thereof: Merck KGaA
Germany	13,236	3,715
United States	13,976	

The most representative numbers in the financial statements that is related to the general characteristics of our employees can be found in the Notes to the Consolidated Financial Statements under (31) "**Number of employees**" and under the (8) "**Segment Reporting**".

In general, we aim to ensure the safe employment of our employees and to comply with legally prescribed country-specific exemptions. The following table presents the number of employees by contract type and broken down by gender in the reporting year:

2024[1]

	Female	Male	Other	Total
Total number of employees	27,245	35,168	144	62,557
Number of permanent employees	25,381	33,495	144	59,020
Number of temporary employees	1,864	1,673	–	3,537

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

2024 thereof: Merck KGaA

	Female	Male	Other	Total
Total number of employees	1,467	2,248	–	3,715
Number of permanent employees	1,426	2,189	–	3,615
Number of temporary employees	41	59	–	100

The figures disclosed for permanent employees include all active employees who have an unlimited contract with one of our subsidiaries. The figures disclosed for temporary employees include all active employees who have a limited contract. We do not apply non-guaranteed hours employment contracts. Therefore, we do not report this category.

The total number of employees that have left the company during the reporting year amounted to 5,746. Thus, the employee turnover rate amounted to 9.2% in 2024.

The employee turnover rate is calculated by aggregating the total number of leavers (including voluntary as well as involuntary fluctuation) during the reporting period divided by the average employee headcount in the same period multiplied by 100. The turnover indicators exclude employees who pause due to parental leave or a long-term illness as well as employees who are transitioning to the non-working phase of partial retirement. Additionally, employees who leave the company due to a divestment are also excluded.

Our metrics related to working conditions

Collective bargaining coverage and social dialogue (S1-8)

The following table presents the overall collective bargaining coverage among our employees. For the first reporting year, we apply the phase-in option per ESRS 1 Appendix C and thus the figures only contain the total percentage across countries and markets where we operate and that are part of the European Economic Area (EEA). Within the EEA, we have multiple collective bargaining agreements:

	2024[1]	2024 thereof: Merck KGaA
Total employees covered by collective bargaining agreements (in %)	86.0	16.0

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

Furthermore, the following table shows the percentage of our employees covered by collective bargaining agreements broken down by country for countries that are part (or not part) of the EEA. We only disclose the coverage for EEA countries where we employ at least 50 employees (by headcount) collectively representing at least 10% of our total number of employees. We cluster the countries according to their coverage rate. Applying the same approach, we also disclose the percentage of employees covered by workers' representatives by EEA country:

2024

	Collective bargaining coverage		Social dialogue
Coverage Rate	Employees – EEA (for countries with >50 employees representing >10% total employees)	Employees – Non-EEA (estimate for regions with >50 employees representing >10% total employees)	Workplace representation (EEA only) (for countries with >50 employees representing >10% total employees)
0-19%	–	Phase-in option	–
20-39%	–	Phase-in option	–
40-59%	–	Phase-in option	–
60-79%	–	Phase-in option	–
80-100%	Germany; Merck KGaA	Phase-in option	Germany; Merck KGaA

In countries and markets where collective agreements do not apply due to different administrative, commercial and legal structures, we work closely with trade unions and/or workers' representatives to implement operational decisions and coordinate relations between management and employees. The working conditions and terms of employment of employees in these countries are determined by legal requirements and our global guidelines.

Regarding employee representation, we have an agreement on the establishment of our Euroforum. More information on the Euroforum can be found under **S1-2**.

Adequate Wages (S1-10)

We are committed to the principle of “equal pay for equal work” and offer our employees competitive remuneration including additional benefits. The remuneration at least meets or exceeds the local remuneration conditions and guidelines and is intended to ensure a decent standard of living for our employees and their families. Our remuneration is based on the requirements of the respective position and the employee's performance. Our remuneration structures are benchmarked externally and updated based on prevailing local conditions. We empower our managers to decide on employees’ pay, based on local conditions and the requirements of the job, within the framework of the company’s compensation structures and philosophy. The managers are responsible for driving employees’ understanding of the pay structures and addressing concerns, if any. If there are further concerns, our Human Resources Business Partners may be contacted by the employees as well.

To calculate whether all our employees are paid an adequate wage, we record the local minimum wage requirements and the wage of the lowest-paid employee per country and compare the two. The cut-off date for the data collected was December 31, 2024.

We comply with local regulations for appropriate remuneration in all countries and markets in which we operate worldwide. In the reporting period, we paid all our employees an adequate wage, in line with the methodology described above.

Health and safety metrics (S1-14)

The following table shows the share of our own workforce who are covered by our occupational health and safety management system. The calculation is based on head count:

	2024
Total (in %)	**100.0**

Our occupational health and safety (OHS) management system considers the key positions of the ISO 45001 and is established Group-wide as part of our globally integrated management system. This approach enables us to ensure, among other things, the occupational health and safety of all employees. Furthermore, as part of a Group certificate, our OHS management system is annually ISO 45001-certified at selected sites. The sites individually define the scope of their certification. For example, at the Darmstadt site, the ISO 45001 certificate covers employees in the production units as well as those working in infrastructure. For the coverage percentage disclosed above, we consider the coverage of our OHS management system and thus, the number includes exclusively our own employees. This also applies to employees who work at non-certified sites as well as those who are active at sites that are not included in the Group certificate, since our OHS management system is established at all our locations.

Work-related accidents

The following tables disclose figures regarding work-related accidents. A work-related accident is defined as an event that occurs during the course of work that results in injury or ill health. This encompasses sudden personal injuries that happen on site or during business trips, as long as they are connected to the employee's work and not caused by internal factors, such as heart attacks or epilepsy. Additionally, pre-existing damage to ligaments, joints, or back issues are typically not included. Injuries that occur while commuting or during company sports activities are also not counted in the figures below. Work-related ill health refers to any illness that can be attributed to the workplace and is verified by a company physician.

2024

	Employees	Non-employees	Total
The number of fatalities as a result of work-related injuries	–	–	–
The number of recordable work-related accidents	287	14	301
Rate of recordable work-related accidents	2.5	1.6	2.5
The number of cases of recordable work-related ill health	36		
The number of days lost to work-related injuries and fatalities from work-related accidents	5,783		

2024 thereof: Merck KGaA

	Employees	Non-employees	Total
The number of fatalities as a result of work-related injuries	–	–	–
The number of recordable work-related accidents	37	1	38
Rate of recordable work-related accidents	3.4	64.7	3.5
The number of cases of recordable work-related ill health	4		
The number of days lost to work-related injuries and fatalities from work-related accidents	1,789		

The number of fatalities as a result of work-related injuries of other workers working on our sites, such as contractors, amounted to 0 in the reporting year.

The rate of recordable work-related accidents represents the number of respective cases per one million hours worked without taking into account whether these cases resulted in missed days of work. Additionally, we report the lost time injury rate (LTIR) under **S1-5** and **ESRS 2** as it is one of our strategic sustainability key indicators used to gauge the success of our occupational safety efforts. The LTIR measures work-related injuries resulting in at least one day of missed work per one million hours worked (see **S1-5** and **ESRS 2**).

Additionally, we use our Environment, Health and Safety Incident Rate (EHS IR) to track incidents. Under our EHS IR, we track and evaluate all major and minor accidents, environmental incidents as well as EHS non-compliances. It covers both our own employees as well as those of contractors. To calculate it, we state the number of incidents and the severity of the event in relation to the number of hours worked. The EHS IR represents an average value. The lower the EHS IR, the better the EHS performance of the site. In 2024, the ratio was 2.2. As one of our strategic key indicators, we also report the EHS IR under **ESRS 2 (SBM-1)**.

Incidents, complaints and severe human rights impacts (S1-17)

The following table shows the number of work-related incidents and complaints concerning a violation of our Social and Labor Standards Policy within our own workforce. We distinguish between the number of reported violations filed through our existing grievance system as well as the number of confirmed violations of our Social and Labor Standards Policy during the reporting year. Confirmed violations comprise reported violations that were confirmed following investigations. Additionally, we disclose the number of reported and confirmed incidents of discrimination, including harassment as a specific form of discrimination.

	2024
Total number of complaints filed through channels for people in our own workforce to raise concerns: reported incidents of our Social and Labor Standards Policy	183
thereof: Number of complaints of discrimination, including harassment: reported incidents	28
Total number of complaints filed through channels for people in our own workforce to raise concerns: confirmed incidents of Social and Labor Standards Policy	57
thereof: Total number of complaints of discrimination, including harassment: confirmed incidents	10

The total number of confirmed violations of the Social and Labor Standards Policy is one of our strategic key indicators which we use to measure the progress of our sustainability strategy in the focus area of 'Our people and communities; providing a diverse and inclusive environment', see **ESRS 2 (SBM-1)**.

In 2024, fines, penalties, and compensation for damages as result of incidents and complaints disclosed in the table above totaled € 0.

During the reporting period, no complaints in connection with our company and related to matters concerning our employees were filed to the National Contact Points for OECD Guidelines for Multinational Enterprises.

The following table discloses the number of severe human rights incidents connected to our own workforce. We consider incidents of forced labor, modern slavery, human trafficking, and child labor as severe human rights incidents.

	2024
Number of severe human rights incidents connected to own workforce	–
thereof: Cases of non-respect of the UN Guiding Principles on Business and Human Rights, ILO Declaration on Fundamental Principles and Rights at Work or OECD Guidelines for Multinational Enterprises	–

In 2024, fines, penalties, and compensation for damages as a result of severe human rights incidents disclosed in the table above totaled € 0.

Our metrics related to equal treatment and opportunities for all

Diversity metrics (S1-9)

The following table shows the gender distribution at our top-management level:

	2024[1]	2024 thereof: Merck KGaA
Number of female employees at top management level	58	15
Share of female employees at top management level (in %)	29.9	30.6
Number of male employees at top management level	136	34
Share of male employees at top management level (in %)	70.1	69.4
Number of employees with other gender at top management level	–	–
Share of employees with other gender at top management level (in %)	–	–
Total number of employees at top management level	**194**	**49**

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

We define top management level as all employees in senior management positions (Role 6+). We use a market-oriented system to rate positions within the company. To facilitate consistency across the organization, each position is assigned a specific role with an overarching job architecture classifying each role as one of 11 levels, 15 functions and a range of career types (Core Operations, Services & Support Groups; Experts; Managers; Project Managers).

The following table shows the total number of employees, broken down by age:

	2024[1]	2024 thereof: Merck KGaA
Number of employees under 30 years old	8,174	504
Number of employees between 30 and 50 years old	39,520	2,099
Number of employees over 50 years old	14,862	1,112

[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. This number refers to people employed in fully consolidated subsidiaries excluding employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024.

Based on birth year, we determine the age and allocate the individuals to their respective age group.

Persons with disabilities (S1-12)

In the following table, we disclose the percentage of employees with disabilities:

	2024	2024 thereof: Merck KGaA[1]
Share of persons with disabilities amongst employees subject to legal restrictions on collection of data (in %)	2.5	4.9

[1] Only pertains to the joint operation of Merck, calculations based on the German Social Code IX - SGB IX).

The indicator includes all employees with disabilities who voluntarily disclose their status, proven by an official document and only for countries where it is legally permitted to request such information. It is important to note that the legal definitions of 'persons with disabilities' vary across the countries and markets in which we operate. The actual percentage may be greater as the figures are based on voluntary submission of the disability status and reporting is limited to countries and markets where it is legally permitted to collect such information.

Training and skills development metrics (S1-13)

The following table shows the participation among our employees in regular performance and career development reviews, including a breakdown by gender:

Participation in regular performance and career development reviews	2024
Share of employees that participated in regular performance and career development reviews (in %)	98.0
by gender	
Female (in %)	99.0
Male (in %)	98.0
Other (in %)	3.0

The indicator is based on the number of performance reviews (year-end conversations) documented in our central HR system. Year-end conversations are positioned as valuable input for career and development conversations, encouraging line managers and employees to time their discussions accordingly. The comparatively low percentage of participation among the gender category “other” can be attributed to the fact that the majority of employees in this category belong to the newly acquired subsidiary Unity SC SAS (acquisition date: October 31, 2024). Employee data related to performance management is not yet fully integrated into our database. Therefore, the actual percentage of employees in the gender category “other” may be higher.

Remuneration metrics (pay gap and total remuneration) (S1-16)

Our remuneration is based on the requirements of the respective position on the one hand and the performance of the individual employee on the other hand. We make no distinctions based on gender or any other demographic characteristics. To ensure a competitive remuneration structure, we regularly review our salary policy using data analysis and industry benchmarks. Before we make changes, we thoroughly analyze current market conditions and practices and involve relevant stakeholders as well as important stakeholder groups, such as employee representatives where applicable.

In addition to individual performance, our annual and long-term incentive plans measure company performance on the basis of financial and non-financial indicators. The latter are intended to drive forward our High-Impact Culture and sustainability strategy. In addition to a competitive salary, we offer attractive additional and social benefits through our benefits programs, such as a company pension scheme, health insurance and other employee insurance as well as other local offers, such as bicycle leasing or discount programs.

The percentage gap in pay between female and male employees, expressed as a percentage of the average pay level of male employees, amounted to 8.8% in 2024 (unadjusted pay gap). For the calculation, we considered the difference in average pay levels between female and male employees. In previous years, we chose to report the adjusted gender pay gap as we understand that this metric provides a more accurate representation of pay disparities by controlling for various factors such as education, experience and job roles. The adjusted gender pay gap defines the difference in average pay levels between female and male employees after controlling for various factors that can influence pay. The ratio between the remuneration of our highest-paid individual and the median remuneration for our employees amounted to 97.3 in the reporting year.

The underlying calculations for both indicators are based on taxable employee compensation. They include annual base salary, short-term and long-term incentives, all other recurring payments (such as allowance and profit sharing), and all benefits in kind (taxable benefits). Various objective factors influence the pay gap as well as the total annual remuneration, including the type of work, the country/market and sector in which employees are employed as well as individual factors such as educational qualifications, length of service, age, performance, and work experience. To calculate the median annual total remuneration, we included all employees who worked for us the full reporting year, excluding the highest paid individual and employees on unpaid leave.

Workers in the Value Chain (S2)

Our business model is based on scientific research and responsible entrepreneurship. For us, they are the key to technological progress. We source numerous raw materials, packaging materials, technical products, components, and services from all over the world. Accordingly, we depend on the stability and reliability of our suppliers and supply chains. The objectives of our supplier management are compliance with human rights and environmental due diligence obligations through suitable policies, processes, and actions. We aim to act ethically responsible in our own business practices as well as in our supply chain to minimize human rights violations and abuses.

We expect the same commitment from our suppliers and have defined this in our Supplier Code of Conduct. Should human rights violations or breaches of labor standards occur in the supply chain, we apply remedial actions specifically targeted at our suppliers and expect the deviations to be addressed promptly and effectively.

Our main impacts, risks and opportunities in relation to workers in the value chain (S2 SBM-3)

As part of the materiality analysis, we identified negative impacts and risks of our business activities on workers, particularly in the upstream value chain. The type of our business activities, business relationships and geographical circumstances were taken into account in the assessment and identification. Based on this, an understanding of the underlying value chain was gained, including the underlying products and services. Based on this approach, negative impacts and risks were identified as material in all three business sectors (Life Science, Healthcare and Electronics).

Diversity, Employment and inclusion of persons with disabilities	
Identifier	S2-NI-01
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream
Description	Disrespecting equal opportunities, diversity, equity, inclusion and non-discrimination can lead to human rights violations in our value chain. In our upstream areas of work, it is possible that women and minorities are comparatively underrepresented.

Measures against violence and harassment in the workplace	
Identifier	S2-NI-02
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream
Description	Mining companies are in a tense relationship: in order to remain competitive in terms of price, they strive to reduce labor costs; at the same time, their personnel management should ensure long-term performance.

Child labor, Forced labor	
Identifier	S2-NI-03
Material impacts, risks and opportunities	Potential negative impact
Time horizon	medium-term
Value chain step	Upstream
Description	In contrast to our own business activities, we can often only exert indirect influence along our supply chain to prevent negative effects. This leads to potential human rights issues that we cannot monitor or control for workers in the upstream value chain. The International Labour Organization (ILO) has classified the agriculture, aquaculture and fishing sectors as particularly susceptible to forced labor. Workers face non-payment or late payment of wages, restrictions on freedom of movement, violence, threats, human trafficking and other forms of modern slavery. Cases of forced labor have been documented in the supply chains of most products in these sectors. The agriculture, aquaculture and fisheries sectors have the highest proportion of child labor compared to all other sectors, and cases of child labor have been documented in the supply chains of many products in these sectors.

Child labor, Forced labor	
Identifier	S2-NI-04
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Medium-term
Value chain step	Upstream
Description	We require a large number of minerals in our supply chain. There is an increased risk of these minerals being extracted by children or forced labor. Despite our efforts and safety measures, we cannot completely rule out that child and forced labor occur in the extraction of these minerals in our upstream value chain.

Child labor, forced labor, Adequate housing, Water and sanitation, privacy	
Identifier	S2-NI-05
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream
Description	Due to the nature of our business activities, for example when sourcing mica, negative impacts on working conditions, equal rights and equal opportunities, or other labor-related rights (e.g., child labor, forced labor) in the upstream value chain cannot be ruled out. At the same time, our ability to influence external organizations is more limited than within our own company. Restricted labor rights and working conditions that violate human rights have a strong negative impact on workers in the value chain. Accepting or ignoring such violations would exacerbate the negative effects. When working in mines, and staying in the accommodation provided, employees have little control over their privacy. Employment and temporary employment agencies as well as data providers and consulting companies are storing, processing and transmitting more and more sensitive personal data about employees, customers and applicants.

Secure employment, Working time, Adequate wages, Health and safety	
Identifier	S2-NI-06
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream
Description	Working conditions in relation to renumeration, social security, working hours, health and safety in several countries are often associated with human rights violations and have a negative impact on workers in these countries.

Health and safety	
Identifier	S2-NI-07
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream
Description	We operate in various industries or have business relationships with them, including Electronic Manufacturing Services (EMS) and Original Design Manufacturing (ODM), the water and waste service sector, the transportation sector, the industrial manufacturing industry as well as the metals and mining industry. Health and safety aspects therefore play a major role, as employees working in these sectors are exposed to health and safety risks arising from heavy machinery, moving equipment, pollutants, high temperatures and pressure, and electrical hazards, among others. Negative impacts on human rights occur particularly in the upstream supply chain. These impacts relate to working conditions and workers' rights. The deeper you go into the supply chain, the more difficult potential hazards are to monitor.

Health and safety	
Identifier	S2-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Short term
Value chain step	Upstream; downstream
Description	The effects of unprecedented events such as pandemics or other geopolitical events not only put a strain on the healthcare system, but also have a direct impact on the economy. In the event of such incidents, for which there are no adequate ad hoc measures or other actions in place, there is a risk that the loss of people/workers could lead to supply bottlenecks, which could result in financial and reputational damage for us.

Workers in our upstream value chain

Our company operates in complex global supply chains. In many cases several supplier levels exist between us and the sources of the raw materials used in our products. Workers who may be particularly affected by human rights violations in the upstream value chain include:

- Workers who extract, process and transport conflict minerals such as tin, tungsten, tantalum, and gold in mines. These minerals carry the risk of being extracted and sold from conflict-affected and high-risk areas. According to the European regulation, conflict-affected and high-risk areas means areas in a state of armed conflict or fragile post-conflict. Or it could mean areas witnessing weak or non-existent governance and security, such as failed states, including widespread and systematic violations of international law and human rights abuse.
- Workers in the mica supply chain. This raw material is primarily mined in India, particularly in the states of Rajasthan and Bihar.
- Workers in the logistics sector, especially in the transportation of goods. Employees are confronted with problems such as precarious working conditions, a lack of health and safety protection, mistreatment and discrimination.

Workers from the aforementioned groups are particularly susceptible to negative effects. This includes people who do not have a good command of language in the workplace, meaning they have difficulty understanding safety instructions and/or communicating effectively with colleagues, for example. Workers with physical or mental challenges may also be more susceptible to injury or accidents in the workplace. Women can be discriminated against and treated unequally in the workplace, affecting their access to safe working conditions, fair promotion opportunities, and adequate health and safety resources.

In the conflict minerals supply chain and in the mica supply chain and logistics industries, the potential negative impacts of indirect tier-n suppliers are both widespread and systematic. Due to the nature of our business activities, potential negative impacts on working conditions, equal treatment and opportunities and other work-related rights in the upstream value chain cannot be ruled out.

For example, mica is an important raw material for our effect pigments, which are used in the automotive, cosmetics and plastics industries. We source the majority of our mica from the Indian states of Rajasthan and Bihar, where people often work in hazardous conditions during mica mining. There is also a considerable risk of child labor and unsafe working conditions. The lack of formal employment structures and official supervision further exacerbates this problem.

The identified material risk of a pandemic (S2-R-01) arises from external factors and therefore not from any impacts or dependencies on workers in the value chain. Workers in our upstream value chain are just as affected by our identified risk as those working in our downstream value chain, such as distributors or agents. Workers working in the operations of a joint venture or workers in our downstream value chain are not impacted by our material impacts. Workers who work on our site and fall into the category of ‘non-employees’ (for example self-employed workers or workers provided by a third party) belong to our own workforce. They are covered by the ESRS under **S1**.

Our policies related to workers in the value chain (S2-1)

As an international company, we have the responsibility to respect human rights worldwide. We want to ensure that no human rights violations occur at our subsidiaries, suppliers, or business partners. We also aim to work toward improving the respective circumstances if human rights violations are identified. In doing so, we are fulfilling our due diligence obligations and complying with legal obligations, such as the German Supply Chain Due Diligence Act (LkSG). In the event of inconsistencies between our Group-wide standards and national laws, we try to act in accordance with whichever standard is stricter while respecting compliance with the laws in the countries in which we operate. In doing so, we contribute to achieving the UN Sustainable Development Goals (SDGs).

Our policies, in particular our Supplier Code of Conduct, are based on the following principles:

- a zero-tolerance policy toward all forms of child and forced labor, modern slavery and human trafficking,
- the rejection and prohibition of discrimination,
- the right to form employee representative bodies and engage in collective bargaining,
- compliance with national legislation on working hours, remuneration, minimum wage and social benefits or if there are no national regulations, with the international standards of the ILO,
- taking action to prevent accidents and work-related illnesses as far as possible.

Our policies aim to address the impacts and risks for employees in the upstream value chain. The policies related to our workers in the value chain are regularly monitored and updated.

Human Rights Charter	
Connection to material impacts, risks and/or opportunities	Identifier S2-NI7, S2-NI5, S2-NI8
Material sustainability matters	Health and safety, child labor, forced labor
Key contents	The policy underlines our commitment to respecting human rights and supporting its realization across our operations, supply chain, and business relationships. It addresses specific human rights issues such as social and labor standards, access to health, product stewardship, research ethics, privacy, supply chain as well as business relationships, investment decisions, communities, security, and bribery and corruption. Additionally, the policy describes our overarching human rights due diligence process including the handling of concerns and grievances.
Scope of application	The policy applies Group-wide to our entire value chain. We expect our suppliers, business partners and other parties linked to our operations, products and services, to respect human rights and to practice human rights due diligence as articulated in our policy.
Accountability	Executive Board
Third-party standards/initiatives	The policy is based on the International Bill of Human Rights, the UN Guiding Principles on Business and Human Rights, the principles of the UN Global Compact, the ILO Declaration on Fundamental Principles and Rights at Work and its follow-up and the ILO Declaration on Multinational Enterprises.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal and external stakeholders.
Availability	The policy is available internally on the intranet and publicly on our website.

Merck Group Policy Statement on Compliance with Human Rights and Environmental Due Diligence Obligations	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI7 and S2-NI5
Material sustainability matters	Health and safety, other work-related rights
Key contents	This policy aims to uphold human rights and ensure sustainable environmental practices throughout the entire supply chain. The policy includes our human rights commitment and our due diligence obligations. Moreover, it describes the process of how we ensure that we meet our human rights and environmental due diligence obligations. This process includes the risk analysis, preventive action and remedial action, complaints procedures as well as documentation and reporting obligations. Our due diligence obligations are implemented based on national and international standards and in line with the German Supply Chain Due Diligence Act. Our expectations as regards to human rights and the environment as per the German Supply Chain Due Diligence Act must be acknowledged and adhered to by all of our employees and suppliers: • Ban on child labor: We take a zero-tolerance approach to any form of child labor; • Ban on discrimination: We do not tolerate discrimination against anyone based on characteristics such as gender or gender identity, culture or national origin, ethnic origin, race, color, religion or beliefs, disabilities, age, sexual orientation, family or marital status, military or veteran status; • Ban on forced labor: We take a zero-tolerance approach to any form of forced or compulsory labor, slavery and human trafficking; • Freedom of association: We respect the right to form employee representative bodies and engage in collective bargaining (in accordance with the law in the place of employment); • Compliance with legal requirements on pay and working hours: We comply with national legislation on working hours, pay, minimum wage and social security benefits or the international standards of the ILO where there are no national regulations; • Security personnel monitoring: Regardless of the type of contract, we observe applicable national law when using external personnel (e.g., security personnel) in contractual and labor relations. We take appropriate action to inform and monitor external personnel, especially with regard to human rights risks; • Occupational health and safety: We conduct suitable occupational health and safety management action to prevent accidents and work-related illness wherever possible.
Scope of application	The policy applies Group-wide at all our sites and to our upstream and downstream value chain.
Accountability	The Executive Board and Human Rights Officer
Third-party standards/initiatives	The policy is based on the Universal declaration of Human Rights, the ILO core labor standards, the Ten Principles of the UN Global Compact, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, the UN Guiding Principles on Business and Human Rights, and the OECD Guidelines for Multinational Enterprises.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal and external stakeholders.
Availability	The policy is publicly available on our website.

Supplier Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI11, S2-NI5 and S2-NI18
Material sustainability matters	Working conditions, health and safety
Key contents	The policy describes the expectations to our suppliers and sales intermediates with regard to human and labor rights, occupational health and safety, business integrity, protection of the environment, animal welfare and as well as continuous improvement and supplier management. A standardized process has been set up to ensure that our suppliers recognize the policy. Group Procurement is responsible for integrating sustainability requirements into the relevant phases of our procurement and supplier management processes. Since 2023, the policy has been reflected in the General Terms & Conditions of Purchase.
Scope of application	The policy applies globally to all our providers of goods and/or services ("Suppliers") and to sales intermediates (e.g. dealers, distributors, wholesalers and resellers).
Accountability	Chief Procurement Officer and Group General Counsel.
Third-party standards/initiatives	The policy considers, among others the UN Global Compact, the United Nations Guiding Principles on Business and Human Rights, the ILO core labor standards, the EU Conflict Minerals Regulation (EU) 2017/821, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Sec. 1502, the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas, the Green House Gas Protocol, ISO 50001 on Energy Management, the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Ellen-MacArthur Foundation, the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, the ETS123 Appendix A and the latest edition of the US ILAR guide.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal and external stakeholders as well as experts.
Availability	The policy is available internally on the intranet and publicly on our website. The policy is referred to in our orders via a link to the General Terms and Conditions of Purchase; it is also embedded in new or amended contracts.

Responsible Minerals Sourcing Charter	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI11, S2-NI7, S2-NI18, S2-NI5
Material sustainability matter	Health and safety
Key contents	The policy governs our approach to the sourcing of minerals from conflict-affected and high-risk areas. The focus of this charter is on minerals such as tin, tungsten, tantalum and gold (also known as "3TGs") as well as cobalt, which are mined in conflict and high-risk areas. These minerals, also known as "conflict minerals", carry the risk of contributing to human rights violations. For this reason, we have developed a comprehensive due diligence program and due diligence practices that comply with international laws.
Scope of application	The policy applies Group-wide and supplements the requirements arising from our Supplier Code of Conduct.
Accountability	Senior Management of business sectors, Business Sector Conflict Minerals Lead and Group Procurement
Third-party standards/initiatives	The policy is based on the EU Conflict Minerals Regulation (EU) 2017/821 and German law 585/19 on the implementation of (EU) 2017/821 of the European Parliament. We also strive for practices that are in line with the Dodd-Frank Wall Street Reform and Consumer Act, section 1502 and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is publicly available on our website.

Conflict Minerals Due Diligence Guideline	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI7, S2-NI5, S2-NI6, S2-NI8
Material sustainability matters	Health and safety, child labor, forced labor
Key contents	The objective of the policy is to ensure compliance with applicable laws and codes as well as international standards relating to the sourcing of conflict minerals from conflict-affected and high-risk areas. To comply with these regulations and maintain consistency, the policy describes our due diligence process and the associated practices specifically designed to address conflict minerals originating from conflict-affected and high-risk areas (CAHRAs). The policy describes our process for implementing our due diligence with regard to conflict minerals.
Scope of application	The policy applies Group-wide at all sites and also to our value chain.
Responsibility	Sector Senior Management, Business Sector Conflict Minerals Lead and Group Procurement
Third-party standards/initiatives	The policy is based on the EU Conflict Minerals Regulation (EU) 2017/821, the German Act 585/19 implementing Regulation (EU) 2017/821 of the European Parliament, the Dodd-Frank Wall Street Reform and Consumer Act, Section 1502 and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available on our intranet.

Mica Sourcing Governance Process	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI7, S2-NI5, S2-NI6, S2-NI8
Material sustainability matters	Health and safety, child labor, forced labor
Key contents	We are sourcing mica for the production of our effect pigments from regions that face challenges related to poverty, political instability and human rights issues. According to our human rights commitments outlined in our human rights charter and policy statement, we have to ensure that no human rights violations occur within our respective sphere of influence and that our business activities do not infringe upon these rights. The policy process aims to ensure that our suppliers comply with the requirements of the Supplier Code of Conduct and our Human Rights Charter. For example, progress in improving sustainability in mica sourcing is to be summarized and documented in order to provide a shared view of the current status.
Scope of application	The policy applies Group-wide to our value chain.
Accountability	Mica Steering Committee
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is available on our intranet.

Risk management process for external supply chain	
Connection to material impacts, risks and/or opportunities	Identifier: S2-NI11, S2-NI7, S2-NI18, S2-NI5
Material sustainability matter	Health and safety, child labor, forced labor
Key contents	The Risk Management Policy document for our external Supply Chain refers to the Group Standard "Human Rights Due Diligence Obligation". This document which is applicable for the entire company, defines a system with core elements of the diligence obligations regarding the protection of human rights including the social and specific environmental aspects.
Scope of application	The policy applies Group-wide to our own operations and to our upstream value chain.
Accountability	Group Procurement and the Executive Board
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders and experts
Availability	The policy is available on our intranet.

We are committed to respecting international standards on human rights such as the OECD Guideline für Multinational Enterprises and the International Labour Organization Declaration (ILO) on Fundamental Principles and Rights at Work. Our Human Rights Charter is based on the United Nations Guiding Principle on Business and Human Rights. We do not engage directly with workers in the value chain. We work with other companies in industry initiatives to ensure that we operate according to industry standards and can rely on comparative data and expert analyses. For example, we are a founding member of the multi-stakeholder group Responsible Mica Initiative (RMI). The RMI initiative aims to reduce human rights risks in the mica supply chain. In addition to the interests of companies, the interests of value chain workers are also considered in order to improve working conditions and eliminate child labor and forced labor.

If we discover that a human rights or environmental violation has occurred in our supply chain, we will immediately take appropriate action to end these violations. We may terminate our commercial relationship with a supplier if it fails to comply with our human rights regulations. Our actions include investigating the infringement case and the particular supply chain situation. The responsible role contacts the supplier about the (potential) case to ask for a formal statement about the reported allegation. Depending on the willingness of the supplier to end the violation, the discussion results are documented and followed up, or an escalation process is initiated as defined in our Remedial Actions Guideline. Concrete actions in the follow-up process, which includes agreeing on a corrective action plan (CAPA) with the supplier, for example, are determined by the severity of the case. The follow-up or escalation activities are conducted with the help of contributions by departments for example Procurement, as well as human rights experts and business risk owners.

In the reporting year, we received four reported cases of complaints. None of these cases were confirmed as human rights violations in which the UN Guiding Principles on Business and Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work and its follow-up measures, or the OECD Guidelines for Multinational Enterprises were not adhered to, and in which employees in the value chain were involved. Cases of human rights violations from our supply chain can be reported to us via our compliant channels through our web-based compliance hotline, by phone or via e-mail. Our center of expertise within Group Procurement documents, tracks and handles the investigation and the closing of the cases. The Human Rights Officer is informed accordingly. The aim of our grievance mechanism is to gain knowledge of risks and violations relating to human rights and certain environmental aspects at the earliest possible stage in order to take effective preventive and remedial actions and avert potential harm to the persons affected. Should the investigation confirm human rights or certain environmental risks or violations at suppliers, suitable subsequent actions such as audits and corrective action plans are initiated. The complaint procedure is closed if it has been ascertained with sufficient certainty that there were no human rights risks or violations.

We have defined clear responsibilities for the implementation of and compliance with our human rights due diligence, including clear responsibilities for monitoring risk management. Our Human Rights Officer is responsible for monitoring human rights and environmental due diligence. As we consider the fulfillment of due diligence obligations as a cross-sectoral task, in addition to our Human Rights Officer, topic managers in the respective functions, business sectors and local units are also responsible for their operational implementation. In addition, external experts are consulted for certain topics and tasks. Overall responsibility for respecting human rights lies with our Executive Board. In our Human Rights Policy Statement on Compliance with Human Rights and Environmental Due Diligence Obligations we clearly state that we take zero tolerance approach to any form of child labor and forced labor. This statement is also part of our Supplier Code of Conduct, in which we outline our expectations to our suppliers and business partners with regard to human rights.

Our process for engaging with workers in value chain in relation to the impacts on them (S2-2)

We do not yet have processes in place to directly engage with workers in the value chain and their representatives about material actual/potential impacts and risks affecting them.

Our processes for addressing negative impacts and channels through which workers in the value chain can raise concerns (S2-3)

As a globally active company, we cannot rule out negative impacts on people and the environment in our supply chain. Our aim is to protect (potentially) affected persons and to prevent, end or at least minimize adverse human rights impacts. We have established standardized processes for this purpose. These processes include our supplier selection process, remedial actions in accordance with our respective guideline, our human rights risk management, our complaints mechanism and due diligence process for conflict minerals. Through these processes we are able to identify and address risks appropriately and avoid and mitigate negative effects on workers in the value chain. If a human rights violation occurs in our supply chain, the range of actions is diverse and depends on the identified violation and root cause of the violation.

Our supplier selection process

Compliance with human rights and environmental expectations is taken into account when selecting suppliers. These criteria are part of the supplier selection strategy. We are currently working on adapting our standard operating procedures accordingly, and training employees in the Sourcing department on these changes. Our expectations are communicated to the supplier both during the tender process and during contract negotiations. We obtain confirmation of compliance with our Supplier Code of Conduct from all suppliers with a defined risk profile comprising country risk and industry risk before said supplier is included in our enterprise resource planning systems and receives a purchase order. If we discover that a violation of a human rights or environmental obligation has occurred along our supply chain, we immediately initiate appropriate actions. For example, corrective and remedial action plans are defined with suppliers in accordance with our "Remedial Actions Guideline", which must be fulfilled within a specified period of time. In addition, we ask our suppliers to have assessments or audits carried out by us or by trusted partner companies and have also integrated this requirement into contracts. To ensure that we comply with industry standards, we work together with other companies in industry initiatives. For example, we are a member of Together for Sustainability (TfS), the Pharma Supply Chain Initiative (PSCI), the Responsible Mica Initiative (RMI) and the Responsible Minerals Initiative (RMI).

Our risk management process

In order to identify human rights and environmental risks, we conduct a risk analysis of suppliers on an annual basis or ad hoc if required. Firstly, we determine the abstract risks of our direct suppliers using country and industry indices calculated based on external data, taking into account the scope of our business activities with the respective supplier. In a second step, specific human rights and environmental risks are considered. In the concrete risk analysis, either those suppliers identified as "relevant" in the abstract part or those in a high-risk supply chain or suppliers that are considered high-risk according to internal findings are assessed. By doing so, we also want to be able to take changes in our supply chain into account and respond to newly acquired knowledge.

The results of the risk analysis are continuously evaluated and integrated into our internal decision-making and business processes. Risk analysis forms the basis for appropriate preventive or corrective actions within our own operations and as well as our direct suppliers.

Our remedial actions

The Remedial Actions Guideline provides guidance and assistance on the actions to be taken to end a human rights or environmental violation or to mitigate an identified concrete risk. The first part focuses on cases arising from assessments and audits. Suppliers who do not successfully pass an audit are required to implement appropriate corrective and preventive actions within a defined time frame via a CAPA plan. In addition, they must complete our training on the Supplier Code of Conduct. The second section lists actions for cases about which we are informed via our compliance hotline or media coverage, for example. A process has been defined for this purpose, which involves suppliers being contacted about reported cases and having to comment on them. The supplier is also requested to submit an action plan to end the infringement immediately. The effectiveness of the plan is assessed on the basis of the evidence provided by the supplier regarding the implementation of actions. If necessary, actions must be adjusted.

Our complaint mechanism

Potential violations of human rights, legal provisions and environmental concerns can be reported via our Group-wide whistleblower and complaints system. A central component of this is our Compliance Hotline, which we have set up in collaboration with a third-party provider. Both our employees and workers in the value chain can report suspected cases in more than 40 languages via this system: free of charge and anonymously, either by telephone or via a web-based application. The channels can be accessed via our external website **Compliance-Hotline**. All reports are treated confidentially and are checked and processed according to a clear and transparent process. The responsible persons for the investigation are independent and autonomous. Group Compliance accepts complaints received via the aforementioned channels and passes them on within Merck to the specialist departments responsible for processing. The respective Group functions are responsible for complaints that concern the business activity of Merck. The respective Center of Expertise within Group Procurement is responsible for possible violations in the supply chain. If the investigation confirms human rights or certain environmental risks or violations in our company or at our suppliers, appropriate follow-up measures (preventive and remedial actions) are initiated in accordance with our Remedial Actions Guideline. At the same time, we regard the reports as an opportunity to review our internal processes and structures and improve them where necessary. The human rights and environmental whistleblowing procedures contain a description of our compliance process and are available on the website in the following languages: English, German, Chinese, French, Hindi, Japanese, Korean, Portuguese and Spanish. The complaints system is described in our Supplier Code of Conduct. Furthermore, we outline in our supplier code of conduct that our suppliers shall have a grievance mechanism or respective complaints procedure in line with effectiveness criteria of the United Nations Guiding Principles on Business and Human Rights or other applicable laws. They shall encourage and enable their employees to report concerns or illegal activities. Suppliers shall follow up on concerns and take corrective actions if needed. The grievance mechanism or complaints procedure also needs to be made available and actively communicated to external rights holders. Additionally, our suppliers with low human rights scores have to conduct a training on our Supplier Code of Conduct, which specifically includes information about our complaint system.

Our grievance system meets all established effectiveness criteria for non-judicial grievance mechanisms, as set out in the UN Guiding Principles on Business and Human Rights: it is legitimate, accessible, predictable, fair, and transparent. We are working on reviewing the effectiveness of our complaints system and improving it accordingly.

Our due diligence process for responsible mineral sourcing

Our supplier management includes separate actions for tier-n-suppliers (indirect suppliers) in the area of conflict minerals. Our due diligence process is aligned with international standards. It involves establishing a strong management system, identifying, and assessing risks through tools such as the Conflict Minerals Reporting Template (CMRT), and designing tailored risk mitigation strategies. In the event of concrete indications that our principles for suppliers are not being adhered to, the supplier is audited. In line with our position in the supply chain, a risk management plan is implemented in collaboration with upstream suppliers if a risk is identified.

The measurable risk reduction must be tailored to the respective supplier and the context of its activities and include qualitative and/or quantitative indicators to measure the improvement. The supplier must implement the actions within a specified period. During this period, a temporary suspension of trading may be considered. If the supplier is unable to successfully mitigate the risk or we are of the opinion that the risk mitigation is not sufficient, we have the option of terminating the business relationship. An audit will be carried out at the supplier's premises to check whether the risk reduction was successful.

Neither workers nor their representatives are directly involved in the risk reduction process. The reference is more likely to be via their employers, as they have to take corrective action in the event of any negative effects. If we receive a complaint about a human rights violation through our complaint channels, the cases are documented and investigated. The complaint procedure is closed when it has been ascertained with sufficient certainty that no human rights risks or violations have occurred. All information is processed in due consideration of the principle of confidentiality. This applies in particular to personal data. The identity of the complainant is preserved and only used internally to the extent necessary. We use the means available to protect the complainants against potential discrimination and reprisals they may face for raising a complaint.

Our initiatives and actions regarding workers in the value chain (S2-4)

In order to fulfill our human rights due diligence obligations, we have implemented a variety of measures as described in the following. The aim is to protect (potentially) affected workers and to prevent, end, or at least minimize adverse impacts on human rights. Unless otherwise stated, all actions are to be regarded as continuous and have no fixed closing date.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated to the initiatives mentioned below in relation to workers in the value chain. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Together for Sustainability supplier assessments and audits

Through the TfS initiative, suppliers are assessed either based on information obtained during audits or based on self-reported and publicly accessible information provided by EcoVadis, an independent rating agency. EcoVadis assesses suppliers from more than 175 countries and more than 200 sectors across the four categories of Environment, Labor and Human Rights, Ethics, and Sustainable Procurement. On top of the assessments, suppliers are also monitored through a 360-degree news watch. The results are shared among TfS member companies in compliance with all restrictions stipulated by antitrust law.

Through the TfS initiative alone, we have access to 2,695 valid scorecards on the assessment of our suppliers, almost 2,587 of which completed a new assessment or re-assessment in 2024. These were either initiated by us or in other cases by other TfS members.

In 2024, we continued our collaboration with member companies in TfS workstreams. We contributed to several best practice sharing and collaboration formats such as the TfS Talks as well as TfS Coordinator Roundtable. The TfS academy offers training courses for employees of member companies. The module on human rights due diligence covers topics such as child labor, forced labor, human trafficking, discrimination and harassment.

We use this leverage to enforce sustainability standards and requirements in supplier contracts to ensure compliance with ethical practices and environmental responsibility. We pool our knowledge and resources in a global network to drive systematic improvements in the supply chain.

Training on the Code of Conduct for suppliers with a low human rights rating

Since January 1, 2023, a specific contractual clause has been applied to all new contracts, through which we enshrine the obligation to comply with our Supplier Code of Conduct. Suppliers with an identified risk profile or a low score on human rights issues must undertake training on our Supplier Code of Conduct. This involves using an interactive e-learning tool that we have developed based on the content of the Code in various language formats. The training can also be carried out as part of an existing action plan. All remedial actions and training initiatives of suppliers with a score below the threshold are documented for continuous monitoring of the supplier. By documenting this, we aim to ensure that the implemented measures are driving continuous improvement of our supplier’s performance. If the supplier does not fulfill the requirement, appropriate escalation levels are used.

Membership of the Responsible Minerals Initiative

To address the complexity of our supply chains, we are a member of the Responsible Minerals Initiative. The Responsible Minerals Initiative provides us with various tools and resources enabling us to make sourcing decisions that ensure compliance with regulations and support the responsible sourcing of minerals from conflict-affected and high-risk areas. For example, we have access to a database for checking smelters and their audit assessments in accordance with the Responsible Minerals Assurance Process (RMAP) standard. In accordance with these standards, the risk analysis of suppliers also includes human rights aspects. Based on this information, we can identify conflict mineral suppliers with a critical assessment at an early stage. The effectiveness of this initiative is proven by the fact that the tools of the Responsible Minerals Initiative provide us with a better overview and access to information about conflict minerals suppliers.

Membership of the Responsible Mica Initiative

We are a founding member of the Responsible Mica Initiative. Since 2017, we have held the presidency of the organization. Through this cross-industry alliance of stakeholders, the initiative aims to eliminate child labor and unacceptable working conditions in the mica supply chain.

In the reporting year, we continued to support the initiative's work to improve working standards, by conducting audits, for example. We have also worked with our members to improve the living conditions of local people.

Improving the living conditions of mica workers

Sourcing mica from the Indian states of Jharkhand and Bihar, where social and economic factors contribute to poor working conditions, including child labor, enables us to support this region by safeguarding local employment and livelihoods. Therefore, we have contractually agreed a monthly wage of 17,500 Indian rupees with our suppliers for the workers in the mines and factories. In 2023, the workers in processing units and mines in our supply chain already received the aforementioned fixed salary, independent of mica volumes harvested or processed. This wage is a living wage that contributes to a decent standard of living for workers and their families while helping to eliminate the root cause of child labor. We continue to monitor the maintenance of this living wage. Moreover, we are working to improve the living conditions of families in the mica mining areas. Since 2012, we have been funding three schools in Jharkhand, India, which currently have around 490 students, as well as five vocational training centers, all of which are run by our local partner, the non-governmental organization IGEP. In addition to our support for education, we are also helping to improve access to healthcare. For example, we fully fund a health center operated by IGEP in Sapahi, Bihar, which serves around 20,000 residents of the region.

External audits in the mica supply chain

Environmental Resources Management (ERM), a leading international environmental, health, safety, risk and social consultancy, conducts annual audits at our mica suppliers covering mines and processing units. It examines working conditions as well as environmental, health and safety aspects. The audit reports document all findings identified and recommend corrective actions. Our employees in Calcutta (India) and Darmstadt take action to address any identified findings. If the actions are not respected, we may suspend or even terminate our business relationship.

In addition, our partner IGEP has been carrying out regular unannounced visits since 2013: IGEP monitors occupational safety and compliance with laws to combat child labor. In 2024, its inspections focused on medical check-ups for workers and conducting mock fire drills. We regularly optimize the escalation process together with IGEP. Supplier assessments are carried out in meetings every third week with representatives of our company. These meetings help to identify any required actions, which our sourcing teams then discuss and implement with our suppliers. Our employees in Kolkata and Darmstadt take action to address any identified issues. As a result, our suppliers have successfully improved the working conditions at these sites. If the corrective actions are not respected, we may suspend or even terminate our business relationship.

Evaluating and tracking mica sources

We use a digital traceability system to help ensure that the mica we purchase is derived from mica sources qualified by our company and audited accordingly by ERM and IGEP as described above, focusing on working conditions as well as environmental, health and safety aspects. Based on written records of the daily extraction quantities, we review the volumes of mica reported and supplied to the processing facilities. The effectiveness of this initiative is proven by the fact that we only source mica volumes from mines that fulfill due diligence requirements.

Supplier diversity

In the United States, we have a supplier diversity program, not only to comply with local legislation, but also to optimize our corporate culture. The focus on raising awareness of companies that are managed by women, members of minority groups or people with disabilities, and to incorporate them into the supplier selection process wherever possible. To do this, we use a supplier locator tool, which helps us to identify and potentially allow us to contract with small and diverse suppliers. We raise awareness among our procurement staff through internal as well as third-party training sessions. We recently expanded our internal reporting capabilities through our third-party provider supplier database. Year-on-year reports indicate that we increased the proportion of spend with suppliers classified as small and diverse. Our program initially focused on indirect spend categories and the healthcare business; since then, we have also expanded reporting to include the Life Science and Electronics business sectors.

To increase supply resilience, we identify and monitor relevant suppliers against criteria such as financial, operational and ESG related risks, and their strategic importance to the business. This approach supports our category sourcing teams to identify potential mitigation actions with impacted suppliers and supports them in making improvements. As part of our comprehensive procurement risk management approach, which is based on various external data sources and indices, we also monitor potential global events (e.g., geopolitical, climate, natural catastrophes, military conflicts, etc.). In the case of an identified risk, our sourcing teams work closely with our businesses to take the necessary action, for example, creating a contingency plan with our suppliers.

Ensuring ethical labor practices: Our commitment to SDG 8.7

We demonstrate our commitment to Goal 8 "decent work and economic growth" of the 17 UN Sustainable Development Goals through our initiatives, taking immediate and effective actions to contribute to the elimination of forced labor, end modern slavery and human trafficking, prohibit and eliminate the worst forms of child labor, including conscription and the use of child soldiers, and end all forms of child labor by 2025. We have an ongoing commitment to help establish and maintain fair and ethical labor practices in our operations and throughout the supply chain. By adhering to stringent ethical and social standards, regularly reviewing compliance, and engaging with suppliers to ensure ethical practices, our approach facilitates continued improvement in eradicating forced labor, modern slavery, human trafficking, and child labor. This commitment to human rights due diligence and responsible supply chain standards aligns with the aim of SDG target 8.7 and contributes to the company's ongoing dedication to ensuring fair and ethical labor practices within its operations and across its supply chains.

Roles and Responsibilities

Procurement is responsible for integrating sustainability requirements into the relevant stages of our sourcing and supplier management processes. Our Center of Excellence for Sustainability coordinates the relevant actions, such as updating our guidelines where necessary, examining processes and coordinating our participation in external initiatives to collaborate with peers and further stakeholders about human rights due diligence in our supply chain, for example. We use internal communication channels and training to regularly inform and update Category Sourcing teams responsible for selecting and contracting suppliers. These updates include our guidelines and sustainability requirements, including human rights requirements affecting workers in the value chain as set out in our Supplier Code of Conduct.

We have defined clear roles for the governance of the due diligence process for conflict minerals. The Conflict Minerals Project Lead oversees the governance process, leads the project teams, and updates senior management. The Business Sector Conflict Minerals Lead oversees supplier reporting and participates in due diligence activities, for example, by monitoring conflict mineral supplier assessments, including human rights aspects for workers in the value chain via the RMI Facility database at an early stage. The procurement team engages in risk mitigation and ensures compliance with sourcing expectations. They are also responsible for gathering supplier information and managing supplier relationship.

Group Procurement has overall responsibility for sourcing mica. The Head of Corporate Responsibility, Surface Solutions, is the central contact for topics related to mica sourcing. He defines business requirements, executes audits and reviews outcomes to manage corrective actions that affect working conditions for mica workers, for example. Our procurement unit is in direct contact with suppliers to reiterate the importance we place on ethical, social and environmental standards. Our Head of Product Compliance, Surface Solutions heads mica advocacy efforts and serves as the President of the Responsible Mica Initiative.

Our targets in relation to workers in the value chain (S2-5)

We have set ourselves the following quantitative targets:

Sustainability assessment of our relevant suppliers	
Reference to material impacts, risks and/or opportunities	Identifier: S2-NI4; S2-NI7; S2-NI15; S2-NI16; S2-NI8; S2-N11
Material sustainability matters	Child labor; forced labor; adequate housing; secure employment; working hours; adequate pay; health and safety
Target	We strive for transparency in all our procurement regions. This is in direct relation to the strategic goal of anchoring sustainability throughout value chains by 2030. To achieve this, we review the sustainability performance of relevant suppliers using valid sustainability assessments. This assessment is intended to provide reliable information on the sustainability performance of our relevant suppliers, including compliance with human and employee rights. To measure this target, we use the previous year's spend as our baseline. We implemented the sustainability assessment of our relevant suppliers as a sustainability key indicator in 2022 and we used supplier spend from 2021 as the baseline. In the year 2022 33% of our relevant suppliers were covered by a valid sustainability assessment. In the same year, 74% of our procurement spend attributable to relevant suppliers was covered by suppliers with a valid sustainability assessment. For the reporting year 2024 we achieved our objective. For the year 2025, our objective is to cover 92% of our relevant supplier spend and 73% of our relevant suppliers with sustainability assessments, using the supplier spend data from 2024 as our baseline. The objective relates to our relevant suppliers. We define these via a) Annual total number of suppliers, which are rated with a higher risk score according to our human rights and environmental risk analysis b) Total annual number of suppliers contributing to 50% of procurement-related spend, excluding the suppliers mentioned under a) We actively engage with our relevant suppliers by requesting their sustainability assessments. By analyzing the results of these assessments, we are able to identify potential sustainability risks within our supply chain. This approach enables us to implement targeted measures as detailed out in our Remedial Action Guideline to mitigate risks and collaborate with our suppliers to improve sustainability performance, ensuring that our procurement practices align with our commitment to sustainable and transparent supply chains. When setting the target we applied our overarching Group Sustainability Strategic objective "Sustainable and Transparent Supply Chains" to the procurement sustainability objective. The development process was an internal, interdisciplinary process. Consolidated supplier data is compiled through an automated process. The data are regularly reviewed by the Merck Sustainability Board. We report the sustainability assessment of our relevant suppliers additionally under **ESRS 2 (SBM-1)** as it is one our strategic sustainability key indicators.
Methods	The annual calculation of the Key Indicator is based on the relevant suppliers using the data for spend and number of suppliers as of December 31 of the previous year, as well as on the current year's data for valid assessments. The first step is to consolidate the assessments of our relevant suppliers from various external platforms. The total number of ratings is then compared with the total number of our relevant suppliers. In the second step, we look at how much of our procurement spend is attributable to these suppliers on the basis of the supplier evaluations and compare this figure with our total procurement spend.
Consideration of stakeholders	We developed the target internally.
Changes from the previous year	No changes were made.
Performance/Key figures	In 2024, we worked with our relevant suppliers on new assessments and reassessments. 75% of our relevant suppliers were covered by a valid sustainability assessment. 94% of our procurement spend attributable to these suppliers was covered by suppliers with a valid sustainability assessment.

Consumers and End-Users (S4)

General information related to the protection of consumers and end-users

As part of the materiality analysis, we identified impacts, risks and opportunities related to consumers and end-users. For the material sustainability matter of health and safety, we identified a negative impact that mostly relates to individual incidents, but may be widespread in some cases. We have used the general ESRS definition of consumers and end-users for the business sectors Life Science and Electronics and a more specific one for Healthcare. All impacts, risks and opportunities that exceed our materiality threshold relate to the Healthcare business sector.

Consumers

According to ESRS, consumers are individuals who acquire, consume or use goods and services for personal use, either for themselves or for others, and not for resale, commercial, trade, business, craft, or professional purposes. For the Healthcare business sector this applies primarily to individuals that acquire, consume, use or are intended to use our medicines and services e.g., patients, their relatives or carers.

End-users

According to ESRS, end-users are individuals who ultimately use or are intended to ultimately use a particular product or service.

In the Healthcare business sector, our primary end-users are adult and pediatric patients who use or are intended to ultimately use our medicines and services. End-users also include clinical trial subjects (patients or healthy volunteers participating in clinical studies) who use or are intended to use our unapproved or approved products.

Furthermore, our end-users include those who benefit from the information and services we offer, such as people who are made aware of diseases through campaigns and/or who make use of our diagnostic or screening services. The same applies to students or researchers who take part in initiatives to foster health skills in science.

All medicines carry both benefits and risks for patients; in this sense, our products can be harmful to some end-users due to adverse effects of and/or increase the risk for chronic diseases. The consumers and end-users of our products also depend on accurate and accessible product- or service-related information, such as manuals, product labels or package inserts, to use the product correctly and ultimately achieve the intended effect and minimize adverse reactions. Furthermore, some of our end-users, such as patients with medical needs, are particularly vulnerable to health impacts. In addition, our end-users may also include particularly vulnerable populations such as children or people who are financially disadvantaged.

All consumers and end-users who are likely to be materially impacted by our company were taken into account when describing our strategy and business model.

Health and safety of our patients

Our consideration of consumers and end-users as stakeholders for clinical trials and patient safety measures (S4 SBM-2)

Before obtaining regulatory approval for our medicines, we conduct clinical studies with patients and, if necessary, also with healthy volunteers to investigate the safety and efficacy of our products. We aim to do so only in countries where we intend to market our medicines to ensure accessibility to the medicine after successful marketing authorization. We also aim to conduct high-quality clinical research that complies with applicable laws and regulations. We set Group-wide requirements that aim to ensure that high ethical and scientific standards are met when conducting clinical studies. Our top priority is the safety, well-being, dignity, and rights of the sick and healthy people who participate in our clinical studies. In order to improve our recognition of consumers and end-users and include their perspectives in research and development (R&D), we are committed to patient-focused drug development that more actively involves patients, carers and their representatives in our work. We are convinced that their valuable insights into disease and treatment management will help us to make more informed decisions at every stage of drug development.

Once our products are commercially available, they can only be purchased from a pharmacy with a prescription from a licensed physician. This is to ensure the safe use of our medicines for our end-users, as access to the drug is only given when medically justified. We also continue to educate our consumers and end-users about the products themselves and support them in administering them safely. In addition, we conduct Patient Advisory Board meetings to obtain feedback on patient-facing materials, the patients' disease journey or when developing patient support programs. Our processes for engaging with consumers and end-users involve patients and their carers and are detailed under **S4-2; S4-3**. Furthermore, we actively engage with healthcare professionals in the form of Medical Advisory Boards to exchange information on the treatment experiences of their patients and implement their feedback to ensure that patients receive the best possible treatment for their indication. The feedback received is thoroughly assessed and informs our company's business strategy, for example, in the form of drug development activities, or the set-up and design of patient-support programs, with which we aim to enhance patient care.

We aim to ensure that our products are effective in combating disease, while posing the lowest possible risk for end-users. The Code of Conduct emphasizes that the safety of patients treated with our medicinal products is our top priority and that we strive to continuously monitor any treatment-related risks or adverse effects and take the necessary action to minimize them in order to safeguard the interests and the rights of our consumers and end-users of our products. Our safety monitoring encompasses the entire life-cycle of a medicine, from development and market launch to expiration or withdrawal of regulatory approval. Stakeholder views on the negative impact of misuse of medicines (S4-NI-01) are not explicitly considered.

Our material impacts, risks and opportunities in relation to consumers and end-users (S4 SBM-3)

We distinguish between the health and safety of our patients and access to our products and services, as well as access to (quality) information. This first part of the chapter focuses on the material sustainability matter of health and safety covering our clinical studies and patient safety approaches. Our disclosure focuses on the following material impacts, risks and opportunities:

Health and safety	
Identifier	S4-NI-01
Material impacts, risks and opportunities	Potential negative impact
Time horizon	Short term
Value chain step	Own operations; downstream
Description	Illegal diversion and misuse of medicines can pose a risk to public health. This may impact the health and safety of consumers and end-users.

Health and safety	
Identifier	S4-PI-01
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Own operations; downstream
Description	Our medicines and our biological and chemical innovations that utilize the latest technologies have an actual positive impact on human progress and global health. To develop pioneering solutions that have a positive impact on society and support organic growth, Merck is exploring transformative technologies beyond core products and markets.

Health and safety; access to (quality) information	
Identifier	S4-PI-02
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Downstream
Description	Wholesalers and pharmacists play an important role in the healthcare system as they provide patients with medications and are often the last healthcare professionals to interact and engage with patients before medications are consumed. Pharmacists ensure that our medicines are used safely.

Health and safety	
Identifier	S4-PI-03
Material impacts, risks and opportunities	Potential positive impact
Time horizon	Short term
Value chain step	Own operations; downstream
Description	During clinical studies we want to adhere to high ethical and scientific standards, comply with legal requirements and work together with health authorities. This may result in a positive impact on the safe treatment of patients as well as end-users of medicines. This also enables new treatments for people worldwide, including those in low- and middle-income countries. Additionally, we secure early access to drugs through specific programs and work extensively to increase diversity, equity and inclusion in our clinical studies.

Health and safety	
Identifier	S4-PI-04
Material impacts, risks and opportunities	Potential positive impact
Time horizon	Short term
Value chain step	Downstream
Description	We collaborate with health authorities in low- and middle-income countries to help improve their pharmacovigilance systems and operating environments. This may have a positive effect on the health and safety of consumers and end-users.

Health and safety	
Identifier	S4-PI-05
Material impacts, risks and opportunities	Potential positive impact
Time horizon	Short term
Value chain step	Downstream
Description	Our actions and initiatives to reduce the risks associated with counterfeit medicines often exceed the minimum legal requirements. For example, we support authorities in detecting and resolving cases of counterfeit medicines. We also provide training for employees and business partners to strengthen their competencies in detecting product-related crime.

Health and safety	
Identifier	S4-R-01
Material impacts, risks and opportunities	Risk
Time horizon	Medium term
Value chain step	Downstream
Description	We are exposed to potential liability claims in relation to pharmaceutical products and clinical studies. Our liability insurance cover for such claims is limited and the insurance contract needs to be renewed on an annual basis. In general, insurance coverage for pharmaceutical product liability is limited, and in the future, it may become more difficult to obtain adequate coverage at a reasonable price.

Health and safety	
Identifier	S4-O-01
Material impacts, risks and opportunities	Opportunity
Time horizon	Short term
Value chain step	Downstream
Description	As part of regular portfolio management reviews, we continuously evaluate research areas and R&D-pipeline projects. We are realigning them, where necessary, in order to focus our investments on areas where the needs of patients are best met. This helps us to develop innovative medicines in areas where they are needed the most. In addition to in-house R&D efforts, strategic alliances with external partners and the in- or out-licensing of programs also form part of the catalog of measures to develop innovative medicine and ensure the efficient allocation of resources.

As a science and technology company, we are committed to advance healthcare and to improve the health for our patients by using our innovations to deliver first-in-class or best-in-class medicines. The safety of the patients treated with our medicines is our top priority, and we continuously aim to adapt our strategy to address our material impacts.

Our focus on innovative solutions and transformative technologies aligns with our strategy to address high unmet medical needs across all our therapeutic areas, thereby driving our organic growth. Additionally, we continuously evaluate our R&D pipeline to prioritize investments in areas that best meet patient needs with a special focus on complex or rare chronic conditions. By ensuring effective communication and monitoring of our products post launch, we mitigate risks associated with adverse effects, maintaining our commitment to safety throughout the product life cycle.

With our oncology, neurology and immunology and fertility specialty business portfolio, we support patients with unmet medical needs. In our core business we offer solutions for treatments in cardiovascular disease, diabetes, thyroid disorders, and endocrine diseases.

To ensure the safety of patients during clinical studies, we select trial participants based on known risk factors, such as age and comorbidities. Notably, we only enroll the specific number of patients needed to answer the scientific and medical questions posed. We only conduct clinical studies to investigate issues relevant to patients, healthcare professionals or society and only when our established methodology finds that the given medicines show significant therapeutic promise and a positive benefit-risk ratio. In addition, we reconcile and review the safety reports from our clinical studies and marketed products and immediately address any unforeseen risks. Senior boards, such as the Pharmacovigilance Advisory Board and the Medical Safety and Ethics Board, maintain oversight of any emerging safety concerns. In addition, cross-functional teams assess the benefit-risk ratio and development strategy of each product to ensure it delivers maximum safety and efficacy to patients.

The implementation of clinical studies in vulnerable populations, such as children or people with disabilities, requires special attention and care to comply with high ethical and scientific standards. That is why we only conduct studies with participants from vulnerable population groups if scientifically justified and if there is no other way to achieve conclusive results. When performing such studies, especially when informing study participants and obtaining their consent, we aim to take statutory regulations into account.

We are conducting clinical studies within various patient populations that are expected to use our products after their regulatory approval. In order to carry out our activities in an ethical manner, we have strict internal requirements and compliance guidelines. Our clinical study processes and procedures are regularly audited internally and inspected by the relevant regulatory authorities to verify their compliance with applicable laws and guidelines.

Once the medicines enter into the downstream value chain, we work with wholesalers and pharmacies in the respective countries to deliver our medicines. The latter also help ensure that patients use our products correctly. Our medicines must be effective in treating the respective disease while posing the lowest possible risk to patients. That is why we have established a pharmacovigilance system which helps us ensure that adverse effects are monitored, including those that were not detected during clinical development. This enables us to reduce risks to patients and communicate them transparently. Our safety monitoring covers the entire life cycle of a medicine, including development, market launch and commercialization and the expiry or revocation of regulatory approval. We aim to adhere to international guidelines and standard procedures.

Impacts to patients resulting from illegal counterfeiting and diversion of our products have significantly shaped our overall anti-product-related crime strategy, which is structured around three main pillars: supply chain and product integrity, detection and investigations as well as collaboration with external partners and authorities.

Due to the diverse therapeutic areas for which we aim to improve healthcare and the nature of our business model, we also provide our treatments to consumers and end-users who may be at greater risk of harm as a result of particular characteristics or those using particular products or services:

- End-users participating in clinical studies for innovative treatments for severe diseases are exposed to a high risk due to the less-well-characterized efficacy and safety profile of the treatment solutions.
- Patients receiving drugs from our oncology portfolio may be exposed to a higher risk because cancer drugs can have inherently harmful adverse effects for humans due to their mode of action. However, when treating a life-threatening disease such as cancer, a higher risk for the patient is accepted if the treatment is beneficial in combatting the disease.
- Pediatric patients such as those receiving medicines for the treatment of schistosomiasis are vulnerable end-users.

Our contribution to health and safety

Clinical studies enable us to investigate and provide new treatments for people around the world, including those living in low- and middle-income countries. Clinical studies also have a positive impact on the participants, as they receive potentially life-saving medicines safely and prior to commercial availability. By thoroughly assessing all available data, we ensure that the potential benefits outweigh the potential risks for patients when we decide on whether a given medication should be developed further.

Based on our commitment to diversity, equity and inclusion, we strive to ensure that the different patient groups who are likely to use our product after regulatory approval are adequately represented in our studies. We therefore endeavor to prevent discrimination against study participants on the basis of factors such as gender, ethnicity, religion, disability, gender identity, or socio-economic status. This commitment is available in a statement accessible via our website. In any event, the selection of participants is determined by the inclusion and exclusion criteria of the clinical trial, which are designed to benefit the patients involved. We identify the positive impacts in our downstream value chain for clinical studies for all consumers and end-users.

Furthermore, we want to ensure early access to medicines through our Early Access Programs. Under specific circumstances, these enable patients to gain early access to new, potentially life-saving products. The offer is aimed at people with serious conditions who have already received all available therapies without success. It allows them to be treated with products that have already been clinically tested but have not yet been approved. Furthermore, we offer patients who participated in one of our clinical studies post-study access to the investigational product, provided that certain conditions are met.

There may also be inquiries about the therapeutic use of our products beyond the marketing authorization. While each medicine is authorized for use in specific indications, a physician may, based on an individual benefit-risk assessment, wish to administer a product to a patient suffering from a serious disease for which the product in question is not approved. While we promote our medicines strictly within the scope of their specific marketing approval, these unsolicited requests for use of our products outside the scope of their approval are assessed by our qualified medical personnel. This personnel decides on the medical and scientific rationale and whether the request complies with our strict internal standards. If all requirements are met under the specific circumstances, we can enable patients to gain access to potentially life-saving products that are not approved for their respective indication.

After conducting clinical studies involving hundreds of patients around the world and the demonstrating a beneficial benefit-risk ratio, we launch our products commercially once they are approved by the health authorities. To ensure the safe use of our products already on the market, we continuously review and assess any safety data updates on those products.

Material negative impacts related to product integrity and supply chain security can potentially occur in any market where we sell or provide our products. These impacts include incidents of illegal diversion of medicines or misuse of our products.

To mitigate these negative impacts and secure the supply of genuine products to our consumers and end-users, we strive to fulfill the regulatory requirements on product serialization and the implementation of track-and-trace technologies in many countries and regions. This includes clear barcoding of individual products and collectively packaged products for transport so that they can be traced in the supply chain and the likelihood of counterfeit and illegally diverted products reaching patients is reduced. Using a risk-based approach, we apply our own product security features on certain products. In this way, we ensure that our products can be quickly and reliably checked for authenticity and thus contribute to the safety of consumers and end-users.

All material health and safety risks and opportunities we have identified relate to consumers and end-users of our Healthcare business sector. Generally, the opportunities are relevant for the respective patient group suffering from diseases for which we offer products.

Our policies related to consumers and end-users (S4-1)

Standards on Human Research and Clinical Studies	
Connection to material impacts, risks and/or opportunities	Identifier S4-PI-03
Material sustainability matter	Health and safety
Key contents	We have several internal policies on human research and clinical studies: Standard on Human Research, Standard on Investigator-Sponsored Studies and Standard on Collaborative Research Studies. Our policies define how we strive to protect the safety, well-being, dignity, and rights of all patients and subjects in clinical studies. They also cover the principles of ethical corporate governance and the compliant framework for clinical studies and aim to expand clinical and medical knowledge in accordance with applicable laws and codes. Compliance with the policies is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policies covers downstream activities of the Healthcare business sector. The policies' affected stakeholder groups are consumers and end-users as well as employees of the Healthcare business sector who need to comply with and are trained on the policies.
Accountability	Chief Medical Officer
Third-party standards/initiatives	The policies are based on the World Medical Association's (WMA) Declaration of Helsinki on ethical principles for medical research involving human subjects, the ICH Guidelines for Good Clinical Practice E6 (R2) (ICH-GCP) and the CIOMS International Ethical Guidelines for Health-related Research Involving Humans.
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policies are based on regulatory sources and requirements.
Availability	The policies are available internally on the intranet.

Medical Governance Standard	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-01; S4-PI-03
Material sustainability matter	Health and safety
Key contents	The purpose of the policy is to ensure compliance of all human research activities with recognized medical and ethical standards. It aims to protect the rights, safety, dignity, and well-being of patients using our products and of subjects participating in clinical studies. This policy describes the framework of our internal medical governance with roles and responsibilities, committees, guidelines, standards and processes. Compliance with the policy is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policy covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users as well as employees of the Healthcare business sector who need to comply with and are trained on the policy.
Accountability	Chief Medical Officer
Third-party standards/initiatives	The policy is based on the World Medical Association's Declaration of Helsinki and the International Conference on Harmonization – Good Clinical Practice Guideline.
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Standards on Managed Access to Medicines	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-01; S4-PI-03; S4-PI-04
Material sustainability matter	Health and safety
Key contents	For managed access to medicines, we have two policies, the Standard on Early Access and the Standard on Access to Approved Medication for Unapproved Uses. In general, Healthcare R&D strives to develop new medicines for people with difficult-to-treat diseases as safely and quickly as possible. In accordance with applicable laws and codes, we can provide ethical, compliant and controlled means of free access to approved medicines for unapproved uses or for early access in certain situations. Compliance with the policies is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policies covers downstream activities of the Healthcare business sector. The policies' affected stakeholder groups are consumers and end-users as well as healthcare professionals and employees of the Healthcare business sector who need to comply with and are trained on the policies.
Accountability	Chief Medical Officer and Head of Global R&D
Third-party standards/initiatives	The policy Standard on Early Access is based on the Principles of the Pharmaceutical Research and Manufacturers of America on conduct of clinical studies.
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users nor were their interests directly included. The policies are based on regulatory sources and requirements.
Availability	The policies are available internally on the intranet.

Standard Procedure: Product Quality Complaint Management	
Connection to material impacts, risks and/or opportunities	Identifiers S4-NI-01; S4-PI-03; S4-PI-04; S4-R-01
Material sustainability matter	Health and safety
Key contents	The policy defines the following requirements: Ensure that all complaints about products and services related to GMP (Good Manufacturing Practice) or GDP (Good Distribution Practice) are recorded and investigated promptly and effectively; Complaint management: receiving, recording, evaluating, investigating, responding to, and monitoring complaints as well as analyzing complaint trends to prevent recurrence; Screening complaints for adverse events and forwarding them to the relevant safety function; Furthermore, the policy defines the rules for reporting such complaints to management and the Health Authorities; Compliance with the policy is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policy covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users as well as employees of the Healthcare business sector who need to comply with and are trained on the policy.
Accountability	Healthcare Quality unit
Third-party standards/initiatives	The policy is based on: ISO 9000:2005: Quality Management Systems – Fundamentals and vocabulary; WHO-GMP: Good Manufacturing Practices for pharmaceutical products; ICH Q10: Pharmaceutical Quality Systems; US-GMP: Code of Federal Regulations (CFR) parts 210, 211, 600, 803, 820; Eudralex Volume 4 Chapter 8; ISO 13485:2003: Medical devices – Quality management systems – Requirements for regulatory purposes; ISO 14971:2007: Medical Devices – Application of Risk Management to Medical Devices; EMA Classification: Rapid Alert System: Classification of Urgency of Defective Medicinal Product Alerts (EMEA/INS/GMP/313510/2006, rev 1); Europe MEDDEV 2.12-1 rev 8: Guidelines on a medical devices vigilance system; European Commission: Falsified medicines directive, 2011/62/EU & European Commission: Commission Delegated Regulation, 2016/161/EU; Health Canada, Health Products and Food Branch Inspectorate; Good Manufacturing Practices (GMP) Guidelines – 2009 Edition, Version 2; Canadian Medical Device Regulations SOR/98-282
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-03; S4-PI-04
Material sustainability matter	Health and safety
Key contents	The policy guides our workforce in conducting business ethically – in line with our company values and the law. It outlines our commitment to respect human rights, our principles in the workplace and for dealing with external business partners, customers, consumers and end-users. The policy also addresses our principles of responsible business conduct, for example product safety, patient safety and the conduct of clinical studies. Furthermore, the policy describes various reporting methods for employees if they suspect that internal or external rules are being breached.
Scope of application	The policy applies Group-wide to all employees at our own operations. It also applies to downstream business activities and relations with external stakeholders, such as consumers and end-users.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy follows the principles of the UN Global Compact.
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders and experts.
Availability	The policy is available in 22 languages – internally on the intranet and publicly on our website.

Pharmacovigilance Governance Standard	
Connection to material impacts, risks and/or opportunities	Identifier S4-PI-04
Material sustainability matter	Health and safety
Key contents	The policy addresses patient safety. In line with the objectives of this policy, our Global Patient Safety (GPS) unit has a clear organizational structure in which all local/regional patient safety staff report directly to GPS. The policy describes the Pharmacovigilance framework, including organizational structure, processes, governance, and systems. Compliance with the policy is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policy covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users as well as employees of the Healthcare business sector who need to comply with and are trained on the policy.
Accountability	The European Union Qualified Person Responsible for Pharmacovigilance (EU QPPV)
Third-party standards/initiatives	The policy is based on the Commission Implementing Regulation (EU) No 520/2012 Directive 2010/84/EU; the General Data Protection Regulation (GDPR); the Regulation (EU) 2016/679 GVP Modules and Annexes; the Regulation (EC) No. 726/2004 and US Food and Drug Administration (FDA): Code of Federal Regulation 21, Title 21 and relevant FDA Drug Safety Guidances.
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Standard on Patient Support Programs	
Connection to material impacts, risks and/or opportunities	Identifier S4-PI-03
Material sustainability matter	Health and safety
Key contents	The policy provides a framework of general requirements and operational guidelines for the management of all types of patient support programs to comply with applicable laws, codes and company standards. Patient support programs conducted by the Healthcare business sector or any third party acting on behalf of our company are organized programs with the objective of providing benefits and support to patients in the diagnosis, treatment and management of their disease or condition and/or addressing specific aspects of their patient journey (e.g., education, diagnoses, adherence, and compliance). According to this policy, the purpose of such a program is to enhance patient care, which will directly benefits patients and the program is not revenue-driven or conducted for the purpose of generating profits. Compliance with the policy is ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policy covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users based on the Healthcare business sector's definition as well as employees of the Healthcare business sector who need to comply with and are trained on the policy.
Accountability	Chief Medical Officer
Third-party standards/initiatives	None
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Group Standard Illicit Trade & Product Crime Prevention	
Connection to material impacts, risks and/or opportunities	Identifiers S4-NI-01; S4-PI-05
Material sustainability matter	Health and safety
Key contents	The policy defines the general actions required to protect the business, patients and our customers from product-related crime. Compliance with the policy is to be ensured by internal audit procedures.
Scope of application	The scope of the globally applicable policy covers all consumers and end-users affected by counterfeit products that are falsely associated with our company.
Accountability	Chief Security Officer
Third-party standards/initiatives	None
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Good Practice and Process Guidance: Engagement with Patients, Patient Opinion Leaders, Carers, Patient and Carer-led Organizations	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-01; S4-O-01
Material sustainability matter	Health and safety
Key contents	The policy provides a framework for working with patients, patient opinion leaders, carers, and patient- and carer-led organizations. As a global healthcare company focused on patients' needs, our company is committed to fostering an open dialogue with and listening to the patient community and their carers to increase our knowledge of patients' needs and act to meet them. This is in order to: • Find better innovative healthcare solutions for patients; • Take into account and respond to the broader needs of patients and carers throughout the patient journey; • Facilitate meaningful patient engagement in the areas of improved health outcomes, access to care, policy issues, clinical development, and medical innovation. Our company engages with patients, patient opinion leaders, carers, patients and carer-led organizations to elevate their voices, both within our company as well as within society. We aim to ensure that all interactions with these stakeholders comply with applicable laws and codes as well as our internal policies and guidance.
Scope of application	The scope of the globally applicable policy covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users based on the Healthcare business sector definition as well as employees of the Healthcare business sector (excluding US employees) who need to comply with and are trained on the standards.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	None
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

Merck Quality Policy	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-01; S4-PI-03; S4-PI-04
Material sustainability matter	Health and safety
Key contents	This policy defines the strategic framework for quality-related activities at our company. These activities must be performed in compliance with our Code of Conduct, the applicable Group Quality Documents, the Healthcare Marketing Best Practices, and the applicable regulations. The objective is to ensure that products, services and systems are delivered to patients and our customers at the intended level of quality, safety and efficacy. Our vision is: Quality is embedded in everything we do. Compliance with the policy is ensured by internal audit procedures.
Scope of application	The scope of the globally applicable Group policy also covers downstream activities of the Healthcare business sector. The policy's affected stakeholder groups are consumers and end-users as well as employees who need to comply with the policy.
Accountability	Head of Corporate Sustainability, Quality and Trade Compliance
Third-party standards/initiatives	None
Consideration of stakeholder interests	Due to strict regulatory requirements, no interviews were conducted with consumers and end-users, nor were their interests directly included. The policy is based on regulatory sources and requirements.
Availability	The policy is available internally on the intranet.

In cases where we face conflicts between our Group-wide standards and national laws, we will seek to act in accordance with whichever standard is stricter while ensuring respect for the laws of the countries in which we operate. Information on our policies regarding alignment with internationally recognized initiatives can be found in our policy tables under “Third-party standards/initiatives”.

The policies related to our consumers and end-users are regularly monitored and updated. Our policies are generally available in English. Some are not publicly accessible and are only available internally. Others are also published on our website.

Our commitment: International guidelines and requirements

Our human rights commitments are detailed in our Human Rights Charter. Within this charter, relevant management processes and actions are set out for specific human rights issue areas such as research ethics, including clinical studies. Our commitment is based on the UN Guiding Principles on Business and Human Rights (UNGP). We expect our employees and our business partners to respect human rights. Compliance with the Human Rights Charter is currently not monitored with regard to consumers and end-users.

Our Quality Policy provides a strategic framework that aims to ensure that our products, services and systems offer patients high quality, safety and efficacy. It details the relevant laws and codes, criteria and guidance (e.g., for product development, manufacturing and access), and highlights the responsibility of our senior management to ensure quality is embedded in everything we do.

Our Standard on Human Research regulates the conduct of clinical studies. It helps us to comply with the applicable legal, ethical and scientific standards. Further quality documents detail the strategic direction of all quality-related activities or disclose our position on data privacy, for instance. In addition to the relevant national laws and regulations, these documents also include references to further guidelines and principles. Depending on the topic of a quality document, the respective guidelines and principles below have to be complied with as well:

- The **Good Clinical Practice (GCP)** guidelines of the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH).
- The **Declaration of Helsinki**, published by the World Medical Association.
- Good Laboratory Practice (GLP); Good Manufacturing Practice (GMP); Good Distribution Practice (GDP).
- The **International Ethical Guidelines for Health-related Research Involving Humans** of the Council for International Organizations of Medical Sciences (**CIOMS**).
- The **Joint Position on the Disclosure of Clinical Trial Information via Clinical Trial Registries and Databases and the Joint Position on the Publication of Clinical Trial Results in the Scientific Literature** published by the International Federation of Pharmaceutical Manufacturers & Associations (**IFPMA**), the European Federation of Pharmaceutical Industries and Associations (**EFPIA**) and the Pharmaceutical Research and Manufacturers of America (**PhRMA**).
- The **EFPIA and PhRMA Principles for Responsible Clinical Trial Data Sharing** and the IFPMA Principles for Responsible Clinical Trial Data Sharing.

Furthermore, we aim to follow international guidance and standard procedures for patient safety. These include, for example, the ICH guidelines, the Good Pharmacovigilance Practices (GVP) established by the European Medicines Agency (EMA), Title 21 of the Code of Federal Regulations governed by the U.S. Food and Drug Administration (FDA), and other pharmacovigilance regulations issued by national health authorities. We also aim to comply with relevant new statutory pharmacovigilance regulations in the countries where we market our products. We continuously monitor our service objectives through our pharmacovigilance quality strategy and annual quality plan. We also regularly monitor our performance and compliance through the internal and external reporting of key performance indicators. This includes submitting high-quality documents to health authorities in a timely fashion and performing assessments to support the monitoring of product safety throughout their life cycles.

Patient orientation

We aim to continuously improve our research and development approach and are committed to patient-focused drug development. We actively involve the patients, carers and their representatives as well as patient experts and patient advocacy groups throughout the entire drug development process and after the drugs become available to understand their unmet needs. Their valuable insights into disease and treatment management will help us make more informed decisions at each stage of the drug development process. We have compliance guidelines that define how we aim to ensure that such engagements take place within an ethical framework.

To this end, we have established Patient Advisory Boards (PAB) as one of our most important channels to gather patient and carer insights. Our PAB guidelines describe how we involve patients and carers in our clinical research process. At advisory board meetings, patients, patient advocates and carers can provide actionable feedback that informs our strategy and improves outcomes. We use this opportunity to discuss various aspects of the product development process, including but not limited to protocol design, educational materials, technology, and innovative approaches to clinical studies.

The input of patients is crucial for us, as is evidenced by dedicated patient engagement activities between patient representatives and senior management. Patient organizations are invited to discuss and provide senior management with direct feedback on our patient focus at an annual summit meeting. This enables respectful and enduring relationships to be formed. At corporate events, such as town hall meetings, individual patients are also invited to share their experience and make their voices heard. In addition, we receive indirect feedback from treating physicians at Medical Advisory Board meetings and supplement this with feedback from patients on their treatment experience through patient-reported outcomes, which are also included as an endpoint in some of our clinical studies.

Actual and potential impacts on consumers and end-users of our medicinal products contribute to our product information documents. Our product information supports correct use and informed treatment decisions, including relevant details such as indications, ingredients, dosage, storage, warnings and precautions, and potential side effects. Package leaflets may also include disposal instructions for environmentally harmful ingredients. We regularly review and update these documents to ensure they reflect the latest safety, efficacy and formulation information.

Our approach to enable effective human rights remedies

Violations of our Code of Conduct or legal provisions as well as human rights and environmental concerns during clinical studies can be reported via our Group-wide whistleblowing and complaints system. Anyone can report suspected cases anonymously and free of charge.

If our safety risk assessments identify any new safety issues, or if safety observations in the downstream value chain require urgent safety measures or if we identify new safety information that could impact the benefit-risk balance of our medicines (e.g., in the event of a product recall as part of crisis management), we immediately notify the health authorities using the appropriate emergency response procedures. Emergency response procedures include seeking health authority approval for further actions and communicating the information to relevant healthcare professionals. In addition, we promptly share this information with our business partners and clinical study investigators, enabling them to take proper action where the medicinal product in question is used. Further information can be found under “**Our complaint mechanisms**”.

We are committed to upholding human rights, which is why we became a signatory to the UN Global Compact back in 2005. We endeavor to prevent the risk of human rights violations as far as possible, not only at our own sites but also along our entire supply chain. We have a Group-wide complaints system for reporting human rights risks and violations. Our employees and external stakeholders can anonymously report suspected violations free of charge using this Group-wide complaints system, either by telephone or using a web-based app. To identify further human rights risks and certain environmental risks, we carry out risk analyses for our own business and for our direct suppliers once a year and on an ad hoc basis in cases of mergers and

acquisitions, for example. Risks relating to indirect suppliers are generally assessed on an ad hoc basis. We have also implemented the Supplier Code of Conduct, which applies to all providers of goods and/or services to our company (suppliers) and sales intermediates (e.g., dealers, distributors, wholesalers, agents, and resellers). The Supplier Code of Conduct sets forth the minimum standards that suppliers agree to fulfill as regards respecting human and labor rights, occupational health and safety, business integrity, environmental protection, continuous improvement, and supplier management. More information can be found under **S2**.

Our complaints mechanism applies generally and is not limited to cases relating to consumers and end-users in our downstream value chain. There were no reports for this target group in the reporting year. No severe human rights issues or incidents connected to consumers and end-user were reported in 2024.

Our processes for engaging with consumers and end-users (S4-2; S4-3)

The phases in which consumers and end-users are involved, as well as the type and frequency of involvement, vary from process to process. In principle, we work with consumers and end-users or their legitimate representatives either directly and/or through credible proxies. To transparently disclose to our consumers and end-users any relevant new achievements that have the potential to change the treatment patients receive, we aim to provide updates in press releases on critical development steps.

Furthermore, we further involve consumers and end-users in our Patient Advisory Boards, in the form of individual interviews and in the context of consulting agreements, surveys, or qualitative and quantitative research projects. We focus on exploring a specific topic or condition, and this includes feedback on living with a certain disease, disease trajectories and diagnoses or a variety of topics affecting clinical studies and their design to ensure that patients are able to adhere to the study protocols, for example. The knowledge gained in Patient Advisory Boards and further patient engagements is used for the subsequent decision-making processes of Medical, Digital Health, Communications, and other functions and informs the development of patient-facing materials to ensure they are understandable. In addition, they provide valuable information for the content of patient support programs, companion apps, awareness campaigns, and future company strategies. This way, we ensure that patient insights and perspectives are brought into internal decision making from the outset. All materials for the advisory board as well as the details around contracting and payment of the participating patients are pre-reviewed and approved by relevant departments, especially the medical, legal and compliance departments. The accountability for the Patient Advisory Boards lies with clinical and medical functions as well as overarching functions such as Government and Public Affairs and Communications. The guidelines of the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the internal policy Good Practice and Process Guidance: Engagement with Patients, Patient Opinion Leaders, Carers, Patient and Carer-led Organization apply to all procedures.

We are specifically looking for suitable patients, carers, or patient organizations to participate in our Patient 360 program. The program has yielded valuable outcomes, such as insights that have informed our planning and validation of patient engagement initiatives and the identification of gaps in support for carers of individuals with multiple sclerosis and myasthenia gravis. Additionally, as part of our Patient 360 program, we have worked closely with patient advocates to co-create a medical information website. Involvement takes place four to five times during the program via e-mail, virtual meetings, or personal contact. After a session, a survey is usually conducted to assess the effective involvement of participants in the development of patient-focused medicines. We summarize the insights gained, including concrete recommendations for action, in a report and share them with the participants and internal functions that may benefit from the insights. The accountability for Patient 360 lies with the Director, Global Patient Insights & Advocacy for Neurology & Immunology and our Vice President, Global Patient Insights & Advocacy.

The Medical Advisory Board meetings are held as required with the relevant medical employees of the Healthcare business sector and external healthcare professionals. The feedback we receive during these advisory board meetings is taken into account when planning our clinical studies. For example, the outcome of such feedback might lead to increased caution when enrolling studies in specific countries in order to prevent bias, adapt treatments and patient populations or modify biomarker strategies to enhance the value of clinical

data and improve patient stratification. We hope that this will bring us closer to the needs of patients during drug development, increase the benefits of the drugs and minimize the risks for participants in clinical studies. The accountability for the Medical Advisory Board meetings lies with the heads of the medical functions.

As part of our Individual Case Safety Report Management, several channels are available to consumers, end-users and healthcare professionals for reporting adverse events. This includes e-mail, fax, telephone number, web pages, and programs managed by our company. We conduct basic pharmacovigilance training throughout the Healthcare business sector to ensure that our employees are able to collect and report information on adverse events from all sources. Role-specific training plans are also in place for our employees who work in programs or tasks related to patient safety. We have introduced appropriate procedures for supplier management, pharmacovigilance agreements with business partners and audits. The accountability for the Individual Case Safety Report Management lies with the Head of the Global Patient Safety unit.

Once our products are on the market, we often engage via two-way communication with consumers and end-users, i.e. patients, their relatives, carers, and healthcare professionals. If this communication involves collecting safety and/or efficacy data, it is classified as a Patient Data Collection System (PDCS). The Global PDCS Team oversees all PDCSs globally, maintaining a comprehensive inventory and continuously monitoring to ensure compliance with applicable laws and regulations as part of our responsibilities as the marketing authorization holder.

We operate a wide range of programs worldwide, some of which are classified as PDCS. These include, but are not limited to, market research, digital media, digital health management tools, patient assistance programs, patient support programs, patient access solutions, and call centers or hotlines. The PDCS certification process is designed to ensure consistency in the safety practices of all the Healthcare business sector programs that qualify as PDCS. This process ensures proper planning and execution of PDCSs, focusing on identifying, collecting, and processing adverse events (AE) and special situations in patients using our authorized and marketed medicinal products. The Global PDCS Team is responsible for certifying all PDCSs. Each PDCS is assigned a PDCS Program Lead alongside a PDCS Safety Representative. All personnel involved in PDCS operations must undergo annual training in adverse event collection to ensure compliance.

Ultimately, the General Manager of the PDCS Program Lead is accountable for establishing the infrastructure and securing the resources needed to support effective operation of the PDCS. The frequency of engagement varies depending on the program structure and requirements. When collecting information, we include vulnerable patient groups, such as children, senior citizens and patients who are pregnant or breastfeeding. If necessary, we also take into account accompanying medications and existing medical conditions. The Head of Regulatory, Quality and Safety Operations is accountable for the PDCS process.

Once a medicine has been approved by the regulatory authority, the authority may request a study to collect further safety data. In this context, healthcare professionals may register for our Post-Authorization Safety Studies (PASS) to report safety data. The frequency of engagement varies depending on the program structure and requirements. When collecting safety information from PASS, we also take into account the vulnerable patient groups already mentioned. Once the PASS protocol is established, reviewed, and approved by the Pharmacovigilance Advisory Board, clinical study authorizations are established and tracked in accordance with Good Pharmacovigilance Practices guidelines. The study is disclosed through the entry of the PASS in the catalogues of Real-World Data Sources and Studies. The Clinical studies Transparency Officer also enters the relevant information in **ClinicalTrials.gov**. Accountability for the PASS process lies with the Head of the Global Patient Safety unit.

In the post-market phase, consumers and end-users as well as healthcare professionals receive drug information and labeling in the form of product information documents, such as package inserts, summaries of product characteristics, United States prescribing information, instructions for use, or illustrations on the medicinal product. We also ensure necessary training for affected employees working on the process. The procedures for medicinal product information should ensure that safety information is updated in the available public portals, package inserts and illustrations for all marketed medicines. It should also ensure the availability

of safety information about the known product characteristics, indications, warnings, and precautions as well as potential side effects to healthcare professionals, consumers and end-users as required. The Head of the Global Labeling unit is responsible for drug information and labeling.

If our ongoing safety monitoring activities of our medicinal products identify important new safety findings with a potential impact on the benefit-risk balance, we organize the respective safety communication after obtaining the necessary approvals from the relevant regulatory authorities. The safety communication message is delivered to the target group (such as our business partners, healthcare professionals and consumers and end-users) in the appropriate format. Depending on the life cycle of the medical product in question and applicable requirements, communication takes the form of a letter, e.g., a “Dear Doctor Letter” or a “Dear Investigator Letter”, an e-mail, a video, a written statement on a website, or via other Internet-based channels such as social media. Safety communication messages disseminated to healthcare professionals are tracked. Employee training for the safety communication processes are covered by role-specific trainings, and the responsibility of such processes lies with the Global Patient Safety unit. In 2024, we had 5 drug product recalls affecting 46,465 units in total.

Our complaint mechanisms

We have set up a Group-wide whistleblowing and complaints system that can be used to report actual and potential violations. A central component of this is our free and anonymous compliance hotline. Complaints received via our compliance hotline are received by a central, independent, and qualified team within Group Compliance. This team evaluates the reports and either initiates an investigation directly or, depending on the type, content, and nature of the report, may forward the report to the responsible function. If the complaint involves concerns from consumers and end-users regarding medicines, the report is forwarded to the appropriate function (e.g., Global Patient Safety) for further follow-up and measures. The end-to-end investigation process and remedial action lies within the responsibility of the respective function. Generally, if communication with the reporting person is possible, we would confirm receipt of the report within seven days and aim to provide information on the status of reported concerns within three months after the confirmation of receipt. Our central compliance hotline is available in more than 40 languages and countries as a telephone service or online platform. Both employees and external parties can use it. The accessibility of the compliance hotline is reviewed annually and is also contractually guaranteed by the external provider. We do not assess whether consumers and end-users are aware of and trust our compliance hotline as a way to raise concern.

Our general call center 720 serves all customer groups, including healthcare professionals, patients, and carers. Contact information, such as phone numbers and e-mail addresses, is provided in the package leaflets or the summaries of product characteristics of medicines as well as on the websites of the therapeutic areas. In addition, they are communicated on websites for specific therapeutic areas. We are legally obligated to be available for reporting adverse events and product complaints, and reconciliation processes are in place for such requests to ensure that all cases are processed appropriately. To meet this responsibility and comply with standards, we have established various procedures. Our call center services, which may be outsourced, are closely monitored for quality and efficiency and supported by service level agreements with the aim of ensuring high standards. We regularly review reports and analyses to maintain the availability and functionality of our communication channels. Documenting and tracking adverse event and product complaint reports are integral to our quality management system. We also record and analyze medical information requests to gain insights and assess the recognition and trustworthiness of our call center 720. We do not assess whether consumers and end-users are aware of and trust our call center 720 as a way to raise concerns.

With a centralized follow-up of corrective and preventive actions (CAPA), we help to verify the effectiveness of procedures in connection with complaints about product quality. To this end, we carry out regular trend analyses of complaints and their causes in order to identify areas that require improvement. All complaints received are anonymized. Digital systems are used to track complaints, while regular meetings with service providers in accordance with the service level agreements are intended to ensure effectiveness.

In accordance with our standards on product and supply chain integrity, we aim to maintain the integrity of our supply chains and reduce the likelihood of illegal medicines circulating, as counterfeit and substandard medicines pose a significant risk to public health. That is why we have safety rules and regulations for products and supply chains. We strive to comply with the regulatory requirements for product serialization and implementation of track-and-trace technologies as prescribed in many countries and regions. Track-and-trace technologies help us increase supply chain transparency and protect the integrity of our products, which is consistent with our corporate targets for patient health and safety. They work by making it possible to identify illegal medicines within the legitimate supply chain and prevent them from being dispensed, while ensuring that healthcare or regulatory authorities are notified.

We actively combat the illegal counterfeiting and diversion of our products. Our Group-wide standard Illicit Trade & Product Crime Prevention sets out binding procedures for effectively identifying and responding to incidents of pharmaceutical crime. In close cooperation with the authorities, we support the prosecution of offenders. A team of security personnel and experts from a range of fields, including legal and trademarks, supply chain, patient safety, regulatory affairs and quality assurance, pool their expertise to ensure the implementation of and compliance with the standard. We monitor online pharmacies, websites, online marketplaces, and social media to identify and remove illicit listings of our medicines and have established processes to ensure rapid and reliable authentication of suspected counterfeit products. We conduct proactive investigations both online and offline to identify and disrupt the availability of illicit products in both legitimate and illegitimate channels. All reports of suspected product-related crime are documented in a separate central, group-wide reporting system, enabling us to build intelligence, link incidents and respond more effectively. To protect patients, we also sponsor global initiatives, such as the Global Pharma Health Fund (GPHF), a non-profit organization that provides the GPHF-Minilab®. This mobile compact laboratory enables users to quickly and effectively test the presence and quantity of 113 different active ingredients, particularly in regions with limited access to healthcare solutions.

As previously mentioned, consumers and end-users can use multiple channels, including the Compliance Hotline, the call center 720 and the regular patient safety and product complaint channels to raise their concerns about dubious products. All reports of suspected product crime are documented in a separate central, Group-wide reporting system. This enables us to collect information, link incidents and respond more effectively.

Our actions related to consumers and end-users (S4-4)

Our actions in relation to consumers and end-users follow our policies and aim to improve the protection and advance the healthcare of consumers and end-users. Through the following measures, we aim to make progress toward the targets we have set ourselves, which are detailed under **S4-5**. This primarily affects consumers and end-users, R&D functions and the associated business sector Healthcare as well as external service providers. Unless otherwise stated, all measures mentioned are to be regarded as ongoing and have no fixed completion date.

Inspections and audits to ensure patient safety

We conduct global internal audits to ensure compliance with legal and further requirements such as Good Clinical or Pharmacovigilance Practices and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use as well as our internal standards, and to verify the effectiveness of protection measures for consumers and end-users. These audits affect our R&D function as well as further Healthcare units and external service providers. We carried out 113 audits in 2024. Regular quality management reviews with Senior Management involve sharing identified trends and risks from audits and inspections. Internal audits that detected relevant observations trigger a root cause analysis and the definition of corrective and preventive actions, which are checked and approved by the Quality Assurance department. In addition, regulatory authorities check whether we are complying with legal requirements and our internal standards to verify compliance with applicable guidelines and patient safety. In 2024, 17 health authority inspections took place. We follow up on the findings of these inspections and take necessary actions to ensure the ongoing compliance of our pharmacovigilance system. For each critical and major audit/inspection

observation that requires corrective and/or preventive actions (CAPAs), an effectiveness check must be defined and the result documented to verify that actions taken were effective to eliminate the root cause. If the effectiveness check does not meet the predefined criteria, new root cause analyses and/or additional CAPAs must be defined, followed by new effectiveness checks. Based on feedback from inspectors, inspections are either closed or reworked. All audits were completed without significant safety risks to subjects or impact on subject rights or data integrity that could lead to legal action. In addition, all inspections were completed without legal action by an authority.

By conducting audits according to pre-defined audit plans, we ensure that our processes are appropriate and that the safety and rights of our consumers and end-users are at no time at risk. Audits and inspections accordingly also constitute a means to allow us to compliantly develop drugs, mitigating the risks for the company arising from dependencies on our consumers and end-users including liability claims.

In 2024, no significant capital expenditures (CapEx) or operating expenditures (OpEx) were allocated to the actions in relation to inspections and audits. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

Patient Safety Day

The aim of Patient Safety Day is to raise awareness of patient safety and the importance of pharmacovigilance in the local subsidiaries. This annual event is held within the WHO celebration event schedule. The global awareness campaign, which took place in September 2024, aims to raise employee awareness of the need to proactively report and communicate adverse events to the responsible unit (i.e. Global Patient Safety). We currently have no specific effectiveness tracking in place. Generally, the campaign is intended to help to prevent serious safety problems and medication errors by pointing them out at an early stage. Raising awareness of pharmacovigilance helps to protect patient safety, thus reducing the risk of our company being exposed to liability claims regarding pharmaceutical products.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated to Patient Safety Day. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

We do not have any actions in place related to the identified material negative impact (S4-NI-01). However, we have established processes to manage this impact effectively. These processes are intended to enhance supply chain security by ensuring compliance with strict quality standards in both manufacturing and distribution processes. Furthermore, we strive to fulfill the regulatory requirements on product serialization and the implementation of track-and-trace technologies. More information can be found under **S4-2/S4-3**.

Roles and responsibilities

Our Global Development unit is responsible for clinical development, including clinical studies and the associated management processes (Reference to S4-PI-01; S4-PI-03; S4-R-01; S4-O-01). The Head of Global Research and Development reports to the CEO of the Healthcare business sector, who is a Member of the Executive Board. We review the progress of the development of new products based on predefined milestones. Depending on the results of the clinical studies, we decide whether to continue, change or discontinue development.

Two internal boards monitor our clinical studies. The Integrated Protocol Review Committee is responsible for the studies we conduct with products that are in clinical development. The integrated Medical Study Governance Board is responsible for our own studies on products that have already been approved as well as for all studies conducted by independent investigators that are supported by our company (so-called investigator-sponsored studies). Both boards consist of medical and scientific experts as well as managers with many years of experience in clinical research. We only take the critical step of a first clinical study on humans after carefully conducting extensive preclinical tests. The Human Exposure Group, a separate committee headed by our Chief Medical Officer, is responsible for making this decision. Before and during our clinical studies, we continuously analyze the potential risks for the participants in clinical studies. Our Medical Safety

and Ethics Board monitors the safety of participants in our clinical studies and reviews the benefit-risk profiles of investigational medicinal products as required. In addition, it also convenes as required to resolve any questions related to patient safety and the benefit-risk profile of our marketed products. To this end, and when particular actual or potential negative safety events are detected for a certain drug, these events and their implications on the safety of our consumers and end-users will be discussed in the Medical Safety and Ethics Board. This board constitutes the most senior decision-making body that ensures that the usage of our medicines is safe and that they exhibit a positive benefit-risk ratio. Depending on the type of issue, the board might mandate the termination of a trial, the adaptation of a clinical study protocol, or a product batch recall, among other actions, to ensure the safety of patients.

Our Global Patient Safety unit is responsible for managing patient safety (Reference to S4-NI-01; S4-PI-01; S4-PI-02; S4-PI-04; S4-PI-05; S4-R-01). The unit analyzes all safety data and reassesses the risk profile on this basis, if necessary. If applicable, we inform regulatory authorities, healthcare professionals and patients about new risks, additional risk mitigation measures and potential changes to the benefit-risk profile. Our Healthcare Quality unit handles quality complaints in connection with our products.

Our Corporate Security team manages all security risks across our organization, including our strategies and initiatives against product-related crime (Reference to S4-NI-01; S4-PI-05). Supported by experts from Legal, Export Control, Supply Chain, Patient Safety, Regulatory Affairs, and Quality Assurance at both global and local levels, they work collaboratively to safeguard our products and patients.

Our targets related to consumers and end-users (S4-5)

Good Clinical and Good Pharmacovigilance Practice	
Reference to material impacts, risks and/or opportunities	Identifiers S4-PI-03; S4-PI-04
Material sustainability matter	Health and Safety
Target	Our target for Good Clinical and Good Pharmacovigilance Practice is to achieve a completion rate of 100% of the annual audit plan. In auditing, we use specific risk assessment tools at regular intervals for each type of audit in order to define audit objectives and select audits. The target for inspections is that observations are properly mitigated to maintain compliance to regulations and internal standards.
Reference value/year	Base value of 100% completion rate annually for audits. Response to inspection observation accepted by authorities and no legal action initiated.
Methods	Our audits are based on a risk-based approach. Inspections are initiated by regulatory authorities. The target is not based on scientific evidence.
Consideration of stakeholders	Stakeholders were considered through questionnaires, interviews, and previous experience.
Changes from the previous year	No changes were made.
Performance/Key figures	Target achievement in auditing is tracked on a quarterly basis. The progress in target achievement is in line with what had been initially planned for the reporting period. The information is not applicable for inspections. For inspections carried out by regulatory authorities, our ambition is to have inspection responses delivered before or on the due date defined by the regulatory authority. In 2024, we documented 17 inspections. In addition, we conducted 113 audits. The completion rate of the annual audit plan 2024 (Q2/2024 bis Q1/2025) is expected to reach 96%.

At present, we are not able to share specific information about our target-setting process in relation to the stated target. Furthermore, we lack systematic mechanisms to compare our performance with consumer expectations and experiences, and we have not implemented structured processes for collaborative learning and improvement with consumers. For both audits and inspections, we conduct internal learning sessions. Our current approach does not involve direct engagement with consumers and end-users at this stage. In addition, we are looking for ways to improve our understanding of the expectations and experiences of consumers and end-users. We recognize the importance of learning from our achievements and working with consumers and end-users to identify areas for improvement.

Our ambition is to systematically identify, manage and report risks associated with consumers and end-users. Beyond this, we have not set any targets related to consumers and end-users for the material sustainability matter of health and safety. Further information on our actions can be found under **S4-4**.

Access to our products and services and access to (quality) information

Our material impacts, risks and opportunities in relation to consumers and end-users (S4 SBM-3)

We distinguish between the health and safety of our patients (see previous section) and access to our products and services, as well as access to (quality) information. Given the clear thematic links, we will look at the latter two sustainability matters together. Our disclosure focuses on the following impacts:

Access to products and services	
Identifier	S4-PI-06
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Downstream
Description	We recognize that healthcare systems face multifaceted challenges as regards access to health. We strive to drive health equity and make health solutions available, affordable, and accessible to all consumers and end-users in the downstream value chain. As part of our global commitment and in line with our Healthcare sustainability strategy we are implementing our Access Strategy for low- and middle-income countries (LMICs) to widen access to our healthcare products and innovations and continuing our efforts to fight the neglected tropical disease schistosomiasis and malaria.

Access to products and services	
Identifier	S4-PI-07
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Downstream
Description	We acknowledge the affordability challenges faced by healthcare systems under growing financial pressures. We recognize the unique characteristics of each health system and adapt our equitable prices based on local market considerations, such as unmet medical and treatment needs, health system capacity, infrastructure, and socioeconomic factors. We apply intra-country and inter-country equitable pricing approaches to all our brands. In addition to capacity- and awareness- building, we are also working in partnerships with health authorities in initiatives such as • to help address affordability issues, e.g., offer of discounted prices in tender and reimbursement listing for patients to access our products through the public channel. • to collaborate in policy development such as early screening for diseases in pregnant women and newborns for endocrine diseases and diagnostic testing in cancers. We believe these have a significantly positive impact on patients' health and quality of life.

Access to (quality) information	
Identifier	S4-PI-08
Material impacts, risks and opportunities	Actual positive impact
Time horizon	Not applicable
Value chain step	Downstream
Description	Driving health equity involves implementing initiatives to strengthen healthcare systems and build capability in order to contribute to medical advances for the benefit of patients in countries in need. We also invest in health education and awareness initiatives to drive behavioral change and empower patients to make informed decisions about treatment pathways.

Our approach to providing access to our products and services and to (quality) information

Health is a fundamental human right. However, half the global population still lacks adequate access to health, which is why we have made it a priority to drive health equity in order to address this global health disparity. We understand health equity as a concerted effort to ensure that all people, regardless of socioeconomic, geographical or other differences, can achieve the best possible care. We work with partners to tackle these complex challenges and are committed to systematically integrating the interests and perspectives of our stakeholders into our strategy and business model. To this end, we have adopted a holistic approach that focuses on integrating the pillars of innovation, access and community engagement:

- Availability: Catalyze innovative solutions for global health challenges through needs-based Research & Development (R&D), and responsible handling of intellectual property. We strive to foster the fastest and broadest access to innovation.
- Accessibility: Support countries in building up infrastructure and strengthening health services to enable patient access to the best possible care.
- Affordability: Implement innovative mechanisms for equitable and sustainable access to our innovations and established products.

We strive to increase our company's competitiveness and value while delivering long-term benefits to society by reaching populations in need with our products and technologies. Besides enabling access to our healthcare portfolio, our global health engagement extends to the fight against diseases that disproportionally impact populations in low- and middle-income countries (LMICs). These include the neglected tropical disease (NTD) schistosomiasis as well as malaria.

Our LMIC **access strategy** aims to achieve our target of reaching more than 170 million patients per year in these countries by 2030: more than 80 million patients with access to our healthcare portfolio and more than 90 million people with our global health portfolio. More information on our targets can be found under **S4-5**.

Partnerships and dialogue with stakeholders are essential to improve access to healthcare. That is why our approach also involves close cooperation with governments of various countries, international and non-governmental organizations, academic institutions, the private sector and independent experts. When it comes to pricing, we monitor the dynamic healthcare environment and markets, pricing and reimbursement systems as well as legal and regulatory guidelines and adjust our prices where necessary. Through a consistent, data-driven approach we intend to ensure that these meet patients' needs.

In the context of access to (quality) information, our business model focuses on strengthening healthcare systems and local capacity by enhancing the skills and expertise of scientists and medical professionals through a network of experts. Through health education and awareness initiatives, we also intend to drive behavioral change and to empower health professionals and patients to make informed decisions about treatment pathways. We implement these initiatives along the value chain in cooperation with our local partners on the ground. We concentrate primarily on the diseases in which we have the greatest expertise. In the area of global health, we have been primarily active in four key areas to improve healthcare systems: local research and development, manufacturing and supply chains, education and awareness raising, and health infrastructure and training.

Our contribution to improving access to our products and services as well as (quality) information

With our strategy, we seek to understand the prevalence of disease, the extent of unmet medical need and the availability of existing therapies. On this basis, we decide whether development is justified and how an appropriate access strategy for these diseases can be defined in the relevant regions, countries and communities. In developing this strategy, we balance our commitment to improving access globally while maintaining a sustainable business model that favors long-term investment in innovative research and development, as well as production of high-quality, safe products that are intended to improve patients' lives.

In the area of global health, we work with respected international and local organizations to jointly assess priorities. When it comes to schistosomiasis, for example, we align and contribute to the requirements of the World Health Organization's 2021-2030 Roadmap for Neglected Tropical Diseases. We do this by investing in our programs and specifically providing treatments for controlling disease, developing innovations, implementing health interventions for behavioral change through awareness campaigns and fostering partnerships to accelerate progress. Based on the results of our programs, we review and refine the analysis to identify and focus on the priorities that we can best address.

To ensure affordable access to our healthcare portfolio, we conduct annual price analyses to validate price thresholds and provide guidance on local pricing to our subsidiaries for the following year. We aim to ensure that they meet patient access needs by taking a consistent, data-driven approach together with equitable pricing initiatives. Moreover, we have adopted the Systematic Health Access and Patient Enablement (SHAPE) program with its holistic approach to addressing key barriers to access to healthcare, including affordability in addition to availability and accessibility, and consequently to improving access for underserved patient populations in LMICs. Our commitment to improve patient access to health also goes beyond LMICs to acknowledge and address affordability issues in some populations within high-income countries.

Our policies related to consumers and end-users (S4-1)

Merck Pricing and Access Policies	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-06; S4-PI-07
Material sustainability matter	Access to products and services
Key contents	Our internal policies on affordability include the following standards: Pricing Governance; Patient Access Program (PAP) Governance; Tender Management Governance. These policies describe how we price our products in a fair, responsible, equitable and sustainable way. In addition, the policies create a comprehensive framework that defines the requirements, processes and operational guidelines for the initiation and management of our equitable pricing initiatives and SHAPE projects.
Scope of application	These policies focus on our downstream value chain and affect various stakeholders, including patients, healthcare professionals, health service providers (e.g., hospitals), charitable organizations, and third-party providers of services and products, as well as employees of the Healthcare business sector who need to comply with the standards.
Accountability	Head of the Global Value Demonstration, Market Access & Pricing unit (GVAP).
Third-party standards/initiatives	In developing the policies, we were guided by the Good Practice Standards of the Access to Medicines (ATM) Foundation. These include addressing local needs and skills gaps, partnering with relevant stakeholders, ensuring strong governance to mitigate conflicts of interest, setting clear and measurable targets, conducting regular monitoring and evaluation while sharing progress publicly, and aiming for long-term integration within the health system.
Consideration of stakeholder interests	Pricing and access governance policies are developed with patients' needs for accessibility, availability and affordability in mind. For example, during the development of the PAP governance, we considered unmet medical needs, ability to pay, and availability and maturity of healthcare infrastructure such as testing and diagnostic facilities.
Availability	Our Pricing and Access policies are available internally on the intranet.

Charter on Access to Health in Developing Countries	
Connection to material impacts, risks and/or opportunities	Identifiers S4-PI-06; S4-PI-08
Material sustainability matter	Access to products and services and access to (quality) information
Key contents	The policy outlines our position and commitment and provides examples of how we shape access to our products and services in low- and middle-income countries (LMIC). The policy describes the general approach to access as well as the approach to R&D in infectious diseases, equitable pricing in LMICs, intellectual property rights and sustainable supply chains. In 2024, we assessed the evolution of this policy in line with our access strategy which will lead to the publication of a new policy document in 2025.
Scope of application	The scope applies downstream to patients, international and local organizations, including governments, healthcare professionals, and private and public partners.
Accountability	Head of Global Health & Health Equity
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we considered the interests of internal stakeholders.
Availability	The policy is publicly available on our website.

Compliance with strict regulatory requirements means that, unless otherwise stated, no interviews were conducted, nor were the interests of consumers and end-users directly included. Instead, the information reference is based exclusively on regulatory sources and credible proxies, without direct interaction with the consumers and end-users. Focusing on LMICs, our access-related policies cover people and patients who are supposed to use our medicinal products.

Our access-related policies are not aligned with an internationally recognized guideline. They are regularly monitored and updated. They are available in English and are either published internally (in which case they are not publicly accessible) or on our website.

Our commitment: International guidelines and requirements

As stated in our human rights charter, we respect the right to health and are committed to providing high-quality, safe health solutions for all. Our philosophy follows the guidance from the World Health Organization (WHO), which demands “the right to the highest attainable standard of physical and mental health”. We apply the concept of implementing this for populations in LMICs as well as populations with access challenges in high-income countries.

As regards mechanisms for compliance and more details on how we follow laws and regulations but also international guidelines and principles concerning our products as well as how we report human rights incidents, the same apply as for the health and safety of our patients. Further information can be found under **health and safety**.

Our processes for engaging with consumers and end-users (S4-2)

For our activities regarding access to products and services, as well as access to (quality) information, we do not have specific processes in place for involving consumers and end-users. Further information on our processes for engaging with consumers and end-users can also be found under **health and safety**.

We conduct regular stakeholder dialogue with relevant groups such as payers, payer advisors, patient representatives and healthcare professionals to understand the care landscape and the needs of patients and healthcare systems. Our exchange also extends to international organizations, non-governmental organizations, local institutions and universities. When it comes to global health challenges, we focus particularly on LMICs. Stakeholder dialogue takes place in all phases of the life cycle of our products – from research and development to market launch and post-launch. Engagement takes place through various platforms and in the form of market research projects, roundtables, discussions with stakeholders, education and awareness programs, public consultations and the involvement of payers. The Member of the Executive Board and CEO of Healthcare is the most senior role responsible for ensuring the engagement.

Our actions related to consumers and end-users (S4-4)

Our actions in relation to consumers and end-users follow our strategy and aim to improve access to our products and services as well as to (quality) information.

In 2024, we served around 103 million patients with our healthcare portfolio, thereof around 65 million patients in LMICs. Furthermore, we enabled the treatment of around 81 million people with Praziquantel against schistosomiasis. The total number of people reached in 2024 amounted to 184 million, which we show as a strategic sustainability key indicator (Number of people treated with our Healthcare products) under **ESRS 2 (SBM-1)**. Through the following actions, we aim to make progress toward the targets we have set ourselves. Unless otherwise stated, all actions mentioned are to be regarded as ongoing and have no fixed completion date.

Access to health in low- and middle-income countries

As part of the implementation of our Access Strategy for LMICs, SHAPE is our long-term, systematic program for improving the availability, accessibility and affordability of our Healthcare medicines for underserved patient populations. The program includes both existing and upcoming products in our healthcare portfolio. Specifically, we pursue a three-pronged approach that goes deeper, wider and faster. We are going deeper in our collaborative efforts to remove barriers to access in individual countries, including launching equitable pricing strategies and health system strengthening initiatives. We are going wider by making our medicines available in more countries, focusing on those with significant prevalence. And lastly, we are going faster when introducing new products to LMICs, reducing the time between the first global launch and regulatory filings in those countries. We anticipate that the implementation and expansion of SHAPE will continue to positively impact our consumers and end-users, leading to more equitable access and further initiatives to strengthen the healthcare system in LMICs.

In 2024, we served around 103 million patients with our healthcare portfolio, thereof around 65 million patients in LMICs. As of 2024, 17 pilot projects have been initiated in countries such as Peru, Argentina, Brazil, Egypt, Indonesia, and Mexico as well as several countries in Central America. In Egypt, for example, we have implemented a SHAPE project for Erbitux®. The program aims to reduce the prevalence and mortality rates of colorectal cancers by increasing public awareness, providing continuous medical education for healthcare practitioners and supporting diagnosis and treatment. We also collaborate with the Cancer Early Detection Presidential initiative by providing education programs for healthcare professionals.

We continue to drive forward activities in and for LMICs through our health equity accessibility initiatives that help strengthen local healthcare systems. In this way, we prepare and promote access to our innovations and products for high-burden, non-communicable diseases. We adopt a partnership approach to maximize our impact in this complex and challenging environment. This includes the shared value program, which supports our teams in LMICs in implementing initiatives that address health system barriers to patient access through capacity building and training for healthcare professionals. Our stakeholders are patients, health authorities, payers and healthcare providers.

Our Access Strategy for LMICs is contributing to fulfilling our target of serving over 80 million patients by 2030 with our healthcare solutions and portfolio of products for non-communicable diseases, such as cancer indications and endocrine disorders.

The implementation of our aforementioned initiatives is supplemented by monitoring and evaluation processes. We have created an impact evaluation protocol, which is available as needed. This protocol contains a clear definition of the key indicators that are crucial for tracking the effectiveness of our initiatives on an ongoing basis and deciding on actions to improve the effectiveness of our programs in achieving the desired results.

In our SHAPE program, the number of patients is the most important key indicator. This is tracked and evaluated on a quarterly basis. In addition, we continuously monitor the progress of the projects regarding important milestones, especially in the initial phase. We conduct annual target setting and validation for patient numbers and need for investment at the end of the year to ensure effectiveness in the implementation of approved projects.

In 2024, we allocated € 4 million of operating expenditures (OpEx) to our Access Strategy initiatives for LMICs, which are included in the respective lines of the income statement. No capital expenditure (CapEx) was allocated. For 2025, we intend to allocate € 5 million of OpEx and no CapEx.

Eliminating schistosomiasis as a public health problem

We aim to eliminate schistosomiasis as a public health problem by 2030, in accordance with the Neglected Tropical Diseases (NTD) Roadmap 2021-2030 of WHO. We are committed to the targets of the Kigali Declaration on NTDs: Participating companies, governments and private organizations pledge to contain and ultimately eliminate the 21 most prevalent of these diseases, including schistosomiasis. Schistosomiasis, also known as bilharzia, is caused by parasitic worms and affects over 250 million people worldwide, mainly in sub-Saharan Africa. To fight this disease, we have adopted an integrated strategy, which we are implementing in close collaboration with multiple partners worldwide. Our approach is based on four pillars:

- Treatment: As part of our partnership with WHO, we donate up to 250 million praziquantel tablets every year for the treatment in endemic countries. In 2024, we provided 203 million tablets. Based on the treatment guidance of WHO, we estimate that this number of tablets enabled the treatment of around 81 million people. Nearly 50 years after its development, praziquantel remains the standard of care for the effective treatment of schistosomiasis around the world. Our target is to reach over 90 million people per year with praziquantel by 2030.
- Research and Development (R&D): Within the Pediatric Praziquantel Consortium, we developed arpraziquantel – a new pediatric treatment option for children aged three months to six years. We are also advancing R&D for a next generation of drugs, and supporting, through a collaboration, the development of new and more sensitive diagnostics.
- Health education for behavioral change: We believe prevention is the most effective health intervention. That is why we invest in behavioral change initiatives to raise awareness of the causes and risks of schistosomiasis and provide information on preventive measures.
- Advocacy and partnerships: We intend to make even faster progress in the fight against schistosomiasis. That is why we collaborate with partner organizations and maintain a continuous dialogue with the wider stakeholder community, for example via the Global Schistosomiasis Alliance (GSA).

Further information on our targets can be found under **S4-5**.

The demand for praziquantel tablets through WHO, the production and supply of tablets, the number of people reached (school-aged children and adults), and the countries in which they are used are tracked. We continuously monitor the program and outcomes. Final figures are consolidated and assessed on an annual basis.

After the scientific positive opinion by the European Medicines Agency in December 2023, arpraziquantel for schistosomiasis in preschool-aged children was included in WHO's List of Prequalified Medicines in May 2024. The availability of arpraziquantel dispersible tablets in the first African country, Uganda, was confirmed in December 2024 to prepare for the first preschool-aged children to receive the drug through the Consortium's ADOPT program. This program aims to identify routine practices for wider use of the new medicine into countries where schistosomiasis is endemic.

Through our research activities we have identified a promising candidate to prevent and cure schistosomiasis. Furthermore, we also invest in health education and capacity-building initiatives to strengthen local expertise and healthcare systems to promote adequate availability and accessibility.

Through our significant investment in the fight against schistosomiasis, we expect to continue positively impacting our consumers and end-users through the availability of our products via new, diversified mechanisms for sustainable access, to reach people of all ages who are in need.

In 2024, we allocated € 29 million of operating expenditures (OpEx) for our initiatives to eliminate schistosomiasis, which are included in the respective lines of the income statement. No capital expenditure (CapEx) was allocated. For 2025, we intend to allocate € 36 million of OpEx and no CapEx.

Preventing and controlling malaria to support elimination

According to WHO estimates, almost half of the world's population is at risk of contracting malaria. The latest annual figures report over 240 million cases of malaria and more than 600,000 related deaths, with around 80% occurring in children under the age of five. Currently, 95% of cases and deaths occur in Africa.

Increasing drug resistance and the need for additional preventive measures require innovations in this area. We have invested in our As One Against Malaria program to develop a new medicine to cure and prevent the disease. This medicine is currently undergoing Phase IIa clinical studies. Additionally, we are evaluating a new technology for the long-lasting efficacy of our insect repellent IR3535®, implementing research initiatives to strengthen the resilience of healthcare systems in Africa, and defining sustainable business models for new access pathways to reach patients in need with our innovations.

The investment in new health solutions aims to create a significantly positive impact from health and socio-economical perspectives in the countries where malaria is endemic. However, we are not yet able to quantify the impact.

We monitor the progress of the As One Against Malaria program on an ongoing basis. Reports to governance bodies are submitted upon reaching key milestones, which are used as a basis for making decisions. The development of innovations is complemented by the evaluation of mechanisms that will ensure sustainable and more equitable access to products, once available.

In 2024, we allocated € 12 million of operating expenditures (OpEx) to our malaria initiatives which are included in the respective lines of the income statement. No capital expenditure (CapEx) was allocated. For 2025, we intend to allocate € 13 million for OpEx and no CapEx.

Health education and capacity building

The private sector is a crucial partner in responding to global health threats. For this, we help to ensure that healthcare systems are prepared to address emergencies and to sustainably deliver care to patients in need.

In the area of global health, we have established a portfolio of collaborative projects that build up capacity and strengthen healthcare systems in LMICs by investing in four key areas: local research and development, production and supply chains, education and awareness, as well as health infrastructure and training.

We contribute to health equity by building scientific capacity and competencies through our R&D programs with a primary focus on schistosomiasis and malaria. Through technology transfers, we support local production to help countries to become self-sufficient and serve local in-need populations. We built sustainable supply chains of local distributors in Africa through partnership. We also invest in education and behavioral change initiatives to raise awareness on schistosomiasis, through our collaboration with the NALA Foundation as well as our storytelling approach in Kenya, Rwanda, and Ethiopia as examples. We collaboratively develop and implement new approaches and initiatives to strengthen healthcare systems and improve access to, for example, thyroid care in Indonesia and the Philippines.

Equitable pricing approaches

The prices of our products should not be a barrier to accessing treatment. We have therefore implemented a multitude of equitable approaches including value-based contracting, Patient Access Programs (PAP) and second brands.

We are committed to advancing value-based healthcare through pricing and contracting mechanisms that comply with applicable local laws and regulations. In collaboration with payers, such as health insurance companies, we have developed various product- and market-specific reimbursement and contracting models. These help to provide patients with prompt access to our innovations. In 2024, we continued to implement and maintain innovative risk-sharing agreements, which give patients with multiple sclerosis direct access to

Mavenclad® with agreements in Europe, Latin America and the Middle East. We also implemented an adherence-based agreement for Saizen® in Spain and value-based contracting for Bavencio® in Korea.

Our PAPs are self-sustaining commercial programs through which we provide approved medicines to underserved populations in LMICs as well as patients with affordability challenges in high-income countries. In 2024, we operated PAPs for nine of our innovative products in around 20 global markets. In India, for example, we offer a PAP for our oncology drug Erbitux® through which financial assistance to eligible underprivileged patients in line with local laws and regulations is provided. Since we initiated the program in 2013, it has been made available to approximately 8,500 patients nationally. In 2024, around 1,500 patients benefited from the program. In Indonesia, we started implementing an oncology access initiative featuring PAPs and affordable pricing for low- and middle-income patient groups. This initiative supported over 600 patients in 2024. In the United Arab Emirates and Kuwait, we introduced a patient affordability initiative to provide access to our oncology and multiple sclerosis treatments to patients who cannot afford the cost. This program is carried out in collaboration with third-party providers and charitable organizations. In 2024, 62 patients benefited from this program.

For some of our existing high-quality products, we offer second brands at affordable prices, especially in countries where many patients live on low incomes. Second brands of the beta-blocker bisoprolol (Concor®) are available at affordable prices in Brazil, Chile, Peru, Poland, Greece, Slovakia, Botswana and South Africa. Similarly, a second brands of levothyroxine (Euthyrox®) is available in Brazil, Peru and Mexico, and a second brand of extended-release metformin (Glucophage® and Glucophage XR®) is available in Mexico and Chile.

We expect that the introduction and expansion of our equitable pricing initiatives will continue to have a positive impact on our consumers and end-users over the next 3-5 years and beyond. We monitor the effectiveness of our equitable pricing initiatives on an ongoing basis; mechanisms used to assess the effectiveness vary. For example, the effectiveness of our value-based contracting programs is assessed against pre-set outcomes in the contract, such as financial indicators, performance, and patient adherence-based outcomes. We monitor the outcome of our Patient Access Programs (PAPs) based on patient numbers reached in the respective target populations.

In 2024, we allocated € 3 million of operating expenditures (OpEx) for our equitable pricing approaches which are included in the respective lines of the income statement. No capital expenditure (CapEx) was allocated. For 2025, we intend to allocate € 3 million of OpEx and no CapEx.

Roles and responsibilities

The member of the Executive Board and CEO of Healthcare has overarching responsibility for the initiatives related to access to our products and access to (quality) information.

Our Global Health & Health Equity organization is responsible for Group-wide initiatives and programs with the aim of developing and providing access to health solutions and driving health equity by creating equitable and sustainable access mechanisms for patients and society (Reference to S4-PI-06; S4-PI-08). Our team works closely with the various sectors to leverage our collective strengths and expertise internally as well as with a large number of international and local partners. Beyond enabling extended access to our healthcare portfolio by leveraging strategic approaches and shared value initiatives, we also focus on diseases that disproportionally impact populations in LMICs by prioritizing efforts for disease control toward the elimination of schistosomiasis as a public health problem, and catalyzing innovations for global health challenges, including for malaria.

Our Global Value Demonstration, Market Access & Pricing (GVAP) unit sets the prices for the market launch in coordination with the respective franchises and is responsible for the cross-functional global SHAPE program (Reference to S4-PI-06; S4-PI-07). It reports directly to a member of our Healthcare Executive Committee. In addition, the GVAP unit systematically evaluates our medicine portfolios and implements equitable access initiatives. Our local subsidiaries are responsible for price management and adapt prices to changing local conditions. This is done in accordance with our pricing governance and the defined price approval process.

Our targets related to consumers and end-users (S4-5)

Access to our Healthcare portfolio	
Reference to material impacts, risks and/or opportunities	Identifiers S4-PI-06; S4-PI-07
Material sustainability matter	Access to products and services
Target	With our access strategy for LMICs, we aim to increase access to our products and services in these countries. Out of our target of reaching more than 170 million patients per year in these countries by 2030, we aim to provide access to our Healthcare products to more than 80 million patients per year by 2030. The focus for non-communicable diseases is on head and neck cancer, colorectal cancer and bladder cancer as well as endocrine disorders.
Reference value/year	Around 57 million patients in 2023
Methods	We measure progress by the number of patients reached on the basis of our product sales figures. The definition of the countries included is based on the World Bank's list of low- and middle-income countries in 2022.
Consideration of stakeholders	Stakeholders were not directly involved in our target setting; however, the needs of patients, payers and healthcare providers were taken into consideration via stakeholder engagement and dialogue.
Changes from the previous year	No changes were made.
Performance/Key figures	In 2024, we supplied more than 65 million patients in LMICs with our healthcare portfolio.

Elimination of schistosomiasis with praziquantel	
Reference to material impacts, risks and/or opportunities	Identifiers S4-PI-06; S4-PI-08
Material sustainability matter	Access to products and services
Target	Our integrated schistosomiasis strategy focuses on disease control in order to contribute to the elimination of schistosomiasis as a public health problem. We continue to produce and donate up to 250 million tablets of praziquantel per year. By 2030 we will provide sufficient praziquantel tablets to enable the treatment of 90 million people every year. The treatment is mainly intended for school-aged children in sub-Saharan Africa where schistosomiasis is highly endemic.
Reference value/year	Around 73 million school-aged children in 2021
Methods	We measure progress based on the number of tablets and the number of people reached (calculated on the basis of 2.5 tablets per person).
Consideration of stakeholders	External partner organizations (such as WHO)
Changes from the previous year	No changes were made.
Performance/Key figures	Target achievement: In 2024, we provided 203 million of tablets of praziquantel which enabled the treatment of around 81 million people. The progress toward achieving our target is in line with what was initially planned in consideration of our annual provision of up to 250 million tablets of praziquantel.

Elimination of schistosomiasis with arpraziquantel	
Reference to material impacts, risks and/or opportunities	Identifiers S4-PI-06; S4-PI-08
Material sustainability matter	Access to products and services
Target	Our integrated schistosomiasis strategy focuses on disease control in order to contribute to the elimination of schistosomiasis as a public health problem. By 2030, sufficient arpraziquantel dispersible tablets will be made available to reach up to 12 million preschool-aged children.
Reference value/year	The first preschool-aged children receive arpraziquantel in early 2025, which is our reference year.
Methods	We measure progress based on the number of tablets and the calculated number of preschool-aged children reached.
Consideration of stakeholders	External partner organizations (such as WHO)
Changes from the previous year	New target
Performance/Key figures	Ongoing monitoring, with annual tracking of the number of tablets and the number of preschool-aged children reached by the treatment.

The measurement of metrics related to consumers and end-users has not been separately validated by an external body.

To set the targets for our SHAPE program in the context of the implementation of our LMICs access strategy, we worked closely with our regional and local teams who have experience evaluating the needs of consumers and end-users. We take into account various factors such as epidemiology, unmet patients' needs, ability to pay or existing relevant healthcare infrastructures such as testing and diagnostic facilities.

We use a quarterly tracking system to ensure that we are on track to meet our targets and particularly the number of patients benefiting from the SHAPE program per product and country. In many LMICs, our teams on the ground are often confronted with unforeseen circumstances, for example, when external stakeholders change or additional investments are required to further strengthen the healthcare infrastructure. As a result, the implementation of our programs and initiatives can take a long time. Despite the challenges, our teams are committed to implementing our programs as close to planned timelines as possible with regular tracking and reporting. Our patients should be able to get diagnoses, especially early diagnoses, and have access to our innovative products through the SHAPE program, which covers both the public and private sectors where appropriate.

For our praziquantel donation program to combat schistosomiasis for school-aged children and adults, we work with WHO concerning targets on disease prevalence and unmet medical need. We track targets annually on the basis of the figures provided by the WHO. We continue working with selected partners to further improve our monitoring.

Referring to arpraziquantel for preschool-aged children, we develop targets on expected uptake of the medication in the endemic countries, combined with the estimated number of preschool-aged children at risk of schistosomiasis and the projected supply situation. As soon as the first children receive arpraziquantel in 2025, the supply of tablets and the number of preschool-aged children will be tracked. Together with our partners, we are working on a process to assess and track the epidemiological impact of arpraziquantel in terms of control and elimination of schistosomiasis, and the ultimate effect on the population in need (consumers and end-users).

Governance

Business Conduct (G1)

Corporate culture

Our governance (GOV-1)

We describe the role of our administrative, management and supervisory bodies, their roles and responsibilities as well as access to expertise and skills regarding business conduct, impacts, risks and opportunities under **ESRS 2 (GOV-1)**.

Our material impacts, risks and opportunities related to corporate culture (G1 SBM-3)

As part of our materiality analysis, we assessed impacts, risks, and opportunities in relation to corporate culture. An overview of the criteria applied in our materiality assessment and risk and opportunities identification, can be found under **ESRS 2 (IRO-1)**. Our disclosure refers to the following identified material impact:

Corporate Culture	
Identifier	G1-PI-01
Material impacts, risks, and opportunities	Potential positive impact
Time horizon	Medium-term
Value chain step	Own operations
Description	We are dedicated to cultivating a positive culture inspired by our corporate vision of "Sparking Discovery, Elevating Humanity". In this way, we empower our employees to create positive outcomes for customers, patients, and society. As part of this culture, we define a shared mindset that guides how we do business and interact with colleagues and stakeholders. By clearly defining acceptable behaviors in the workplace, we can deliver on our purpose and foster a work environment where everyone can succeed, develop, and grow. These behaviors also embody our shared values and help to ensure our teams reflect different cultures, ways of thinking and life experiences.

Our policies related to corporate culture (G1-1)

As a science and technology company we thrive on change and view it as an exciting opportunity for growth and innovation underscored by our new company vision “Sparking Discovery, Elevating Humanity”. Our commitment is to create a brighter, healthier, and more sustainable world for customers, patients, and communities around the globe.

Our multi-industry business model, diverse team and global footprint represent a competitive advantage. In addition, with our family values and behaviors rooted in a long history, we want to ensure that we can carefully plan for the needs of both current and future generations. Our research and business decisions are guided by a clear moral and ethical compass, outlined in our Code of Conduct. Furthermore, our High-Impact Culture and inclusive mindset are intended to give us the strength and agility to navigate through challenging circumstances. By embracing this set of values, behaviors, and inclusive mindset, we set a foundation for a company that thrives on the diversity of our teams of employees and the talents we attract.

Defining clear workplace behaviors helps us support our purpose and create an environment where everyone can grow and succeed. These behaviors reflect our values and ensure that our teams embrace diverse cultures, ideas, and life experiences.

The behaviors are:

- Obsessed with customers and patients: We focus on the impact we create. The customer ‘s and patient ‘s needs are the starting point of our work.
- Act as the owners: We think and behave like owners, we make decisions and act on behalf of the company’s best interest, not just our own.
- Be curious and innovate boldly: We challenge our own thinking and the status quo, focusing on better approaches and innovative methods while staying aware of the competition.
- Simplify and act with urgency: We value simplicity and efficiency. By eliminating unnecessary processes, we focus on what matters most and adapt quickly, when necessary, as speed is crucial to staying competitive in every business.
- Raise the bar: We constantly set high standards for ourselves and our teams, striving to deliver the best quality in our products, services, and processes.
- Disagree openly, decide, and deliver: We think independently and deliver as a team. We make clear what is important in every decision, take accountability, and avoid deferring difficult decisions. Once a decision is made, we all commit to it.

Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier G1-PI-01
Material sustainability matter	Corporate culture
Key contents	The policy guides our workforce in conducting business ethically – in line with our company values and the law. It outlines our commitment to respect human rights, our principles in the workplace and for dealing with external business partners, customers, consumers, and end-users. The policy also addresses our principles of responsible business conduct, for example, product safety, patient safety, and the conduct of clinical studies. Furthermore, the policy describes various reporting methods for employees if they suspect that internal or external rules are being breached.
Scope of application	The policy applies group-wide to all employees at our own operations. It also applies to downstream business activities and relations with external stakeholders, such as consumers and end-users.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	The policy follows the principles of the UN Global Compact.
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders and experts.
Availability	The policy is available in 22 languages – internally on the intranet and publicly on our website.

High-Impact Culture Manifesto	
Connection to material impacts, risks and/or opportunities	Identifier G1-PI-01
Material sustainability matter	Corporate culture
Key contents	The policy illustrates our commitment to fostering a unified culture that emphasizes collaboration, innovation, and a customer-centric approach. At the same time, it encourages employees to drive meaningful impact in their work and communities. The progress of achievements across business sectors is monitored via the actions related to corporate culture.
Scope of application	The policy applies Group-wide at all sites.
Accountability	Chair of the Executive Board and CEO
Third-party standards/initiatives	None
Consideration of stakeholder interests	When setting the policy, we conducted workshops, interviews, and feedback rounds with various colleagues across the organization and with external experts to add further perspectives to the policy.
Availability	The policy is available internally on the intranet and can be downloaded in ten languages.

Whistleblowing and Investigations Standard	
Connection to material impacts, risks and/or opportunities	Identifier G1-PI-01
Material sustainability matter	Corporate culture
Key contents	The policy provides guidance on reporting potential violations, outlining our procedures for investigating reports of misconduct and unethical behaviors while ensuring confidentiality and whistleblower protection. Depending on the nature, content, and type of the report, it may be reviewed, assessed, processed, and investigated in accordance with predefined internal responsibilities of responsible functions – Human Resources, Corporate Sustainability Quality and Trade Compliance, Legal & Compliance, and Internal Auditing.
Scope of application	The standard applies group-wide to all employees and, where indicated, also to external parties.
Accountability	Senior leaders, reporting directly to the Executive Board.
Third-party standards/initiatives	The policy is based on the EU Whistleblowing Directive 2019/1937.
Consideration of stakeholder interests	The policy was established with consideration of regulatory standards and the interests of both internal and external stakeholders, incorporating their input through an internal review process.
Availability	The policy is internally available on the intranet.

The policies related to our corporate culture are regularly monitored and updated.

One core value that guides our operation is maintaining high standards of **ethical conduct**. To support this, we implemented a group-wide whistleblower and complaints system for reporting any forms of misconduct. A central component of this is our Compliance Hotline, which we have set up in collaboration with a third-party provider. It is accessible to our employees as well as external stakeholders. Concerns can be reported in more than 40 languages and around the clock, 365 days per year, free of charge and anonymously, either by telephone or via a web-based application. The channels can be accessed via our external website **Compliance-Hotline**.

Our Whistleblowing and Investigations Standard reinforces our commitment to maintaining and strengthening our “speak up” culture. The standard provides guidance on reporting potential violations and our procedures for investigating reports of misconduct while ensuring confidentiality and protecting whistleblowers in line with Directive (EU) 2019/1937.

Reports to the Central Reporting Channels are directly received and reviewed by a central, independent, and qualified team from Group Compliance. The qualified experts handling the report must act impartially, objectively, and in a timely manner, while maintaining confidentiality. In addition, our qualified experts are provided with our Whistleblowing and Investigation Standard, SpeakUp Line and Case Management relevant training materials and investigation related templates. Compliance-relevant cases with a particular risk profile are presented to the Compliance Case Committee, comprising senior members of our Compliance, Legal, Data Privacy, Internal Auditing, and Human Resources departments. The Committee evaluates and classifies specific compliance cases and takes appropriate measures to clarify the identified issues.

Moreover, we provide regular training for employees on existing and new compliance requirements, guidelines, and best practices, both in person and online. The topics include various areas such as Code of Conduct, anti-corruption, and data privacy. Employees are required to complete these courses during the onboarding period and to repeat the training based on their level of risk exposure. Additionally, we continuously update our training curricula to reflect new developments. Some courses also apply to independent contractors and contingent workers, such as temporary workers.

Our actions related to our corporate culture (G1 MDR-A)

Our commitment to fostering an environment in which every employee feels valued, engaged, and empowered to contribute to our collective success is at the core of our High-Impact Culture. We believe that acknowledging and rewarding individual achievements, along with a feedback-driven culture, enable this collective success. For this reason, we use a performance management approach that values employee expectations, defines clear goals, ensures feedback, and rewards outstanding performance. Our actions in relation to our corporate culture follow our Code of Conduct and aim to empower our employees to act in accordance with our core values. This approach applies to all employees across all business sectors. Unless otherwise specified, all actions are to be considered ongoing and have no fixed closing date.

Strengthening our sustainability culture

Since 2021, e-learning courses on our sustainability strategy have been a mandatory training component for existing and new employees. Building on this foundation, we extended our offer to function- and hierarchy-specific educational activities in 2023. Moreover, since then, we have focused on training Sustainability Change Agents who serve as multipliers within their functions to spread a sustainable mindset and enable changes toward reaching our sustainability targets. All Change Agents have been selected from our Sustainable Network, which is a platform with a continuously growing membership. The Sustainable Network has existed since 2021 and includes employees and managers across the company. It supports active exchange and mutual learning on sustainability topics, on a voluntary basis.

Attracting and inspiring key talent

We believe that a strong and appealing employer brand is built from the inside out. Our overarching objective is to attract qualified employees and build a strong organizational culture that supports effective collaboration and long-term employee retention. In the reporting year, we launched a campaign to provide insight into our culture and our employees' passion for our vision of "Sparking Discovery, Elevating Humanity": employees shared stories in video format. Furthermore, we want to focus our efforts on reaching relevant talent beyond our current industry by diversifying the channels we use to raise awareness among potential candidates who may not yet be familiar with the opportunities we offer. We are also working consistently to enhance the onboarding phase of our new employees, helping them adopt our High-Impact Culture and develop a strong sense of belonging within their team and their organization. We support managers in integrating new employees, ensuring they understand our high standards for ethics, integrity, accountability, and care. Additionally, we train our talent acquisition team to consider diversity, equal opportunities, inclusion, and unconscious bias in the recruitment process. Through our global minimum standards for the hiring process, which include clear expectations for hiring managers, we aim to ensure a fast and quality-oriented process. Our recruiters are trained to guide our hiring managers in following sound practices.

Embracing conversation and dialogue

In our increasingly connected world, we believe that feedback enhances open dialogue, builds trust, motivates, and improves collaboration. Our 360° feedback tool shall encourage our employees to provide continuous feedback based on integrity and respect. In the reporting year, we conducted various enablement sessions to further promote conversation and dialogue around our feedback culture. These included the interactive learning format Space2Grow, which emphasizes practical learning for our employees. As a part of the New Leader Onboarding Journey and the Supervisor Academy, our new managers are equipped not only with process knowledge, but also with an understanding of cultural differences.

Empowering our employees

We foster a trustful and open feedback environment within our company, inviting everyone to actively contribute to our organization's success through internal communication platforms, surveys, and discussion rounds. Moreover, we conduct various employee surveys at different stages of the employee journey, e.g., onboarding surveys, pulse checks, engagement surveys, and exit surveys. These surveys help us identify areas of strength as well as opportunities to improve employee well-being, engagement and belonging. Based on the survey results, follow-up areas are identified at the global or sector/functional level and translated into action planning.

MyImpact: Building a culture of feedback and performance excellence

MyImpact is our framework for maintaining and further developing a feedback-driven and performance-oriented culture in our company. It is designed to ensure that every employee is empowered to take ownership of their performance, actively participate in feedback conversations, and contribute meaningfully to the company's success. A mandatory e-learning ensures that employees, regardless of their role, have equal access to understanding performance management principles and can apply them effectively in their day-to-day work. As part of MyImpact, we send out a monthly newsletter promoting psychological safety to build a culture where employees feel safe. Furthermore, we continue communication and framework refinement based on feedback and indicators. By evaluating feedback based on defined indicators and transparently sharing lessons learned, we want to ensure that MyImpact is applied consistently and aligned with the company's strategic goals. The framework contributes to a culture of continuous improvement, bringing employee behavior in line with our ethical standards and High-Impact Culture.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated for the actions: strengthening our sustainability culture, attracting and inspiring key talent, embracing conversation and dialogue, empowering our employees and MyImpact. For 2025, we also do not intend to allocate any significant OpEx or CapEx.

MyGrowth: Empowering employees for skills-driven professional growth

MyGrowth shall empower employees at all levels of the organization to take control of their professional development and become part of a skills-powered organization. Building on a growth-oriented mindset and our artificial intelligence-driven platform, MyGrowth enables employees to shape their own professional journey. By providing access to tailored learning opportunities, mentorship programs, internal job prospects, and development assignments, MyGrowth promotes a continuous learning culture that aligns employee growth with the strategic needs of the company. We conducted optional introductory sessions in English, French, German, Polish, Portuguese, and Spanish to educate employees on the growth mindset and the MyGrowth platform, ensuring inclusivity and accessibility for our diverse workforce. MyGrowth Global Development Weeks promote collective learning across the organization, encouraging collaboration and sharing of knowledge. This two-week learning event offers our employees a range of free global and local learning opportunities and includes a variety of interactive sessions, workshops and activities focused on skills development.

In 2024, we allocated € 2 million of operating expenditures (OpEx) to the action MyGrowth, which are included in the respective lines of the income statement. No capital expenditure (CapEx) was allocated. For 2025 we do not intend to allocate significant OpEx or CapEx.

Evaluating the implementation of the High-Impact Culture

We have evaluated the High-Impact Culture initiative after two years of implementation across our global organization. The evaluation focused on our largest hubs in China, Germany, and the United States to identify gaps and opportunities to further strengthen the implementation of the High-Impact Culture framework. The overarching aim of this analysis connects directly with our topic of materiality and complements the ethical behaviors in our company as defined in our code of conduct. This assessment was completed in the fourth quarter of 2024. We identified an initial set of recommendations to further embed High-Impact Culture in the organization. In 2025, we intend to specify and integrate activities that promote the High-Impact Culture in alignment with our business objectives and values. We address all employees worldwide, thereby aiming to further drive the integration of the High-Impact Culture across the organization.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated for the action Evaluating the implementation of the High-Impact Culture. For 2025, we also do not intend to allocate significant OpEx or CapEx.

Our targets and metrics related to our corporate culture (G1 MDR-T, MDR-M)

Our recognition focuses on monitoring progress through a series of qualitative measures and comprehensive evaluation processes. However, these are not key figures or quantitatively measurable goals that are time-bound and result-oriented. We monitor the effectiveness of our measures on the topic of corporate culture using various criteria, which are presented below.

Within our sustainability culture, we have been using the sustainability-related questions from our annual Employee Engagement Survey since 2023 to measure the impact of our activities. The results of the survey are used internally only to evaluate the maturity of the sustainability mindset within the company and to identify and address differences across functions, regions, and hierarchy levels.

In 2024, as part of our efforts to attract and inspire key talent, we began measuring progress in terms of the quality of our onboarding process and talent retention. This includes evaluating talent management initiatives and analyzing the reasons why talented people leave our company. We also monitor the voluntary turnover rate of top talent and new hires. We also track how often our 360° feedback tool has been used since it was launched.

To continuously empower our employees, we conduct engagement surveys and assess engagement scores to evaluate the resilience and sustainability of our organization. Engagement is defined as the emotional and intellectual involvement that motivates employees to do their best work and contribute to the success of the organization. We define employee engagement as a mutual commitment between our organization and the employee. Additionally, the so-called quality index score is used to track progress on the overall quality of our work culture.

Regarding MyImpact, we have been measuring feedback-based indicators on a quarterly basis since 2023. This includes tracking the number of performance feedback users in the respective year, response rate to feedback requests and comparison with previous year.

Since mid-2024, a bi-weekly report from the MyGrowth dashboard has provided HR and leadership with up-to-date insights on platform usage, the number of users with profiles that include skills and participation in mentorship programs.

The High-Impact Culture assessment has led to a number of recommendations for further integration of High-Impact Culture within the organization. The initial assessment was completed in the fourth quarter of 2024, with plans to implement adjustments throughout 2025.

Animal welfare

Our material impacts, risks and opportunities related to animal welfare (G1 SBM-3)

An overview of the criteria applied in our materiality assessment and risk and opportunities identification, can be found under **ESRS 2 (IRO-1)**. As part of our materiality analysis, we identified one impact in relation to animal welfare. Our disclosure refers to the following material impact:

Animal Welfare	
Identifier	G1-NI-01
Material impacts, risks and opportunities	Actual negative impact
Time horizon	Not applicable
Value chain step	Upstream; own operations; downstream
Description	To ensure the quality, safety and efficacy of our products and processes, the use of animals is often a regulatory requirement. The legal use of animals may have a negative effect on the health and well-being of animals even if it is used only if no alternative exists, it is unavoidable and it is carried out under highest animal welfare standards. Despite our diligent precautions, there a risk of our guidelines being breached, which could result in adverse effects on animal welfare, for example, through inadequate housing conditions, handling, or study procedures.

Our policies related to animal welfare (G1-1)

We are committed to applying high ethical and animal welfare standards related to the housing, husbandry and veterinary care of all animals involved in our work. To ensure compliance with applicable regulations and to integrate animal welfare considerations into our own operations and our supply chain management, we have implemented multiple policies. The policies are regularly monitored and updated if necessary.

Merck Animal Science and Welfare Policy	
Connection to material impacts, risks and/or opportunities	Identifier G1-NI-01
Material sustainability matter	Animal welfare
Key contents	Our policy sets guidelines for activities involving animals, and ensures compliance with our Code of Conduct, internal standards, as well as legal and ethical requirements. It emphasizes our commitment to using animals responsibly, maintaining high welfare standards and striving to phase out animal testing by developing non-animal alternatives. The policy outlines guidelines for gradually reducing the number of animals used, replacing animal testing with alternative methods and refining practices to enhance animal welfare and minimize suffering. The Group Animal Welfare Council (GAWC) is responsible for monitoring and controlling the implementation status, the progress of achievements and the corresponding key figures of business sectors.
Scope of application	The policy applies Group-wide at all sites at our own operations and for all partners that use animals on our behalf.
Accountability	Business department leaders reporting directly to the Executive Board.
Third-party standards/initiatives	The policy is based on national legislations, the EU Directive 2010/63, the European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes (ETS 123 - Appendix A), as well as the guidelines of the Institute for Laboratory Animal Research (ILAR).
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders, including representatives of business units in the One-Merck Animal Welfare Strategy working group, and the GAWC. We strive to be a leader in animal science and welfare, upholding standards that go beyond global regulatory requirements.
Availability	The policy is available internally on the intranet and publicly on our website.

Supplier Code of Conduct	
Connection to material impacts, risks and/or opportunities	Identifier G1-N1-01
Material sustainability matter	Animal welfare
Key contents	The policy describes the expectations of our suppliers and sales intermediates regarding human and labor rights, occupational health and safety, ethics, business integrity, protection of the environment, animal welfare, as well as continuous improvement and supplier management. A standardized process has been set up to ensure that our suppliers recognize the policy. Group Procurement is responsible for integrating sustainability requirements into the relevant phases of our procurement and supplier management processes. Since 2023, the policy has been reflected in the General Terms & Conditions of Purchase.
Scope of application	The policy applies globally to all our providers of goods and/or services ("Suppliers") and to sales intermediates (e.g., dealers, distributors, wholesalers, agents, and resellers).
Accountability	Chief Procurement Officer and Group General Counsel (MAUR Boards)
Third-party standards/initiatives	The policy considers, among others, the UN Global Compact, the United Nations Guiding Principles on Business and Human Rights, the ILO core labor standards, the EU Conflict Minerals Regulation (EU) 2017/821, the Dodd-Frank Wall Street Reform and Consumer Protection Act, Sec. 1502, and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas, the Green House Gas Protocol, ISO 50001 on Energy Management, the Minamata Convention, the Stockholm Convention on Persistent Organic Pollutants (POPs), the Ellen-MacArthur Foundation, the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, the ETS123 Appendix A, and the US ILAR guide's current edition.
Consideration of stakeholder interests	The policy was developed by considering the interest of internal stakeholders and external experts.
Availability	The policy is available internally on the intranet and publicly on our website. In principle, the policy is referred to in our orders via a link to the General Terms and Conditions of Purchase; it is also embedded in new or amended contracts.

Management of Animal Using Contracting Partners	
Connection to material impacts, risks and/or opportunities	Identifier G1-N1-01
Material sustainability matter	Animal welfare
Key contents	The policy defines requirements for animal-using contracting partners of our businesses and legal subsidiaries and affiliates. It aims to ensure that only qualified animal-using contracting partners (AUPCs) are utilized, thus ensuring compliance with external regulations and internal standards in animal science and welfare. Work using live animals shall only be commissioned or contracted to AUPCs that have been trained by qualified auditors in accordance with our auditor training and qualification procedure. This is to be ensured by the Animal-Using Vendor Management unit. All animal work at vendors and suppliers conducted on our behalf must be approved by independent multidisciplinary cross-sectoral Merck Animal Usage Review Boards (MAUR Boards).
Scope of application	The policy applies Group-wide to all business sectors and Group functions governing any work involving live animals by business partners or on our behalf. This includes suppliers, subcontractors and our collaboration partners, academic partners, contract research organizations (CRO), breeders, and service providers. All of these are defined as AUCPs and include all subcontracting activities.
Accountability	Senior management of group functions or business are responsible for AUPCs management.
Third-party standards/initiatives	None
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders.
Availability	The policy is available internally on the intranet.

Corporate Sustainability, Quality and Trade Compliance Audit Management	
Connection to material impacts, risks and/or opportunities	Identifier G1-N1-01
Material sustainability matter	Animal welfare
Key contents	The objective of this policy is to provide an overarching governance guideline as regard Audit Management (internal and external supplier/partners audits) and its related processes and execution within the Corporate Sustainability, Quality and Trade Compliance corporate function. The policy describes the process of audit preparation and enables all auditors to conduct audits in a harmonized approach. The monitoring of the audit management process is conducted through established performance indicators and a robust mechanism for tracking and reporting performance.
Scope of application	The policy applies to the Corporate Sustainability, Quality and Trade Compliance corporate function.
Accountability	Senior management of Group functions or businesses are responsible for implementing the policy. Selected auditors are responsible for overseeing this policy and the activities associated with it.
Third-party standards/initiatives	None
Consideration of stakeholder interests	The policy was developed and reviewed with the involvement of internal stakeholders.
Availability	The policy is available internally on the intranet.

Group Procedure Animal Affairs Incident Management	
Connection to material impacts, risks and/or opportunities	Identifier G1-N1-01
Material sustainability matter	Animal welfare
Key contents	This policy describes the actions to be taken if any incident occurs that has the potential to impact animal health and welfare, or the intended value created by the animal work. These incidents must be reported to Animal Affairs corporate function for oversight. Following the processes described in the policy provides transparency of animal internal or external welfare incidents worldwide and ensures that mitigation actions are in place to prevent any continued avoidable pain or suffering or recurrence of the event.
Scope of application	The policy applies Group-wide to all sites that are involved in animal use. It applies to all quality, efficacy, safety, and compliance concerns related to animal use, husbandry, and animal use services.
Accountability	The Local Animal Welfare Officer is responsible for internal incidents reports and the Global Animal Welfare Officer is responsible for external incident reports.
Third-party standards/initiatives	The policy is based on national legislations, the EU Directive 2010/63, the European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes (ETS 123 - Appendix A) and the guidelines of the Institute for Laboratory Animal Research (ILAR).
Consideration of stakeholder interests	When creating the policy, we considered the interests of regulatory agencies as stated above.
Availability	The policy is available internally on the intranet and an excerpt is provided to suppliers and service providers.

In 2020, we launched the Animal Affairs Academy to provide our employees training and educational sessions on animal science and welfare. We provide internal and external courses on animal welfare and animal testing, and we also supervise and support workforce training on practical work with animals as well as on the applicable rules and regulations. This also includes dealing with incidents in relation to animal welfare. We have set up an internal webinar series called “Let’s talk Animal Affairs” to discuss the topic of animal welfare transparently and openly with our employees. Information about training courses and webinars is available on our intranet and is distributed via a newsletter. This aims to ensure that employees involved in animal activities receive regular and appropriate training and continuing education. The specific training needs (i.e. hours per topics per year) for any role that involves work with animals or work related to animals are defined in accordance with our Group Procedure on Animal Science & Welfare Training.

Our Vivarium Rotation Program, which was initiated in 2022, enables two employees from each of our vivaria to visit another vivarium every year to learn, exchange knowledge and share best practices. To promote ongoing dialogue outside the program as well, the Vivarium Rotation Program community was established; it meets once per quarter and exchanges on lessons learned during visits.

Our actions in relation to animal welfare (G1 MDR-A)

Our actions in relation to animal welfare follow our Animal Science and Welfare policy. Our long-term objective is to be a pioneer in phasing out animal work. Until this objective is achieved, we apply high ethical and animal welfare standards related to quality, housing, husbandry, and veterinary care to all animals in our reach. We orient ourselves toward the species-specific needs of the animals we work with. We replace animal testing wherever possible with alternative methods through effective 4R projects (see below). We are gradually reducing the number of animals used and are implementing refinement processes for all work involving use of animals by us or on our behalf to enhance animal welfare and minimize stress.

4Rs Workstreams

We are committed to the internationally recognized 3Rs Principle for animal testing and have added responsibility as a fourth animal welfare principle in line with the ethical principles published by David DeGrazia and Tom Beauchamp in 2019 in the Principles of Animal Research Ethics:

- Replacement – replacing animal studies with non-animal systems,
- Reduction – using the minimum number of animals required,
- Refinement – minimizing distress or discomfort before, during and after testing,
- Responsibility – accepting and delivering on our responsibility for all animals in our reach internally and among our business's partners.

Replacement as part of our 4Rs workstreams

We have developed a roadmap for the entire Group with our 3-Basket Concept to phase out animal testing in the long term. The model divides all animal testing into three different categories: (1) implementation of animal-free alternatives that are already available, including those that are still legally required by some countries to bring drugs or chemicals to patients or customers, (2) investing in projects to develop alternative methods, or (3) investment in refinements for all animal testing for which there are currently no innovative alternatives available. In the reporting year, the Group Animal Welfare Council approved the 3-Basket Concept, and our animal testing functions completed the sorting of animal testing into the three categories. Moreover, our Life Science business sector introduced a project to sort all animal-derived products. In 2024, we established our roadmap for phasing out animal testing and defined key performance indicators.

We also presented the 3-Basket concept to the European Federation of Pharmaceutical Industry Association Research Animal Welfare Network and the Preclinical Development Expert Group (EFPIA), where the concept was officially adopted as a common approach. Additionally, we received positive feedback by the European Medicines Agency (EMA) on the concept. We also presented the approach at the second European Commission Conference on a roadmap to phase out animal testing and received unanimous positive feedback from authorities, policymakers, associations, and non-governmental organizations. We are continuing to collaborate with EFPIA and the EMA while implementing our 3-Basket concept. The 3 Basket concept is being implemented across all business sectors within the organization, requiring active engagement with relevant stakeholders throughout our upstream and downstream value chain to ensure its effective integration. The 3-Basket Concept serves as the foundation for developing long-term plans and guiding investment decisions aimed at advancing toward animal-free research. This approach reflects a sustained commitment to achieving ethical and sustainable alternatives in line with our strategic goals.

As part of our Bio-Convergence project, we are seeking to dramatically improve the translatability of drug testing, so that clinical studies are significantly faster, cheaper, and more patient-centric. We are developing models based on the combination of artificial intelligence and information technology with human-derived cells and tissues and applying the latest microfluidic and chip technologies. The envisaged innovations can speed up our own drug development, but can also be commercialized on the emerging alternatives' market, thereby supporting the general phase out of animal testing in industry and academia. Animal models as such frequently

were not good enough to reliably predict what would happen in humans or in the environment. The development of science, information technology, including artificial intelligence, and biotechnology may have reached a point where their combined application could surpass the value of animal testing in many areas. Bio-convergence as a new discipline combines tools for understanding the totality of available data with the most advanced technologies to find a solution to the unsolved problem of predicting clinical outcomes. The investment required is divided into two parts and staggered: Firstly, we need to address laboratory animal health requirements immediately so that the data generated are meaningful, at least for the species and conditions we are studying. Secondly, in the medium to long term, we need to use the available data and technologies and explore completely new ways to answer the question of whether a drug or chemical is effective and safe in patients or in the environment. Both are our ethical obligation to patients and animals and an imperative economic necessity for the sustainable future of the global pharmaceutical industry. The Bio-Convergence project is applied globally across all business sectors and the downstream value chain. This project is designed to deliver benefits to customers, scientists, and internal research initiatives, fostering innovation and collaboration across our operations. The Bio-Convergence project is considered ongoing, with no defined closing date, reflecting its long-term commitment to continuous development.

The ViA project, approved in the middle of 2023, aims to switch from animal work to cell culture work for legally required quality control in the batch release of our hormone drugs. This is a crucial step toward reducing animal testing as it aims to eliminate the use of animals for biological quality control (BQC) from 2032 onwards. The biggest challenge is the acceptance of the alternative methods by authorities worldwide. Project ViA is applied worldwide across our own operations within the Healthcare business sector and with the involvement of internal stakeholders.

We are actively working on replacing fetal bovine serum (FBS), which is harvested from fetal calves at slaughterhouses. It contains various growth factors and nutrients and poses a risk of viral contamination. FBS is widely used in cell culture applications by academic and industrial researchers and for manufacturing numerous biological products made in cells, such as vaccines and therapeutic antibodies. Due to the known ethical, scientific and safety concerns, we have continued our research in developing animal-free alternative media and published initial results in 2024. We are further testing the cell-specific needs to produce suitable media for the predominant cell lines in our research and development as well as manufacturing, and we plan to commercialize these for our customers in the Life Science business sector. The replacement of FBS is a global initiative implemented across all business sectors and throughout the downstream value chain. This approach aims to benefit customers, scientists, and internal research initiatives, driving innovation and progress toward animal-free methodologies. The replacement of FBS project is considered ongoing, with no defined closing date, reflecting our long-term commitment to continuous development.

Reduction as part of our 4Rs workstreams

We are driving the VICT3R project, which aims to revolutionize toxicology studies by replacing up to 25% of animals used in experiments with virtual control groups (VCGs), setting new standards for ethical research. This project has been endorsed by health authorities (EMA and U.S. Food and Drug Administration FDA) and will be gradually implemented in the coming years. The VICT3R project is being implemented globally in the Healthcare business sector and is designed for the pharmaceutical, life science, and chemical industries, setting new ethical standards and promoting innovation in research practices.

Refinement as part of our 4Rs workstreams

We initiated the transition to non-aversive handling of rodents in all our animal facilities in 2024 and described this in local standard operating procedures. This prevents our animals experiencing unnecessary harm and stress. Additionally, we have defined species-specific needs and related housing requirements followed by the implementation of individual housing solutions to ensure high animal safety and welfare standards. The implementation of improved housing conditions is ongoing, with continued efforts to enhance animal welfare across our operations. These activities are applied internally and globally to all our vivaria.

Responsibility as part of our 4R workstreams

The core of our responsibility is ensuring the highest ethical and animal welfare standards for all animals in our reach (covered by the 3Rs) and to provide a Culture of Care (CoC) for people working with animals.

During the reporting year, we advanced responsible animal welfare practices by working on operational targets, training, and accreditations. We launched the Global Animal Technician Recognition Day, which took place for the second time in the first quarter of 2024. In addition, we conducted a culture of care survey in the third quarter of 2024 to measure the mood in the vivaria and among the people involved in animal work. Furthermore, the Group Animal Welfare Council (GAWC) endorsed the defined performance indicators.

In the reporting year, all our animal facilities were accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC), indicating a high-quality animal care and use program and a commitment to provide high-quality, humane animal care.

Our Animal Affairs Academy provides educational training and workshops for our employees involved in animal work, ensuring alignment with our ethical standards and operational goals. In 2024, the Animal Affairs Academy held more 112 training courses and workshops on the topic of animal research. More information on our training initiatives and specific requirements can be found under "**Our policies related to animal welfare (G1-1)**".

All activities conducted as part of our responsibility approach are applicable globally across all business sectors and are considered ongoing with no defined closing date. These activities are essential to fostering accountability and driving continuous improvement in the ethical conduct of animal work. The guidance and programs of the Animal Affairs Academy are ensuring consistent understanding and adherence to our values across the organization.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated for the 4R-Workstream action plan. For 2025, we intend to allocate € 4 million for OpEx and no significant CapEx.

Animal Science and welfare audits

Our goal is to maintain transparency, ensure accountability for animal work and uphold high animal welfare standards. Therefore, qualifying all vendors conducting animal work on our behalf is an integral part of our strategy. This is achieved through a rigorous quality assurance process, based on our established and robust audit framework, as well as a comprehensive auditor training and qualification program. Our own vivaria are audited every three years by our Corporate Animal Affairs. According to this audit plan, no audits were carried out in our vivaria in 2024. In 2024, 34 Animal-Using Contracting Partners audits were completed. These audits reflect our commitment to compliance and excellence in animal welfare practices.

In addition, we further enhanced the supervisory role of Corporate Animal Affairs by conducting regular veterinary inspections of all our vivaria globally and monitoring the reporting of animal science and animal welfare incidents, both internally and externally.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated for the Animal Science and welfare audits. For 2025 we also do not intend to allocate significant OpEx or CapEx.

Work with committees and associations

We are involved in several organizations and initiatives, including as Vice Chair of the Research and Animal Welfare Networks of the European Federation of Pharmaceutical Industries and Associations (EFPIA) as well as Interpharma, a federation of research-based pharmaceutical companies in Switzerland. Together with selected member companies, the audit group of the Animal Welfare Working Group of Interpharma conducts audits at contract research organizations and animal breeders.

We are also involved with the Association for Assessment and Accreditation of Laboratory Animal Care International. This private, non-profit organization promotes the humane treatment of animals in science through voluntary accreditation and assessment programs. As of 2024, our employee represents the EFPIA as Delegate of the Member Organization. We continue to support the European Partnership for Alternative Approaches to Animal Testing (EPAA) and participate in its working groups to develop alternatives to animal testing. In 2022, we initiated the Marseille Declaration, the first joint pharmaceutical industry declaration on animal housing and use. In this document, the company signatories state their expectations of animal welfare practices to be used at their own sites and by external partners worldwide when using live animals to conduct studies on their behalf. It aims to promote dialogue between these companies under the slogan “We are not competitors when it is about improving animal welfare”. Together with the first signatories, Novartis, Sanofi, and Novo Nordisk, we formed the Marseille Declaration Steering Group, for which our representative was appointed Chair in 2024. In 2024, the Marseille Declaration had 11 signatories. Moreover, we participated in the Germany REACH Roundtable – Industry led by Humane Society International, the objective of which is to reduce the number of animals used in chemical testing. Our collaboration with committees and associations is ongoing and has no fixed completion date.

In 2024, no significant operating expenditures (OpEx) or capital expenditures (CapEx) were allocated for the Work with committees and associations. For 2025 we also do not intend to allocate significant OpEx or CapEx.

Our targets in relation to animal welfare (G1 MDR-T)

Our aim is to phase out animal work while upholding the high ethical and animal welfare standards. This commitment includes ensuring quality, housing, husbandry, and veterinary care for all animals in our reach. In 2024, we advanced our commitment to responsible animal welfare practices through structured efforts in operational targets, training, and accreditation. Our educational initiatives provided educational training and workshops for our employees on animal science and welfare. By the end of 2024, all our animal facilities had achieved AAALAC accreditation, reinforcing our adherence to recognized global standards for animal care.

In the reporting year, we did not define quantitative, measurable targets related to animal welfare that are time-bound and result-oriented. Our approach focused on monitoring the number of animals used through a series of entity-specific measures and comprehensive evaluation processes.

Additionally, we made significant progress toward our 4Rs principles. We developed a roadmap for phasing out animal testing and established key performance indicators to guide and measure our progress. From 2025, we will measure the following performance indicators: data on the percentage of animal-based tests and animal-derived products that were successfully classified using the 3-Basket approach and the number of animal-based tests and animal-derived products that have been successfully replaced compared with 2021 as the replacement initiatives’ starting year. In addition, we will measure the reduction in the number of animals used for testing and production. With respect to animal well-being, we will evaluate the percentage of animals handled with non-aversive techniques and the percentage of animals housed under conditions that fulfill their species-specific needs beyond the legal requirements. Evidence of prioritization of avoiding animal pain and suffering along with examples for advancing the 4Rs beyond company boundaries will be measured from 2025 as part of our 4Rs Responsibility initiative.

Our metrics in relation to animal welfare (G1 MDR-M)

The metrics outlined below are part of our “entity-specific measures”. These include the total number of animals used for either testing or animal-derived product generation across the entire company as well as providing a breakdown by business sectors (Life Science, Healthcare and Electronics). We track year-on-year percentage changes in animal use to monitor trends over time. Additionally, we differentiate between animals used internally and externally, with further categorization by species. This includes specifying the percentages of rodents (mice, rats, hamsters, and guinea pigs) and non-rodent animals (e.g., rabbits, dogs, minipigs, and non-human primates). For the Life Science sector, we also report the number of animals used relative to net sales (i.e. the relative value for Life Science) on an annual basis, as this sector often conducts animal-related activities on behalf of its clients. By contrast, in the Healthcare business sector, animal testing is a legal requirement to evaluate the safety and efficacy of medicines under development or in preclinical research. Animal numbers are collected at the business sector level, categorized into internal and external data, and reviewed quarterly by the Animal Affairs department. The measurements of the below metrics have not been validated separately by an external body.

Entity Specific Metrics	**2024**
Total number of animals used at Merck	130,135
Share of internal animals used (in %)	83
Share of external animals used (in %)	17
Share of non-rodents used (in %)	2
Share of rodents used (in %)	98
Total number of animals used in Life Science	73,291
Relative value for Life Science (number of animal used/€ million net sales)	8.2
Total number of animals used in Healthcare	56,844
Total number of animals used in Electronics	–

Anti-corruption and anti-bribery

While anti-corruption and anti-bribery are not identified as material to our business operations as part of the materiality analysis, we have robust policies and measures addressing these issues. We have prepared the 2024 non-financial statement based on the European Sustainability Reporting Standards (ESRS) framework to ensure alignment with recognized European reporting guidelines. However, the extent of the disclosed content is determined in accordance with sections 315b and 315c in conjunction with 289b to 289e of the German Commercial Code (HGB).

Our policies related to anti-corruption and anti-bribery (G1-1)

We are committed to upholding high standards of integrity by implementing robust anti-bribery and anti-corruption measures to ensure a transparent and ethical business environment. Our Group Anti-Corruption Policy, which is aligned with the principles of the United Nations Convention against Corruption, mandates that our business activities comply with applicable anti-corruption regulations and standards. The policy is regularly monitored and updated if necessary.

Anti-Corruption Group Standard	
Topic for the non-financial statement	Anti-corruption and anti-bribery
Key contents	The policy stipulates that all business activities must be conducted in line with applicable anti-corruption regulations and standards. All forms of bribery and corruption are strictly prohibited.
Scope of application	The policy applies group-wide at all sites in our own operation and for all third parties acting on our behalf.
Accountability	Group Legal and Compliance; the Chief Compliance Officer and Group Compliance function drives the design and evolution of our compliance program across all business sectors and Group functions. Our Group Compliance function is responsible for the anti-corruption and anti-bribery framework (including healthcare compliance, third-party due diligence and transparency reporting).
Third-party standards/initiatives	The policy is based on the United Nations Convention against Corruption, national legislations, relevant laws and international ethical standards.
Consideration of stakeholder interests	When creating the policy, we considered the interests of regulatory agencies.
Availability	The policy is available internally on the intranet.

Our actions related to anti-corruption and anti-bribery (G1 MDR-A)

As a global company, we have stringent requirements for effective compliance management. Importantly, we seek to emphasize compliance by acting in line with our company values and believe that profitable business operations should go hand in hand with ethical standards.

Corruption and bribery risk assessment

We have implemented a range of measures to mitigate the risk of corruption and bribery, to ensure that we can prevent it effectively and can detect and address any allegations or incidents. To assess risks and the effectiveness of controls, we have implemented indicators, which are regularly monitored. Our approach to risk minimization is governed by a Group-wide framework that emphasizes ethical and legally compliant business processes.

Our compliance risk assessment process covers all our business sectors. The assessment is based on a comprehensive risk matrix that improves objectivity and enables a data-driven risk approach. The matrix focuses on bribery and corruption risks, which are highlighted through in-depth risk categorization and risk scenarios. Furthermore, it utilizes country-specific risk segmentation, classifying countries where we actively operate in terms of their risk exposure regarding bribery and corruption. We use the outcome as a model to prioritize initiatives and intensify activities in countries with higher risk levels.

As part of our commitment to responsible business practices, we apply a risk-based approach when selecting external partners. The greater the estimated risk related to a particular country, region, or service type, the more in-depth the due diligence process is before entering a business relationship. Based on the outcome, we determine whether to reject the potential external partner, impose conditions to mitigate identified risks, or terminate an existing relationship.

Additionally, we actively work to prevent bribery by enforcing strict value limits for gifts and entertainment. These limits are embedded in the company tool we use to reimburse travel and expenses. All submissions are subject to an approval process, which includes an additional internal review if they exceed certain cost thresholds. In 2024, we completed the roll-out of a new tool governing our interactions with healthcare professionals, focusing on a risk-based approach embedded in a system-driven risk assessment. We follow clearly defined internal approval requirements and procedures for each type of interaction, in line with applicable laws and codes. Further information on transparency reporting can be found under chapter "**Dealing with medical professionals and transparency reporting**".

External certification of the Compliance Management System

An external review and certification of our Compliance Management System, in accordance with the principles of proper auditing of Compliance Management Systems (IDW PS 980), has been underway since 2022. The focus is on preventing bribery, corruption and money laundering in order to identify potential areas of improvement and to assess whether the measures we have taken ensure that regulations, policies and processes are adhered to. The assessment covers three phases: the first two phases, the pre-assessment and adequacy assessment, were completed by the second quarter of 2023 without material findings. The adequacy assessment indicates that the processes and measures in our Compliance Management System are adequately designed and implemented to manage our compliance risks. The third phase, the effectiveness assessment, will be gradually implemented across individual regions in 2025.

Corruption and bribery audits

Group Internal Auditing regularly reviews functions, processes, and legal entities worldwide. They also assess the effectiveness of the respective compliance guidelines, processes and structures. If an internal audit results in recommendations for improvement measures, Group Internal Auditing performs a systematic follow-up and monitors the implementation of the recommended corrective actions. In 2024, Group Internal Auditing conducted 30 audits (thereof 6 of Merck KGaA) involving bribery and corruption-related risks.

Investigation of corruption and bribery incidents

Any concerns related to corruption and bribery can be reported via various central reporting channels and are investigated further according to our Whistleblowing and Investigation Standard and our internal investigation procedure. The committee responsible for investigating incidents is separate from the chain of management involved in the matter. Our Chief Compliance Officer reports to the Executive Board and Supervisory Board on the status of our compliance activities, potential risks and serious compliance violations a minimum of twice a year. More details about whistleblowing and investigations can be found under the chapter "**Our policies related to corporate culture (G1-1)**".

Compliance awareness and training

We regularly communicate our compliance policies across various platforms (e.g., the annual compliance newsletter, targeted emails, intranet posts) to ensure that the policies are accessible and well understood by all relevant stakeholders. This approach promotes a strong culture of accountability and integrity across our workforce.

Our efforts to eliminate corruption and bribery risks extend beyond the boundaries of our own company. Through our global third-party risk management process, we want to ensure that sales partners, including

commercial agents, distributors, dealers and high-risk vendors, are informed of our compliance principles. We expect our third parties to comply with relevant laws and reject all forms of bribery.

As bribery and corruption are a key focus area of our Compliance Management System, we implement regular awareness and training initiatives to promote ethical business conduct. In 2023, we launched anti-corruption, anti-bribery and anti-money laundering e-learning course based on the anti-corruption and anti-money laundering policies. Additionally, we offer individual classroom training sessions tailored for high-risk areas.

Anti-bribery and anti-corruption topics are also integrated in our Code of Conduct and Supplier Code of Conduct e-learning modules and are addressed using various awareness initiatives throughout the year. More information about general training related to compliance requirements, can be found under the chapter "**Our policies related to corporate culture (G1-1)**".

We specifically target our training efforts towards employees who may encounter risks related to bribery, corruption and money laundering. This includes employees who interact with public officials, engage with third parties or are involved in reviewing and approving transactions. Participation in this course is mandatory for employees based on their level of risk exposure and associated with employee positions and role in the company.

The number of employees with anti-bribery, anti-corruption and anti-money-laundering training is shown in the table below:

	2024	2024 thereof: Merck KGaA
Total number of persons trained[1]	17,002	
Total number of employees trained	16,967	1,164
Share of employees trained (in %)	27	37
by employee category[2]		
Number of Role 2+ employees	16,013	1,114
Share of Role 2+ employees trained (in %)	47	46
Share of employees below Role 2 trained (in %)	3	4
by region		
Share of trained employees in Europe (in %)	26	37
Share of trained employees in North America (in %)	25	
Share of trained employees in Asia-Pacific (APAC) (in %)	27	
Share of trained employees in Latin America (in %)	35	
Share of trained employees in Middle East and Africa (MEA) (in %)	47	

[1] Includes contractors, external supervised workers (e.g., temporary workers) and contract partners working on-site who were trained on anti-bribery, anti-corruption & anti-money-laundering (2024: 35).

[2] Employees whose role level had not yet been recorded in our database by December 31 of the respective reporting year have been allocated to "employees below Role 2".

Our metrics related to anti-corruption and anti-bribery (G1 MDR-M)

The number of compliance cases reported via the compliance hotline and other reporting channels in 2024 is shown in the table below:

	2024	2024 thereof: Merck KGaA
Number of reported compliance incidents	89	1
Number of confirmed incidents	30	1
Confirmed cases of bribery and corruption	2	–

Additional information on Merck KGaA in accordance with the German commercial code (HGB)

The Management Report of Merck KGaA has been combined with the Group Management Report. The Annual Financial Statements and the Combined Management Report of the Group and Merck KGaA for fiscal 2024 are electronically transmitted to the German Federal Gazette for inclusion in the German company register and are available on its website.

Merck KGaA, headquartered in Darmstadt, Germany, is the parent company of the Group.

Following the transfer of the Life Science, Healthcare and Electronics business sectors into separate legal entities, which was completed at the beginning of fiscal 2023, Merck KGaA primarily performs a holding company function for the Merck Group. As part of the strategic management of the Group, this function makes strategically important decisions and ensures that compliance provisions are observed by the central enabling Group functions on a Group-wide basis. It also performs Group-wide services for Group companies in the areas of information technology, strategic management and site management, especially at the Darmstadt site. Merck KGaA employs around 4,000 of the more than 11,000 employees at the Darmstadt site.

The Annual Financial Statements of Merck KGaA have been prepared in accordance with the provisions of the German Commercial Code (HGB), the German Stock Corporation Act (AktG), and the supplementary provisions of the Articles of Association. The full version of the Annual Financial Statements of Merck KGaA, together with the unqualified auditor’s opinion, is electronically transmitted to the German Federal Gazette for inclusion in the German company register and published there.

Business development and results of operations

Since the operating activities of the Life Science and Electronics business sectors were transferred to separate legal entities on January 1, 2023, the business activities of Merck KGaA have consisted solely of intragroup services such as site management, IT, strategic management, and the issuing of licenses for the "Merck" umbrella brand. Furthermore, the results of operations are influenced by the development of investment income, which includes profit/loss transfers and investment income from subsidiaries.

Results of operations

			Change	
€ million	**2024**	2023	€ million	%
Net sales	1,624	1,628	-4	-0.3
Other income	114	105	9	8.6
Cost of materials	-693	-721	28	-3.9
Personnel expenses	-527	-581	54	-9.2
Depreciation, amortization, and write-downs	-132	-132	–	-0.2
Other operating expenses	-916	-821	-95	11.5
Investment result	2,190	2,203	-13	-0.6
Write-downs on financial assets	-17	–	-17	100.0
Other financial result	-685	-685	–	–
Profit before profit transfers and taxes	**958**	**996**	**-38**	**-3.9**
Profit transfers	-709	-696	-13	1.9
Taxes	36	-16	51	-331.0
Profit after profit transfers and taxes/ net income	**284**	**285**	**-1**	**-0.2**

The **net sales** from intragroup on-charging and **other income** are at the level of the previous year. Due to opposing effects in the cost of material and personnel expenses (which together declined by € 82 million) and other operating expenses (which increased by € 95 million), alongside slightly lower investment income and write-downs on financial assets, the **profit before profit transfers and taxes** was slightly down by € 38 million (3.9%). After profit pooling with E. Merck KG and the recording of the tax result a net profit of approximately € 284 million remains nearly at the level of the previous year.

The **cost of materials** declined due to lower external services incurred which resulted in lower intragroup recharges. Accordingly, the cost of materials in relation to sales decreased slightly to 42.7% (2023: 44.3%).

The decline in **personnel expenses** resulted primarily from lower additions to pension provisions.

The increase in **other operating expenses** resulted mainly from higher external services and procurements, which were higher in the reporting year as a result of expenses from other accounting periods for reimbursements for corresponding external services to customers within the Merck Group in a low triple-digit million-euro amount. These were partially offset by lower expenses for exchange rate losses and other expenses.

The **investment income** went down slightly by € 13 million to € 2,190 million (2023: € 2,203 million) due to lower income from profit and loss transfer agreements with subsidiaries as a result of one-time effects in the Life Science and Electronics business sectors. The general decline in interest rates also led to a decrease in the profit transfer from the Group financing company, Merck Financial Services GmbH, Darmstadt. This was offset by higher investment income from subsidiaries.

The **tax result** resulted in tax income overall, due to trade tax income (€ 42.8 million) and the reduction of provisions for tax liabilities, especially with respect to general tax audit risks and additional tax risks (€ 48.9 million).

Net assets and financial position

Assets

			Change	
€ million	**Dec. 31, 2024**	Dec. 31, 2023	€ million	%
Fixed assets	**25,209**	**24,065**	**1,145**	**4.8**
Intangible assets	193	181	12	6.5
Tangible assets	1,276	1,076	200	18.5
Financial assets	23,741	22,808	933	4.1
Current assets	**1,795**	**1,708**	**87**	**5.1**
Inventories	34	29	5	17.5
Trade accounts receivable	63	62	1	1.8
Other receivables and other assets	1,698	1,617	81	5.0
Cash and cash equivalents	–	–	–	-50.0
Prepaid expenses	**84**	**78**	**6**	**7.2**
	27,088	**25,851**	**1,237**	**4.8**

Equity and liabilities

			Change	
€ million	**Dec. 31, 2024**	Dec. 31, 2023	€ million	%
Net equity	**5,481**	**5,481**	**–**	**–**
Provisions	**2,067**	**2,198**	**-132**	**-6.0**
Provisions for pensions and other post-employment benefits	1,313	1,415	-103	-7.2
Other provisions	754	783	-29	-3.7
Liabilities	**19,532**	**18,162**	**1,370**	**7.5**
Financial liabilities	2,276	2,476	-200	-8.1
Trade accounts payable	155	152	3	1.7
Other liabilities	17,101	15,534	1,567	10.1
Deferred income	**9**	**10**	**-1**	**-6.9**
	27,088	**25,851**	**1,237**	**4.8**

Net assets increased slightly by 4.8%. The main increase on the asset side of the balance sheet related to fixed assets (+ € 1,145 million), while financial liabilities saw the biggest increase on the liabilities side (+ € 1,370 million). By contrast, provisions for pensions and other post-employment benefits declined (€ -103 million). The equity ratio decreased slightly to 20.2% (2023: 21.2%).

In fiscal 2024, the company made a payment into the capital reserve of a subsidiary, as a result of which **financial assets** increased by € 950 million. By contrast, extraordinary write-downs amounting to € 17 million occurred on two investments in affiliated companies in financial assets.

Fixed assets increased as a result of the investments in tangible assets, some of which are still under construction, at the Darmstadt site in particular.

As a result of increased investment income, **other receivables and other assets** increased (+ € 81 million).

Merck KGaA was financed by equity in the amount of € 5,481 million (2023: € 5,481 million). This corresponds to an equity ratio of 20.2% (2023: 21.2%). The net income generated in fiscal 2024 covers the dividend payments that took place during the course of the year.

Merck KGaA is also financed via the Group financing company, Merck Financial Services GmbH, Darmstadt, which provides Merck KGaA with sufficient financial resources, thus ensuring liquidity. **Other liabilities** rose by € 1,567 million and primarily relate to current loans and clearing account liabilities with respect to Merck Financial Services GmbH, Darmstadt, in the amount of € 15,900 million (2023: € 14,476 million).

Financial liabilities in the amount of € 2,276 million serve primarily to finance the acquisitions of Sigma-Aldrich and Versum Materials. The decline in financial debt by € 200 million (net) resulted from the repayment of bonds amounting to € 1,000 million as well as the issue of a new hybrid bond of over € 800 million. This in turn led to an increase of other liabilities from intragroup financing. Additional information on the financing conditions and maturity structure of the bonds can be found in Note (22) "**Financial Liabilities"** of the Notes to the Financial Statements in accordance with HGB.

The reduction in provisions was due in particular to the lower level of **pension provisions**. These were reduced by an increased fair value of the offset plan assets and a lower settlement amount caused by a slightly increased discount rate.

Research and development

Research and development expenses (R&D) in fiscal 2024 increased to € 79 million (2023: € 69 million) and include remaining expenses for global R&D services at Merck KGaA.

Dividend

For fiscal 2024, we propose to the Annual General Meeting the payment of a dividend of **€ 2.20** per share.

Personnel

As of December 31, 2024, Merck KGaA had **3,715** employees, representing a decrease compared with the reporting date of the previous year (2023: 3,924), primarily in the area of administration.

The average number of employees by functional area:

Personnel

Average number of employees during the year	**2024**	2023
Administration	2,529	2,615
Site operations	820	869
Research	310	341
Logistics	55	66
Marketing and sales	36	43
Other	6	74
Total	**3,756**	**4,008**

Risks and opportunities

As the parent of the Merck KGaA Group, Merck KGaA is largely subject to the same opportunities and risks as the Group. Merck KGaA participates in these risks and opportunities via its equity investments and subsidiaries. This can have consequences for its investment income or the valuation of shares in subsidiaries. More information can be found in the Group **Report on Risks and Opportunities**.

Forecast for Merck KGaA

Deviations of actual business development in fiscal 2024 from the previously reported guidance

In the Combined Management Report for 2023, a moderate increase of investment income was initially expected in fiscal 2024 in comparison with 2023, in line with the Group's development. Net income was forecast to be slightly higher than in 2023.

Contrary to this expectation, investment income was slightly less than in the previous year and was thus also less than forecast last year. This was due to lower income from profit and loss transfer agreements with subsidiaries as a result of one-time effects in the Life Science and Electronics business sectors.

Net income was due to a slight decline in the investment income flat compared with the previous year and was thus less than forecast.

Forecast for 2025

For the investment income, we forecast an overall moderate increase, assuming that income from investments remains comparable to previous years and that income from profit transfers increases moderately. Accordingly, net income is also forecast to be slightly higher than in 2024 overall.

Merck Financial Services GmbH, Darmstadt, will provide the company with sufficient financial resources as needed, thus ensuring liquidity.

No risks that could jeopardize the continued existence of the company have been identified.