Non-financial statement**

The combined management report of Merck KGaA, Darmstadt, Germany, and the Group for the fiscal year 2023 includes a combined non-financial statement in accordance with sections 315b and 315c in conjunction with 289b to 289e of the German Commercial Code (HGB) in the form of a separate chapter. The scope of consolidation of this non-financial statement corresponds to that of the Annual Report for 2023. The concepts and results presented relate to both Merck KGaA, Darmstadt, Germany, and the Group. We explicitly state when, in individual cases, the information provided deviates from this. Our non-financial statement orients towards the requirements of the Global Reporting Initiative (GRI) standards. It also includes our reporting in accordance with the EU taxonomy regulation.

Deloitte GmbH Wirtschaftsprüfungsgesellschaft conducted a limited assurance engagement of the combined non-financial statement. References to information not included in the management report are not part of the non-financial statement. The additional content provided on both the company's websites as well as external websites that are linked in this report are not part of the information assured by Deloitte. Our Sustainability Report 2023 is produced in accordance with GRI Standards. It will be available **online** as of April 11, 2024 and will also be subject to a separate limited assurance engagement by Deloitte. With this, we also disclose topics set forth by the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-related Financial Disclosures (TCFD).

Description of our business model

Our business model as well as our Group structure, governance and strategy are described under "**Fundamental Information about the Group**".

Governance

The requirements we place on responsible corporate governance are derived from our **company values** on the one hand and from the regulations, external initiatives, and international guidelines to which we are committed on the other hand. We have integrated these requirements into our **sustainability strategy** and our **Group-wide guidelines**. These guidelines comprise charters and principles that are valid for the entire company as well as specific standards and procedures for individual business sectors and sites.

Some examples: Our **Human Rights Charter** aligns with the **UN Guiding Principles** for Business and Human Rights. Our Group-wide **Social and Labor Standards Policy** reflects the labor standards of the International Labour Organization (**ILO**). Our **EHS Policy** (Corporate Environment, Health and Safety Policy) for environmental impact mitigation and health and safety forms the basis for implementing the chemical industry's **Responsible Care® Global Charter** within our company. Our standard entitled Corporate Chemicals Regulations Governance describes the processes and management structures required to ensure global compliance with the pertinent chemical and product safety regulations.

We endeavor to comply with all applicable laws as a matter of principle. Where necessary, we review our internal guidelines, standards and instruction manuals on compliant behavior and adapt them to reflect changes in the regulatory landscape.

** The summarized non-financial 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.

Roles and responsibilities

Based on the requirements set forth in charters, principles and policies, our internal standards give specific guidance for operational processes. They are constantly updated by the relevant departments and are available on our intranet. Our managers implement these standards in their respective areas of responsibility and ensure that they are adhered to. In addition, we educate and train our employees on all guidelines that apply to them. We employ management systems to steer processes and define goals, actions, and responsibilities. These systems are based on standards such as the internationally recognized quality management standard ISO 9001, good working practices (GxP) in the pharmaceutical industry and ISO 14001 for environmental management. Our company regularly undergoes **ISO 14001** and **ISO 9001** certification, which are conducted by an independent auditing firm. We hold group certificates for both standards.

We support the following responsible governance initiatives:

- United Nations **Global Compact**,
- Chemical industry's **Responsible Care® Global Charter**,
- Company network Together for Sustainability (**TfS**),
- Pharmaceutical Supply Chain Initiative (**PSCI**),
- **Initiative Chemie**[3], a collaboration between the German Chemical Industry Association (**VCI**), the German Employers' Federation of the Chemical Industry (**BAVC**), and the German Mining, Chemical and Energy Industrial Union (**IG BCE**).

Strategic and organizational approach to sustainability

The world is facing numerous challenges that also affect us as a company. These include climate change, international conflicts and economic crises, for instance. Our ambition is to leverage science and technology to achieve sustainable progress for mankind.

We pursue three overarching sustainability goals. In 2023, we revised our sustainability strategy, which we had communicated in 2020. In particular, we sharpened the second goal.

- In 2030, we will achieve human progress for more than one billion people through sustainable science and technology.
- By 2030, we will fully integrate sustainability into our value chains.
- By 2040, we will achieve climate neutrality and reduce our resource consumption.

We describe our sustainability strategy in the "**Strategy**" section of the combined management report within this Annual Report for 2023 and, in more detail, in the Sustainability Report for 2023 in the chapter entitled "**Sustainability Strategy**".

Measuring progress made with the sustainability strategy

We use 14 key indicators to record and assess our progress towards achieving our sustainability goals. We defined these indicators back in 2021 and did not identify any significant non-financial performance indicators. The key indicator "Percentage of employees trained in sustainability" was dropped in 2023 because we had achieved the associated target. Instead, as of 2023, we began using several questions in our annual Employee Engagement Survey to measure how mature the sustainability culture is within our organization.

Moreover, our annual Long-Term Incentive Plan (LTIP) 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. Consequently, target achievement based on the key financial performance indicators can increase or decrease by up to 20%. Details on how this sustainability factor is calculated can be found in the "**Compensation Report**", which is subject to both a formal audit and a separate content audit performed by Deloitte. In 2023 and for the first time, the company tied 15% of variable employee compensation to sustainability parameters. Details on this can be found under "**Sustainable innovation and technology**" within this non-financial statement.

Our key indicators

Goal 1: In 2030, we will achieve human progress for more than one billion people through sustainable science and technology.

Focus area	Sustainability key indicator	Further details
Sustainability innovation and technologies	• Percentage of newly published patent families with positive sustainability impact	**Sustainable innovation and technology**
Impact of our products on health and wellbeing	• People treated with our Healthcare products and pharma products enabled by our Life Science business sector[1]	Will be published in the SASB index within the Sustainability Report 2023 as of April 11, 2024

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

Goal 2: By 2030, we will fully integrate sustainability into our value chains.

Focus area	Sustainability key indicator	Further details
Sustainability in our ways of working & decision making	• Result of the employee engagement survey on sustainability culture[2]	**Attracting and retaining talent**
Our people and communities; providing a diverse and inclusive environment	• Percentage of women in leadership positions	**Diversity, equity and inclusion**
	• Environment, Health and Safety (EHS) Incident Rate	**Plant, process and transport safety**
	• Lost Time Injury Rate (LTIR)	**Health and safety**
Sustainable and transparent supply chain	• Percentage of relevant suppliers (in terms of number and supplier spend) that are covered by a valid sustainability assessment[1]	**Responsible supply chain**
	• Violations of Global Social and Labor Standards Policy	**Human rights**

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

[2] The key indicator "Percentage of employees trained on sustainability" is no longer applicable in 2023, as the target was achieved.

Goal 3: By 2040, we will achieve climate neutrality and reduce our resource consumption.

Focus area	Sustainability key indicator	Further details
Climate change and emissions	• Greenhouse gas emissions (Scope 1+2)[1]	**Climate action**
	• Indirect greenhouse gas emissions (Scope 3)	**Climate action**
	• Percentage of purchased electricity from renewable sources	**Climate action**
Water and resource intensity	• Waste Score[2]	Will be published in the Sustainability Report 2023 as of April 11, 2024
	• Water Intensity Score[2]	**Water management**
	• Wastewater quality	Will be published in the Sustainability Report 2023 as of April 11, 2024

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

[2] A new key figure will replace this key figure from the 2024 reporting year.

Roles and responsibilities

Our Executive Board has Group-wide responsibility for our sustainability strategy. It has adopted our three strategic goals (details can be found under "**Strategy**").

The Group Corporate Sustainability unit is responsible for developing and shaping the sustainability strategy and it informs the Executive Board at least once a year about the progress made and the need for action. It is part of the Group function Corporate Sustainability, Quality and Trade Compliance (SQ), which reports to the Chair of the Executive Board. At Executive Board level, responsibility for Environment, Social, Governance (ESG) also lies with the Chair of the Executive Board.

Group Corporate Sustainability is also responsible for coordinating our Sustainability Board, which is chaired by the Head of SQ, who simultaneously serves as Chief Sustainability Officer. The committee consists of representatives from our business sectors and from key Group functions, such as Procurement, Communications and Controlling.

The Sustainability Board steers and monitors the Group-wide implementation of the sustainability strategy, defines priorities and stipulates globally applicable sustainability policies. In addition, the Sustainability Board ensures that the initiatives of our various business sectors, Group functions and subsidiaries align 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.

In 2023, the Sustainability Board met 11 times by video conference. In addition to climate-related issues and new sustainability reporting requirements, it also addressed the adaptation of the strategy and new objectives for circular economy and water management.

Our Sustainability Advisory Panel (MSAP) supports our company as an external expert committee for sustainability. The panel is chaired by the Head of SQ. It comprises independent experts on sustainability-related topics from various institutions worldwide whom we invite on an ad hoc basis. The MSAP advises our company on selected issues and assesses planned activities. Moreover, the members apply their knowledge to help address societal and political challenges and developments that could be strategically relevant for our businesses.

Topics for the non-financial statement

Pursuant to section 289c (3) and section 315c (2) of the German Commercial Code (HGB), we are obligated to review topics for their double materiality. The principle of double materiality requires companies to disclose non-financial information as soon as the following two criteria are met: Firstly, the information makes it possible to understand how the company's activities affect non-financial aspects. And secondly, the information is necessary to understand the course of business, results of operations and economic position of Merck KGaA, Darmstadt, Germany, and the Group. In 2023, we examined the topics identified within the scope of a materiality analysis in accordance with the Global Reporting Initiative standards (GRI) for their double materiality.

The following topics achieved the relevance threshold for double materiality in 2023. They cover fiscal year 2023 and pertain to our entire Group. Any deviations from the reporting framework are indicated on a case-by-case basis.

Aspect	Topic
Environmental matters	• Environmental management • Climate action • Water management • Plant, process and transport safety • Chemical product safety
Employee-related matters	• Attracting and retaining talent • Diversity, equity and inclusion • Health and safety
Social matters	• Responsible supply chain (including the mica supply chain) • Patient safety • Prices of medicines • Clinical studies • Bioethics • Digital ethics • Data protection and cyber security
Respect for human rights	• Human rights
Anti-corruption and anti-bribery	• Governance and compliance (including anti-corruption anti-competitive behavior) • Interactions with health systems (including responsible marketing)
Other topics	• Sustainable innovation and research & development

As part of our approach to comprehensive risk and opportunity management, we also identify current and potential risks and opportunities resulting from environmental, social and governance aspects. This includes tracking information on the gross risks in terms of potential damage and probability, as well as the residual net risks remaining after mitigation measures have been executed. As of the reporting date and pursuant to the risk analysis of the material non-financial topics, no significant risks within the meaning of section 289c (3) sentence 1 no. 3 and 4 of the German Commercial Code (HGB) from the company's own business activities or from business relationships are known that are very likely to have or will have serious negative effects on non-financial aspects. Additional risks are described in the "**Report on Risks and Opportunities**" in the combined management report.

Environmental Matters

Environmental protection

Minimizing negative environmental impacts and taking meaningful climate action require a holistic approach while also constantly monitoring practices and performance. Our goal is to decouple business growth from negative environmental impacts wherever possible. Our production sites are located in established industrial and commercial zones. Before acquiring a company – and thus its facilities – we first conduct an environmental risk assessment.

Roles and responsibilities

The Chair of the Executive Board and CEO of our company is responsible for environmental protection, which also covers climate action, water management, waste and recycling, air emissions, biodiversity, and plant and process safety. Her duties include approving overarching Group-wide guidelines such as our Environment, Health and Safety (EHS) Policy. Furthermore, our Sustainability Board (MSB) monitors the Group-wide implementation of environmental protection goals.

The Group function Corporate Sustainability, Quality and Trade Compliance (SQ) is responsible for steering all the related measures globally. SQ senior leadership approves operational standards and regularly reports on environmental protection to our Sustainability Board. Every year, SQ prepares a comprehensive environment, health and safety report covering topics such as climate action, water management and waste and recycling as well as plant and process safety. Our Sustainability Board uses this report to steer the strategic direction and provide verification for our ISO 14001 and ISO 45001 certifications.

Across our business sectors, the Operations Leadership Committee (OLC) makes strategic decisions on issues pertaining to emissions, energy, water, and waste. This body comprises representatives from Life Science, Healthcare and Electronics as well as SQ. Decisions made by the OLC and any resulting actions are implemented by the respective business sector. Once per quarter, the OLC members update their leaders on matters relating to environmental protection and this information, if relevant, is then shared with the MSB.

Our commitment: Standards and standard operating procedure

Our approach to environmental management is founded on our **Group EHS (Environment, Health and Safety) Policy**, which has been approved by our Executive Board. Aligned with the requirements of the chemical industry's **Responsible Care® Global Charter** and the ISO 14001 environmental management standard, this policy underscores our leaders' responsibility for environmental protection and health and safety. It is also aimed at our suppliers, calling on them to likewise adopt high environmental sustainability and safety standards. Our EHS policy thus complements the **Supplier Code of Conduct** of our Group Procurement function. Through our Contractor EHS Management Standard, we aim to ensure that our contract partners also take environment, health and safety aspects into account.

Material investments in environmental impact mitigation

Efforts to prevent and monitor air, water and soil emissions entail significant expense on our part, as does proper waste disposal. Moreover, we set up provisions for groundwater and soil remediation to ensure that we can execute all the necessary measures. As of December 31, 2022, our provisions for environmental protection totaled € 149 million (2022: € 148 million), 96% (2022: 94%) of which was attributable to Merck KGaA, Darmstadt, Germany. For details see Notes to the Consolidated Financial Statements under (27) "**Other provisions**".

Assessing environmental impacts

As a matter of principle, we conduct risk-based assessments along with audits of all our production facilities every three years with the goal of analyzing and minimizing our environmental footprint. Conducted by SQ, these assessments serve to ensure that our requirements are being met, with appropriate corrective measures being implemented as needed. In our Group EHS audits, we assess our sites' performance on a five-tier scale ("excellent", "good", "fair", "poor", and "critical"), which in turn determines how frequently audits are conducted. If the findings are deemed to be good, we audit the facility less often, while incompliances can increase the frequency. In 2023, we commissioned a total of 34 audits (2022: 41), one of them "excellent", 23 of them "good" and 10 of them "fair".

Reporting incidents and violations

To review critical situations, near misses and environmental incidents as quickly as possible and take countermeasures, we have a set of reporting procedures in place that allow us to track the respective incident, its degree of severity and all risk mitigation efforts. We record all incidents Group-wide and report them to the Executive Board annually.

In the event of a major occurrence, our digital Rapid Incident Report System (RIRS) promptly notifies the SQ and Group Communications functions, which, if necessary, inform the Executive Board. Major incidents could include fatalities, accidents with multiple casualties, incidents that impact neighboring communities, or natural disasters such as earthquakes and flooding. Through the RIRS, we can quickly coordinate with all those involved and inform the other sites immediately of the respective event. In addition, employees as well as external stakeholders can report any violations of our standards to Group Compliance.

In 2023, we recorded no (2022: two) significant incident-related releases of substances.

ISO 14001:2015 Group certificate

Since 2009, our company has held an ISO 14001 Group certificate that requires all production sites with more than 50 employees to implement an environmental management system with predefined indicators such as greenhouse gas emissions and water consumption. Other facilities are not obligated to undergo certification. The annual internal audit reports and management reviews carried out under the Group certificate give us a better overview of how all our sites are performing. As in the previous year, 95 of our sites worldwide were covered by the ISO 14001 certificate in 2023.

Annual external audits are used to monitor our certifications. As part of a defined sample procedure for the Group certificate, a total of 34 sites were externally audited in 2023, with all audited facilities passing (2022: 12). In addition to external inspections, internal audits serve to ensure Group-wide compliance with our requirements.

Climate action

We want to do our part to preserve the climate and comply with the Paris Agreement on climate change. Therefore, we have set our own objectives:

By 2030, we intend to lower our direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions by 50% compared with the base year 2020. We aim to achieve this mainly by reducing process-related emissions, implementing energy efficiency measures and purchasing more electricity from renewable sources.

In May 2022, this goal for 2030 was approved by the Science Based Targets initiative (**SBTi**), which independently assesses and approves company targets based on its strict climate science criteria. This approval by SBTi confirms that we are contributing to limiting global warming to 1.5 °C, thus complying with the requirements of the Paris Agreement.

We also aim to cover 80% of our purchased electricity with renewables by 2030.

Moreover, we aim to reduce our Scope 3 emissions across the entire value chain by 52% compared with 2020 (per euro of gross profit) by 2030. This target was also approved by SBTi.

By 2040, we intend to have achieved climate-neutral operations throughout our entire value chain; this target covers our Scope 1, 2 and 3 emissions.

Roles and responsibilities

Corporate Sustainability, Quality and Trade Compliance is responsible for overseeing all climate action efforts throughout the Group, with our individual sites and business sectors worldwide implementing the necessary measures at the local level. More information can be found under "**Environmental protection**".

Our commitment: Standards and legal frameworks

We have three EHS standards in place to manage energy and process-related emissions consistently across the Group, specifically "Energy Management", "Air Emissions" and "Emissions of Refrigerants". We use an internal audit process to randomly check compliance with all EHS standards.

Emissions reduced further

In 2023, we reduced our greenhouse gas emissions by nearly 17% compared with the previous year, emitting a total of approximately 1,463,000 metric tons of CO_2 equivalents (CO_2eq) (2022: 1,760,000).

Our direct emissions (Scope 1) totaled 1,236,000 metric tons of CO_2eq (2022: 1,518,000), with process-related emissions accounting for 990.000 metric tons of CO_2eq and fuel use accounting for the remainder. Indirect emissions (Scope 2) totaled roughly 227,000 metric tons of CO_2eq (2022: 242,000) calculated according to the market-based method (approximately 381,000 metric tons of CO_2eq according to the location-based method). Greenhouse gas emission intensity (Scope 1 and 2) amounted to 0.07 Kg of CO_2eq per € of net sales in this period (2022: 0.08).

The Greenhouse Gas Protocol defines 15 categories for Scope 3 emissions from upstream and downstream activities. In 2023, these emissions totaled around 4,594,000 metric tons of CO_2eq (2022: 6,680,000). Categories 1 and 2 (Purchased Goods and Services and Capital Goods) accounted for 62% (2022: 69%) of our total Scope 3 emissions in this period.

Total greenhouse gas emissions (Scope 1 and 2 of the GHG Protocol)[1,2]

metric kilotons	2020[3]	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Total CO_2eq[3] emissions[4]	**2,152**	**1,951**	**1,760**	**1,463**	**22**
thereof:					
direct CO_2eq emissions (Scope 1)[5]	1,827	1,626	1,518	1,236	15
indirect CO_2eq emissions (Scope 2)[6]	325	325	242	227	7
Biogenic CO_2 emissions[7]	**14**	**15**	**14**	**14**	**0**

[1] In line with the Greenhouse Gas Protocol, for all previous years greenhouse gas emissions were calculated based on the current corporate structure as of Dec. 31 of the reporting year and retroactively adjusted for acquisitions or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).
[2] Baseline for our emission targets is 2020.
[3] eq = equivalent.
[4] In 2023, we adjusted our Scope 1 and Scope 2 calculations to reflect minor data corrections.
[5] In 2023, we adapted the Scope 1 calculations to the modified global warming potentials of the IPCC 6th assessment report (previously IPCC 5th assessment report) and restated previous years accordingly.
[6] The figures presented here have been calculated in accordance with the market-based method.
[7] We adapted the calculations to the complete Greenhouse Gas Protocol requirements.

We have included the following gases in our calculation of direct and indirect CO_2eq emissions:
Direct CO_2 emissions: CO_2, HFCs, PFCs, CH_4, N_2O, NF_3, SF_6.
Indirect CO_2 emissions: CO_2.

Other relevant indirect greenhouse gas emissions (Scope 3 of the GHG Protocol)[1]

	2020	2021	2022	2023
Total gross other indirect emissions (metric kilotons CO_2 equivalents)	**5,103**	**5,799**	**6,680**	**4,594**
Purchased goods & services (category 1)[2]	3,040	3,572	4,200	2,517[3]
Capital goods (Category 2)[2]	293	291	388	340[3]
Fuel- and energy-related emissions, not included in Scope 1 or 2 (category 3)	102	143	121	115
Upstream transportation & distribution (category 4)	264	264[4]	319	236[5]
Waste generated in operations (category 5)	85	79	57[6]	32[6]
Business travel (category 6)	32	26	78	86
Employee commuting (category 7)	90	94	99	76[7]
Upstream leased assets (category 8)[8]	-	-	-	-
Downstream transportation & distribution (category 9)	8	8[4]	6	10[5]
Processing of sold products (category 10)[9]	-	-	-	-
Use of sold products (category 11)[10]	1,164	1,296	1382[11]	1,137
End-of-life treatment of sold products (category 12)	23	23[4]	26[11]	42
Downstream leased assets (category 13)	2	2	2	2
Franchises (category 14)[12]	-	-	-	-
Investments (category 15)	0	1	2	1

[1] In line with the Greenhouse Gas Protocol, for all previous years, greenhouse gas emissions were calculated based on the current corporate structure as of Dec. 31 of the reporting year and retroactively adjusted for acquisitions or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).
[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] We updated environmentally extended input-output analysis (EEIO) factors, and we adjusted our emission calculation approach for service categories using primary supplier data.
[4] Due to high efforts for data preparation, we reference 2020 data for 2021.
[5] In 2023, we introduced a new and improved calculation methodology based on primary data from suppliers/logistics service providers and an energy-based bottom-up calculation approach.
[6] We adjusted our calculation methodology to remove non-GHG relevant waste streams.
[7] We adjusted our calculation methodology to take into account the results of an internal employee survey on home office use.
[8] Already covered under Scope 1 and 2 emissions.
[9] 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.
[10] In 2023, we adapted the Category 11 calculations to the modified global warming potentials of the IPCC 6th assessment report (previously IPCC 5th assessment report) and restated previous years accordingly.
[11] Due to high efforts for data preparation, we partly use 2020 data for 2022.
[12] 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.

Biogenic emissions (Scope 3), if present, are not being recorded.

Transparency on CO_2 emissions and energy consumption

We report to **CDP** on an annual basis. This organization assesses the ways in which companies are working to lower greenhouse gas emissions and minimize the risks and consequences of climate change, along with their strategy for doing so. Companies are rated from A to D-, with A being the top score. In 2023, we scored A- (2022: B) for climate change.

Energy consumption and renewable energy

We consumed 2,337 gigawatt hours of energy in 2023 compared with 2,432 gigawatt hours in 2022. As in the previous year, our energy intensity relative to sales remained at 0.11 kWh/€ in 2023.

In 2023, we further strengthened our focus on purchasing electricity from renewable sources. In this period, we sourced 51% of our purchased electricity from renewable energies, meaning direct supply contracts and energy attribute certificates (2022: 47%). The share of our total energy consumption by renewable energies increased to 23% in 2023 (2022: 20%).

In 2023, we signed virtual power purchase agreements (VPPAs) in Europe for a total of around 300 gigawatt hours (GWh) of renewable energy per year. This means that 100% of our electricity currently purchased in the European Union (EU) and Switzerland will be covered with renewable energy certificates as of 2025.

Energy consumption[1]

In GWh	2020	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Total energy consumption	**2,382**	**2,463**	**2,432**	**2,337**	**78**
Direct energy consumption	**1,269**	**1,321**	**1,294**	**1,245**	**68**
Natural gas	1,182	1,235	1,188	1,164	59
Liquid fossil fuels[2]	52	48	70	43	9
Biomass and self-generated renewable energy	35	38	36	38	0
Indirect energy consumption	**1,113**	**1,142**	**1,138**	**1,092**	**10**
Electricity	950	964	984	982	10
Steam, heat, cold	163	178	154	110	0
Total energy sold	**0.2**	**0.1**	**0.01**	**0.00**	**0.0**
Electricity	0.2	0.1	0.01	0.00	0.0
Steam, heat, cold	0.0	0.0	0.00	0.00	0.0

[1] In line with the Greenhouse Gas Protocol, for all previous years energy consumption has been calculated based on the current corporate structure as of Dec. 31 of the reporting year and retroactively adjusted for acquisitions or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).

[2] Light and heavy fuel oil, liquefied petroleum gas (LPG), diesel, biodiesel, gasoline and kerosene.

We use photovoltaics to produce power at multiple sites.

We currently only record purchased secondary energy – this is primarily electricity and, to a lesser extent, heat, steam and cold. Details on the local energy mix, including the respective percentage of primary energy, renewable energy, etc. are not available. Data on local energy efficiency in electricity or heat generation are not available either. Our production sites are located in countries with a widely varying energy mix.

Water management

To us, sustainable water management means obtaining freshwater or discharging treated wastewater without negatively impacting aquatic ecosystems. We are also concerned with addressing water scarcity. To determine whether a site is in a water-stressed area, we apply a risk factor of the Aqueduct Water Risk Atlas of the World Resources Institute (**WRI**). We want to reduce the environmental impact of our wastewater and make our processes more water efficient. In the medium term, we will also consider water-related risks in our supply chain when purchasing important raw materials. In the long term, we aim to transparently map water use and environmental impacts throughout the entire life cycle of our products.

To this end, we have defined two targets: Firstly, we originally aimed to achieve a 10% reduction in our Water Intensity Score by 2025 compared with the baseline of 2020. In 2023, we met and surpassed this target, successfully lowering our Water Intensity Score by 25% in comparison with the baseline year 2020. Consequently, we have set a new target based on a new and more transparent calculation. By 2030, we strive to achieve a 50% reduction in our water efficiency ratio of water intake per revenues compared with the 2020 baseline. The new target covers the complete water intake of our company. Our 2020 baseline year was chosen to align this new target with other existing environmental goals. Our second objective focuses on mitigating our environmental impact. Specifically, we are committed to reducing potentially harmful residues in our wastewater to levels below the established no-effect threshold.

Our regular EHS audits at our production and development facilities also review site-specific water management practices. Our water management efforts focus more heavily on our manufacturing sites than our administrative facilities as production generally poses a higher risk to aquatic ecosystems.

Roles and responsibilities

The Group function Corporate Sustainability, Quality and Trade Compliance is responsible for water management. At our sites, engineers work closely with our EHS managers to reduce water consumption and treat wastewater. Further information can be found under "**Environmental protection**".

Our commitment: Standards and procedures

Our **Sustainable water management principles** set the framework for three Group-wide standards that detail how we integrate mechanisms of sustainable water management into our management system: Sustainable Water Management Part 1 – Wastewater; Sustainable Water Management Part 2 – Water Use; and Sustainable Management Part 3 – Water Risk Management. All three standards are based on the commitments we made under the **Responsible Care® initiative**.

Our Wastewater Standard defines criteria for assessing our wastewater discharges into ecosystems. It also helps us achieve our targets regarding trace substances in wastewater from our operations. The Water Use Standard sets out mandatory Group-wide requirements for the responsible consumption of water. The Water Risk Management standard establishes a way for us to manage the risks that arise from direct or indirect water extraction and covers risks such as contaminated rainwater and flooding. We perform internal EHS audits to verify that our sites comply with our three standards. All sites are required to measure and assess the risks and impacts of the hazardous substances in their wastewater. Moreover, they must also analyze withdrawal and wastewater risks and comply with the respective requirements of the local authorities.

Water withdrawals from our own wells and local suppliers

For the most part, we draw water used for our production processes from our own wells and source drinking water from local suppliers. In doing so, we do not want water extraction to impair any protected areas, sensitive ecosystems or habitats. We extract less water from our own wells than the amounts permitted. We simultaneously monitor potential trends that could lead to the reclassification of water sources, which involves assigning heightened levels of protection to specific regions.

The cooling water used in our production processes generally runs in a circular system. Depending on regulatory standards and the energy footprint, we sometimes use freshwater for cooling in a once-through system. However, this is only done in regions with high freshwater availability. For certain applications, we treat production wastewater and reuse it. In 2023, we recycled a total of 20.5 million m^3 of water (2022: 20.7).

Water withdrawal

millions of m^3	2020	2021	2022	2023 Group	2023 Water stress areas
Total water withdrawal	**14.0**	**13.5**	**13.2**	**12.1**	**0.162**
Surface water (rivers, lakes)	1.8	1.9	1.8	1.4	0.002
Groundwater	6.7	6.3	6.3	5.8	0.002
Drinking water (from local suppliers)	5.4	5.2	5.0	4.8	0.156
Rain water and other sources	0.06	0.06	0.06	0.06	0.002

These figures do not include the ground water that we use for safety measures at our Gernsheim site in Germany. Here, the water is fed back directly into natural circulation.

Using water more efficiently

We seek to minimize our impact on water availability in the vicinity of our sites. In 2023, we withdrew 12.1 million m^3 of water in total (2022: 13.2). We assess local conditions to determine whether a sufficient water supply is available. In our water conservation efforts, we pay particular attention to sites in water-scarce areas. To measure how we improve our water efficiency, we have defined our Water Intensity Score, which relates the amount of water either purchased or withdrawn from our own wells at a site to the number of hours worked, taking local water availability into account.

In 2023, we already exceeded our target set for 2025 to lower our Water Intensity Score by 10% (baseline year 2020). Initiatives that helped us reach our original goal include effects from shifts in product mix as well as initiatives such as recycling of wastewater in Rio de Janeiro (Brazil), St. Louis (USA) and Mollet del Valles (Spain).

We have therefore set ourselves a new target: By 2030 we will reduce our sales-normalized water intake by 50% compared with 2020 (2020: 792 m^3 per million € net sales (100%), 2023: 580 m^3 per million € net sales (-30%)).

In the past, our Gernsheim site in Germany was excluded from both the score and our water conservation efforts because we must extract a minimum water quantity from our own wells to meet regulatory requirements. Our new target will cover the entire Group, including Gernsheim.

Our wastewater

In 2023, we generated a total of 11.1 million m^3 of wastewater (2022: 12.4). This comprised around 7.6 million m^3 of "direct discharge" water (2022: 8.6) into surface waters. 3.4 million m^3 was classified as "indirect discharge" (2022: 3.8) water and treated at external treatment plants.

Wastewater volume

	2020	2021	2022	2023 Group	2023 Water stress areas
Total wastewater volume (millions of m^3)	**13.4**	**13.3**	**12.4**	**11.1**	**0.110**
Wastewater discharged directly	9.2	9.5	8.6	7.6	0.000
Wastewater discharged to third parties	4.1	3.8	3.8	3.4	0.100

We continuously work to optimize our production streams and purification processes to conserve water and minimize residues. We have appointed an expert for each of our business sectors to provide guidance for our sites. This approach aims to reduce the amount of pharmaceutically active ingredient residues as well as all substances with water-hazardous properties. All wastewater from relevant sites is processed in wastewater treatment plants before being discharged into the environment. This is done either in our own plants or by offsite third parties such as municipal wastewater treatment plants.

Assessing our water management practices

In addition to reporting on our climate action efforts, we also report water-related data to the CDP, which collects environmental data from companies once a year and evaluates their processes and performance on a scale from A to D-. As in the previous year, we were awarded a B for our water management practices in 2023.

Plant, process and transport safety

We seek to minimize manufacturing process hazards wherever possible in order to prevent workplace accidents, production outages and chemical spills. To this end, we regularly review our approach to plant and process safety and continuously gauge it using our EHS key indicators.

Moreover, all our shipments are to reach our customers and sites safely, undamaged and with the required safety information. Several of the materials we store and transport are classified as hazardous. The storage of such dangerous goods and the transport thereof – whether by road, rail, air, or water – are governed by global regulations. To minimize risks to people and the environment, we apply strict safety requirements across the Group that also comply with applicable laws. We conduct regular reviews to ensure our own warehouses as well as those of third parties comply with these regulations.

Roles and responsibilities

Overriding responsibility for plant, process and transport safety lies with the Group function Corporate Sustainability, Quality and Trade Compliance (SQ), which coordinates plant and process safety for the company and defines Group-wide EHS standards and regulations.

Our commitment: Internal standards and international rules

To ensure safe operation throughout the lifetime of a plant, our Group-wide EHS standards contain specific rules for production plants and processes. These include specifications that determine how special risk analyses and hazard assessments are to be carried out. We have also defined measures for the event of accidental release of chemical substances and for fire protection.

Our Group-wide EHS standards stipulate the safety levels for the storage of hazardous materials at our sites. Along with supplementary standard operating procedures and best practice documents, these EHS standards describe the technology, equipment and organizational infrastructure needed to achieve the appropriate safety levels. Contract warehouses must also adhere to our strict safety requirements. Before we sign a contract with an operator, they must submit a statement detailing how they meet our prerequisites. Our Group-wide EHS standards also define the technical and organizational requirements for such warehouses.

Our Group Transport Safety Standard is based on the United Nations Recommendations on the Transport of Dangerous Goods. This guideline is especially important for sites in countries with inadequate local regulations covering the conveyance of hazardous materials.

Assessing potential risks

Before commissioning a plant, we draft a safety concept, which is subject to continuous review throughout the entire lifetime of the facility. It is updated as needed until the facility is decommissioned. This safety concept contains an overview of potential risks and specifies corresponding protective measures. In the event that alterations are made to a plant, we reassess the hazard and risk situation. Our Risk Management Process guides all our sites in identifying and assessing risks and serves to devise further measures to minimize them.

We use internal EHS audits to complement the inspections conducted by our EHS and dangerous goods managers in order to ensure that our sites comply with process, plant, transport, and storage safety regulations. Normally, these audits are conducted every three years at production sites and every four years at warehouse and distribution sites. If major shortcomings are identified, we re-audit the respective site the following year. Conversely, we may decide to extend the period between audits at facilities where, based on the findings from previous audits, we deem the potential risk to be low. Our sites are required to rectify any deficiencies discovered during the audit, with the auditor subsequently checking whether the specified corrective actions have been taken. In 2023, we conducted 34 EHS audits (2022: 41) in accordance with our Group-wide EHS standards.

Keeping a close eye on safety

We track EHS performance indicators at all production and warehouse facilities, as well as at major research sites, including both accidents and near misses. We investigate each individual incident and then devise appropriate countermeasures in an effort to reduce the likelihood of such events reoccurring in the future. EHS performance indicator data are reported once a month within each business sector, with the Executive Board receiving reports on the topic once per year. Four indicators are particularly important to us:

- Under our EHS Incident Rate (EHS IR), we track and evaluate all major and minor accidents and incidents as well as further EHS-relevant incidents. The EHS IR 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 lower the EHS Incident Rate, the safer the site is. In 2023, the ratio was 2.4 (2022: 2.8).
- The EHS IR also contains our Loss of Primary Containment (LoPC) indicator. In 2023, we did not record any significant incident-related releases of substances (2022: two).
- The EHS Leading Rate (EHS LR) reflects the number and the results of the analyses of near misses and hazardous conditions or behaviors, as well as other proactive safety activities such as risk assessments.
- For the **Lost Time Injury Rate (LTIR)** we set ourselves the goal of lowering our Group-wide LTIR to under 1.0 by 2025 (number of accidents Group-wide resulting in at least one missed day of work per million hours worked). In 2023, our LTIR was 1.3 (2022: 1.2).

Chemical product safety

Product safety is one of our top priorities. During the product development phase, we investigate the potential adverse impacts of chemical substances. Along the entire value chain of our products – from raw materials to manufacture and commercialization – we provide relevant information on their hazardous properties and how to deal with them. These instructions facilitate the safe handling and use of our products in line with pertinent regulatory requirements. We publish this information primarily on the relevant digital channels. As paper safety data sheets are still common in some countries, we can also provide these upon request through our customer service.

Roles and responsibilities

Our Life Science, Healthcare and Electronics business sectors have organizational structures in place to implement our product safety strategy in line with their respective business requirements and customer needs. This approach includes registering chemicals, classifying hazardous substances and highlighting risks using safety data sheets, labels and digital communication tools.

Our Group standard provides a framework for governing the setup of effective operational processes for product safety, hazard communication and chemical regulatory compliance throughout our business sectors. In addition, the Group Chemicals Regulations Council fosters cross-sectoral alignment of strategic regulatory activities required for existing and emerging chemicals regulations as well as sustainability and identifies potential impacts for our company.

This approach also applies to innovative fields of development such as nanomaterials, which we use with the greatest of care in line with the precautionary principle. Furthermore, our Group-wide **Policy for Use and Handling of Nanomaterials** provides the necessary guidance on the use of these materials.

Legal requirements and internal guidelines

Our internal standard defines the roles, responsibilities and basic processes required to comply with national and international regulations. In addition, we have also endorsed voluntary commitments of the chemical industry such as the **Responsible Care® Global Charter**.

Using the Globally Harmonized System for Classification and Labelling of Chemicals (**GHS**) for hazard communication enables us to streamline our internal processes and provide consistent, harmonized and high-quality information to our customers.

In 2023, there was one incident of non-compliance with regulations concerning potential health and safety impacts and the labeling of our chemical products. Some information and the REACH registration number was missing on a safety data sheet which resulted in a fine in Italy. In this regard, to the best of our knowledge, there were no negative impacts on human health or the environment.

Safety analysis of our products

Safe and sustainable by design implies that product safety starts during development. Therefore, at an early stage of our product development process, we analyze innovations in terms of their impacts on human health and the environment. We continuously evaluate the intrinsic hazards of both our existing and new products to create relevant product safety information in line with applicable rules.

Product safety information

Chemical product safety is all about protecting human health and the environment from adverse impacts resulting from the use of chemical products throughout their life cycle. To achieve this, we provide relevant information to our customers and the public, which helps to raise awareness of the hazards and build a greater understanding of how to mitigate risks and use the products safely.

To obtain the relevant information on hazard profiles, we employ industry-standard digital tools through which we gather information available on the substances we use.

Employee-Related Matters

Attracting and retaining talent

To ensure our ongoing success, we are focusing on the future by creating meaningful impacts and building needed capabilities. At the same time, we must respond to changing demographics and adapt to the behaviors and expectations of the highly competitive talent market. Therefore, in 2023, we continued to enhance our talent acquisition strategy with a more personal, employee-focused approach. Our talent sourcing approach aims to build inclusive pipelines and effectively recruit diverse talent with the needed competencies and capabilities to our organization. In addition, our talent retention approach is inclusive in targeting various employee groups. In 2023, we intensified our efforts to support internal mobility. For example, we launched a dedicated project to improve organizational agility, up-skilling and re-skilling, retention, and engagement. Specific modules went live in 2023, and we will roll out the complete platform with all functionalities during the course of 2024.

We have designed our compensation structure to provide valuable benefits to our employees and their families. Our benefits offerings recognize the diversity and uniqueness of our employees while providing flexibility wherever possible. Additionally, our international employee mobility programs create an environment suited to the needs of a rapidly evolving workforce.

Total number of employees

As of Dec. 31	2020	2021	2022	**2023 Group[1]**	**2023 thereof: Merck KGaA, Darmstadt, Germany[2]**
Total number of employees	58,127	60,348	64,243	62,908	3,924
Men	33,204	34,274	36,452	35,499	2,387
Women	24,923	26,074	27,791	27,409	1,537

[1] Our company also employs people at sites of subsidiaries that are not fully consolidated. For the 2023 reporting year, we have aligned the scope of consolidation also for the employee data in the non-financial reporting with the financial reporting. As of now, the figures relate to all employees who are employed in fully consolidated subsidiaries that manage personnel.

[2] The sharp decline in comparison with the previous year (8,485 employees) is attributable to the fact that in addition to Healthcare KGaA, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany which was hived off in 2019, the two other business sectors, namely Life Science und Electronics, have now also been transferred to separate legal entities.

Employee age by region

As of Dec. 31

Number of employees	Worldwide	North America	Europe	Merck KGaA, Darmstadt, Germany	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
2022							
Up to 29 years old	9,926	2,753	3,530	1,181	2,999	476	168
thereof: women	4,637	1,178	1,655	441	1,441	264	99
30 to 49 years old	38,423	7,811	16,216	4,549	11,174	2,333	890
thereof: women	16,909	3,278	7,528	1,664	4,498	1,196	409
50 or older	15,894	5,283	8,498	2,755	1,239	681	192
thereof: women	6,245	2,045	3,437	870	412	255	96
Average age	**41.6**	**43.3**	**43.1**	**43.1**	**37.3**	**41.1**	**40.3**
Total employees	**64,243**	**15,847**	**28,244**	**8,485**	**15,412**	**3,490**	**1,250**
2023							
Up to 29 years old	8,743	2,233	3,294	535	2,634	440	142
thereof: women	4,150	995	1,521	213	1,323	224	87
30 to 49 years old	38,006	7,352	16,304	2,085	11,218	2,301	831
thereof: women	16,798	3,084	7,565	857	4,562	1,203	384
50 or older	16,159	5,133	8,706	1,304	1,407	717	196
thereof: women	6,461	2,034	3,595	467	472	266	94
Average age	**41.5**	**43.5**	**42.9**	**43.0**	**37.4**	**40.8**	**40.5**
Total employees	**62,908**	**14,718**	**28,304**	**3,924**	**15,259**	**3,458**	**1,169**

Internationality of employees

As of Dec. 31	2020	2021	2022	**2023 Group**	**2023 thereof: Merck KGaA, Darmstadt, Germany**
Number of nationalities	141	142	139	141	70
Number of nationalities in management positions (Role 4 or above)	75	79	78	77	30
% of non-Germans in management positions (Role 4 or above)	66	66	66	66	12

New employees

As of Dec. 31	2020	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Total number of new employee hires	**6,669**	**8,960**	**10,682**	**5,490**	**220**
by age group					
up to 29 years old	2,889	3,679	4,314	2,156	170
30 to 49 years old	3,347	4,610	5,397	2,944	45
50 or older	433	671	971	390	5
by gender					
Women	3,016	4,101	4,569	2,493	89
Men	3,653	4,859	6,113	2,997	131
by region					
Europe	2,160	2,567	3,015	2,028	220
North America	1,789	2,855	3,971	1,181	not applicable
Asia-Pacific (APAC)	2,206	2,803	3,071	1,710	not applicable
Latin America	396	579	460	445	not applicable
Middle East and Africa (MEA)	118	156	165	126	not applicable
Rate of new employee hires[1] (%)	**11**	**15**	**17**	**9**	**6**
by age group[2]					
up to 29 years old	43	41	40	39	77
30 to 49 years old	50	51	51	54	21
50 or older	7	8	9	7	2
by gender[2]					
Women	45	46	43	45	40
Men	55	54	57	55	60
by region[2]					
Europe	32	29	28	37	100
North America	27	32	37	22	not applicable
Asia-Pacific (APAC)	33	31	29	31	not applicable
Latin America	6	6	4	8	not applicable
Middle East and Africa (MEA)	2	2	2	2	not applicable

[1] Formula for calculating the rate of new employee hires: Total number of new employee hires divided by number of employees at the end of the fiscal year.

[2] Formula for calculating the rate of new employee hires by age/gender/region: New employee hires of the focus group divided by the total number of new employee hires.

Staff turnover[1,2]

	2020[3]	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Total turnover rate	**8.22**	**10.82**	**10.16**	**9.96**	**3.48**
Turnover rate by gender					
Men	8.22	10.69	10.40	10.11	3.24
Women	8.22	11.00	9.93	9.76	3.87
Turnover rate by age group					
Up to 29 years old	11.30	16.64	15.91	14.39	5.79
30 to 49 years old	7.74	10.05	9.55	9.48	3.41
50 or older	7.52	9.22	8.05	8.49	2.62
Turnover rate by region					
Europe	5.64	6.00	5.91	5.52	3.48
North America	9.79	15.44	14.33	15.02	not applicable
Asia-Pacific (APAC)	10.60	14.66	12.84	11.90	not applicable
Latin America	11.40	12.95	13.38	13.19	not applicable
Middle East and Africa (MEA)	11.80	16.57	13.04	15.63	not applicable
Total number of leavers	**4,721**	**6,354**	**6,358**	**6,336**	**152**
by gender					
Men	2,697	3,575	3,673	3,639	87
Women	2,024	2,779	2,685	2,697	65
by age group					
Up to 29 years old	974	1,451	1,542	1,358	32
30 to 49 years old	2,677	3,545	3,569	3,624	82
50 or older	1,070	1,358	1,247	1,354	38
by region					
Europe	1,490	1,601	1,640	1,560	152
North America	1,281	2,078	2,182	2,305	not applicable
Asia-Pacific (APAC)	1,394	2,015	1,905	1,824	not applicable
Latin America	398	449	467	460	not applicable
Middle East and Africa (MEA)	158	211	164	187	not applicable

[1] The table contains unadjusted turnover rates. The rate excludes 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.

[2] The employee turnover rate is calculated as follows: Total number of leavers from the past 12 months divided by the average employee headcount multiplied by 100.

[3] The figures do not reflect the approximately 500 Allergopharma employees, who were not included in the employee turnover rate due to the divestment of the business.

In 2023, the average length of service for employees Group-wide was 9.7 years (2022: 9.2 years), with 15.2 years (2022: 15.4 years) for employees of Merck KGaA, Darmstadt, Germany.

Roles and responsibilities

Group Human Resources (HR) supports and advises all business sectors and Group functions within our organization regarding our human capital, especially 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 benefits. In accordance with the audit plan, we conduct internal audits every two to three years to ensure that we implement our guidelines effectively.

The Chair of the Executive Board and CEO is responsible for Group Human Resources. 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 commitment: Group-wide policies and guidelines

As set down in our **Social and Labor Standards Policy**, we will respect our employees' legal rights to form and join worker organizations of their own choosing, including labor organizations and trade unions, and will not discriminate based on an employee's decision to join or not join a labor organization.

Our High-Impact Culture is founded on six behaviors: obsessed with customers and patients; act as the owner; be curious and innovate boldly; simplify and act with urgency; raise the bar; disagree openly, decide and deliver. We regularly inform managers and employees about these behaviors through global campaigns.

Our People Development and Learning Policy provides a Group-wide framework that guides employees in managing their professional growth. It defines requirements for our development opportunities, roles and responsibilities.

A competitive compensation structure

We reward the performance of our employees in order to maintain a competitive edge in attracting and retaining the best talent. Within our Group, we base compensation on the requirements of each position and each employee's respective performance. We make no distinctions based on gender or any other diversity criteria. To ensure we maintain a competitive compensation structure, we regularly review our compensation policy based on data analyses and industry benchmarks. This enables us to compare internal factors and market requirements in equal measure. Before making changes to our compensation structure, we consult with key stakeholders such as employee representatives, as applicable.

In addition to individual performance, our annual incentive plan also measures company performance based on financial and non-financial key indicators in our scorecard. The non-financial key indicators focus on the company's priorities and are designed to support our High-Impact Culture as well as our sustainability strategy and progress in terms of diversity, equality and inclusion. Furthermore, since 2022, we have included a sustainability factor in our Long-Term Incentive Plan (LTIP). More information on the LTIP can be found in the **Notes of our Annual Report**.

Strengthening our sustainability culture

Since 2021, e-Learnings on our sustainability strategy are a mandatory training component for existing and new employees. While this was the first step of our upskilling journey, we have extended our offer with function- and hierarchy-specific educational activities. Furthermore, from 2023 on, we use the sustainability questions from our annual employee engagement survey to measure the impact of our activities. The survey results are only used internally. They help us to understand the maturity of a sustainability mindset in the company and to detect and address functional, regional or hierarchical differences. The corresponding key indicator "Result of the employee engagement survey on sustainability culture" replaces the previous year's achieved key indicator "Percentage of employees trained on sustainability".

Diversity, equity and inclusion

We are committed to promoting a strong sense of inclusion and belonging among our employees. Therefore, we approach diversity, equity and inclusion (DE&I) with the same purpose as our other global business objectives and aspirations. While we have always been a diverse organization – we currently span 65 countries and have about 63,000 employees from 141 nationalities – we recognize that our success depends on our ability to foster equity and inclusion. In addition, our DE&I approach fuels our efforts to make positive impacts in the communities where we live and work. We expect our leaders and managers to be mindful and considerate in how they attract, hire, retain, and promote their people. 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 strive to create equitable outcomes and identify and eliminate any barriers that may hinder our employees' contributions or their access to opportunities or career advancement. Ultimately, we believe diversity inspires progress and strengthens our ability to innovate in all areas of our business.

Number of employees by hierarchical level

As of Dec. 31	2020	2021	2022	**2023 Group[1]**	**2023 thereof: Merck KGaA, Darmstadt, Germany**
Total employees	**58,127**	**60,348**	**64,243**	**62,908**	**3,924**
Senior management (Role 6+)	193	194	191	200	48
Middle management (Role 4 & 5)	3,637	3,831	4,018	4,139	600
Low management (Role 3)	10,286	10,880	11,877	11,907	1,275
Other employees (below Role 3)	44,011	45,443	48,157	46,662	2,001
% of women (total)	**43**	**43**	**43**	**44**	**39**
thereof: number of women in senior management (Role 6+)	42	49	51	58	15
thereof: number of women in middle management (Role 4 & 5)	1,284	1,413	1,550	1,622	214
thereof: number of women in low management (Role 3)	4,352	4,669	5,123	5,150	475
thereof: number of women in "other employees (below Role 3)"	19,245	19,943	21,067	20,579	833
% of men (total)	**57**	**57**	**57**	**56**	**61**
thereof: number of men in senior management (Role 6+)	151	145	140	142	33
thereof: number of men in middle management (Role 4 & 5)	2,353	2,418	2,468	2,517	386
thereof: number of men in low management (Role 3)	5,934	6,211	6,754	6,757	800
thereof: number of men in "other employees (below Role 3)"	24,766	25,500	27,090	26,083	1,168

Footnotes follow at the end of the table.

As of Dec. 31	2020	2021	2022	2023 Group[1]	2023 thereof: Merck KGaA, Darmstadt, Germany
by age group					
Up to 29 years old (%)	**15**	**15**	**15**	**14**	**14**
thereof: number of employees in senior management (Role 6+)	0	0	0	0	0
thereof: number of employees in middle management (Role 4 & 5)	6	8	12	8	2
thereof: number of employees in low management (Role 3)	199	241	263	249	39
thereof: number of employees in "other employees (below Role 3)"	8,365	8,880	9,651	8,484	494
30 to 49 years old (%)	**60**	**60**	**60**	**60**	**53**
thereof: number of employees in senior management (Role 6+)	68	63	58	65	19
thereof: number of employees in middle management (Role 4 & 5)	2,032	2,172	2,235	2,283	367
thereof: number of employees in low management (Role 3)	6,926	7,298	8,007	7,963	805
thereof: number of employees in "other employees (below Role 3)"	25,948	26,624	28,124	27,697	894
50 years or older (%)	**25**	**25**	**25**	**26**	**33**
thereof: number of employees in senior management (Role 6+)	125	131	133	135	29
thereof: number of employees in middle management (Role 4 & 5)	1,599	1,651	1,771	1,848	231
thereof: number of employees in low management (Role 3)	3,161	3,341	3,607	3,695	431
thereof: number of employees in "other employees (below Role 3)"	9,698	9,939	10,382	10,481	613

[1] The Group also employs people at sites of subsidiaries that are not fully consolidated. For the 2023 reporting year, we have aligned the scope of consolidation also for the employee data in the non-financial reporting with the financial reporting. As of now, the figures relate to all employees who are employed in fully consolidated subsidiaries that manage personnel.

[2] The sharp decline in comparison with the previous year (8,485 employees) is attributable to the fact that in addition to Healthcare KGaA, which was hived off in 2019, the two other business sectors, namely Life Science und Electronics, have now also been transferred to separate legal entities.

Roles and responsibilities

The Chief Diversity, Equity and Inclusion Officer is responsible for our global DE&I strategy and for steering its related activities. In this role, she reports directly to the Chair of the Executive Board, whose Board responsibilities include Group Human Resources. In addition, we have established a centralized Diversity Council comprising high-ranking executives from all our business sectors and selected Group functions.

Our commitment: Industry-wide initiatives and regulations

Our **Social and Labor Standards Policy** categorically states that our company does not tolerate any form of discrimination, physical or verbal harassment, or intolerance. To underscore our commitment to equality, fairness, inclusion, and tolerance in the workplace, we also participate in industry-wide initiatives:

- **Women's Empowerment Principles**
- Inclusion Action Plan of the German Mining, Chemical and Energy Industrial Union (IG BCE)
- Equal Opportunity Charter
- **German Diversity Charter association** (signatory of the Charter and member of the association)
- **CEO Letter on Disability Inclusion**

Strategy implementation

In 2023, we continued driving our global DE&I strategy. We accelerated the impact of our national DE&I advocates in our 18 major countries and developed tailored roadmaps for each market. We also published our **Premier DE&I Report**, providing detailed evidence of our strategy implementation and initiatives.

In 2021, we pledged to our people, partners, patients, and industry to intensify our DE&I efforts and set robust aspirations. In 2023, we demonstrated that we are on track to meeting our 2030 goals.

Gender equity

We developed measures to achieve a more balanced gender structure at various hierarchical levels of our business. We are making consistent progress and have increased the share of women in leadership (roles 4+) to 39% (2022: 38%) and senior management positions (roles 6+) to 29% (2022: 27%) while maintaining a 44% proportion of women in our global workforce (2022: 43%). This means our share of women in leadership has increased by 12 percentage points since 2015. Building on these efforts, we aim to achieve gender parity in leadership positions by 2030. Moreover, we are committed to fair and equitable pay for all employees. Our Executive Board comprises two female members (our CEO and CFO) and three male members, bringing the share of women to 40% (2022: 20%).

Culture and ethnicity

With 23% (2022: 24%) of our employees based in the United States and 27% (2022: 27%) of net sales coming from the United States it is crucial that we become an employer of choice among underrepresented racial and ethnic groups in this market. Therefore, we plan to increase the share of employees in U.S. leadership (roles 4+) who are members of underrepresented racial and ethnic groups from 23% (2022: 21%) to 30% by 2030.

Additionally, due to our current performance in Asia, Latin America and the Middle East and Africa (MEA), accounting for 39% (2022: 40%) of our Group sales, we aim to increase the global share of nationals from Asia, Latin America and MEA in leadership positions (roles 4+) from 17% (2022: 16%) to 30% by 2030.

In 2023, we developed an Action Plan on Culture, Nationality and Ethnicity as well as a toolkit for leaders and HR to accelerate our progress as regards these aspects.

Inclusion

Beyond our aspiration to foster specific types of diversity and equity, we are accelerating our efforts to create a genuinely 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 leaders will be encouraged to complete these courses over the coming years. At the end of 2023, 92% (2022: 64%) of our leaders had participated in this training program.

Committed to fair and equitable pay

Our commitment to pay equity is a crucial aspect of our DE&I strategy. To create transparency around unexplained pay gaps and identify their underlying root causes, we started a gender pay equity analysis in 2021. In the first step, we analyzed ten of our largest countries, covering approximately 80% of our total workforce. In 2023, we extended the analysis to all countries, except North America which is planned in 2024. The identified adjusted gender pay gap continues to be less than 1.5%, which is below benchmarks in the industry. We have developed a plan for a recurring analysis to continuously monitor pay data and to take effective actions as needed. These include individual adjustments based on the results of the analysis, as well as educating our HR community on the topic and taking other steps to ensure we make equitable and unbiased pay decisions.

Ensuring fair treatment for all

We do not tolerate any form of discrimination in our company, as stipulated with binding effect in our **Code of Conduct** and **Social and Labor Standards Policy**. In January 2024, we published a new **position paper on disability inclusion** to complement our existing papers on **DE&I**, **non-discrimination** and **non-harassment**. In addition, we have established various reporting channels to ensure employees have a clear point of contact should they experience 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 make anonymous calls to our **compliance hotline**. In the reporting year, our HR Business Partners involved in HR-related compliance case investigations participated in a training and upskilling program to equip them with enhanced employee relations and investigation skills. In 2023, 30 (2022: 20) alleged cases of discrimination or harassment were reported via the compliance hotline and other channels, seven (2022: seven) of which were confirmed on our global reporting platform and appropriate action was taken.

Health and safety

We seek to promote the health of our employees and sustain their long-term performance ability, which in turn necessitates a safe workplace. We are therefore constantly working to further strengthen our health and safety culture.

The lost time injury rate (LTIR) is an important indicator used to gauge the success of our occupational safety efforts. It comprises all accidents 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 supervised temporary staff. Our objective is to lower the LTIR to below 1.0 by 2025.

Generally, before starting any activity, we perform a hazard assessment to identify risks and do everything possible to eliminate them before commencing the activity or commissioning a plant. If this is not feasible, we put measures in place to minimize the likelihood of risks and their potential impacts. Hazard assessments are the responsibility of our individual sites and are therefore conducted by them.

In October 2023, we launched BeHealthy, our global employee health strategy, to our workforce. It is designed to further strengthen the physical, mental, social, and workplace health of our employees. Moreover, in 2023, we introduced a key indicator for health, planned to comprise our health index on the one hand and the implementation status of the BeHealthy strategy on the other hand.

Roles and responsibilities

Our Health and Safety management system is the responsibility of Corporate Sustainability, Quality and Trade Compliance, which in turn reports to the Chair of the Executive Board. This Group function sets objectives, oversees the respective initiatives globally and conducts internal EHS audits. Local EHS managers and their teams ensure that our individual sites comply with all occupational health and safety laws and regulations. They are also responsible for local projects, campaigns, and programs.

Employees concerned about their health or safety are permitted to temporarily step back from their work until the issue has been resolved. Globally, across the Group, they are encouraged to report such concerns via our **compliance hotline**.

Our commitment: Standards and policies

Our Corporate **EHS Policy** (Corporate Environment, Health and Safety Policy) describes our fundamental approach to occupational health and safety, among other things. It is part of our EHS management system and undergoes an external ISO 45001 audit every year. As part of a Group certificate, our occupational health and safety management system was ISO 45001-certified at 66 sites at the end of 2023.

Together with the Group-wide health strategy BeHealthy, we launched the newly developed Group Employee Health Standard in October 2023. It describes the fundamental requirements that a site must fulfill as regards employee health. In addition, the standard specifies our approach to ensuring workplace safety for our employees while also promoting their health and well-being. Furthermore, we set out our Group-wide approach to health and safety management, which is aimed at preventing workplace accidents and occupational illnesses.

We expect our contractors to comply with environmental as well as health and safety requirements throughout the entire process, from starting a job to completion. This objective is reflected in our Group-wide Contractor EHS Management Standard.

Accident rates

Our employees are required to immediately report any relevant occupational accidents to Corporate Sustainability, Quality and Trade Compliance, where these accidents are assessed. If necessary, we then implement additional safety measures. This procedure is common practice across all production facilities around the world. We document the following occupational safety data across our sites worldwide:

- The LTIR measures the accidents resulting in at least one day of missed work per one million hours worked. In comparison with the previous year, our LTIR increased slightly to 1.3 (2022: 1.2). The majority of incidents resulting in lost time were slips, trips and falls, along with contusions and lacerations from the operation of machinery and equipment. Once more, in 2023, we recorded no fatal accidents.
- We use our EHS Incident Rate (EHS IR) to document **incidents**.
- Alongside this indicator, in the United States, we also use the Occupational Illness Rate to monitor work-related illnesses and their long-term effects.

Work-related accidents[1]

	2020	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Lost Time Injury Rate (LTIR = workplace accidents resulting in missed days of work per one million hours worked)	**1.3**	**1.2**	**1.2**	**1.3**	**1.6**
by region					
Europe	2.4	2.1	1.7	2.2	1.6
North America	0.8	1.2	1.7	1.4	not applicable
Asia-Pacific (APAC)	0.1	0.1	0.3	0.1	not applicable
Latin America	0.8	0.4	0.6	0.6	not applicable
Middle East and Africa (MEA)	0.4	0.0	1.1	0.4	not applicable
Number of deaths	**0**	**0**	**0**	**0**	**0**
by region					
Europe	0	0	0	0	0
North America	0	0	0	0	not applicable
Asia-Pacific (APAC)	0	0	0	0	not applicable
Latin America	0	0	0	0	not applicable
Middle East and Africa (MEA)	0	0	0	0	not applicable
by gender					
Women	0	0	0	0	0
Men	0	0	0	0	0

[1] Including supervised temporary staff.

Through the LTIR, we record work-related accidents that involve at least one day of missed work. A work-related accident is an injury that results from the type of work, in the course of doing said work, and that has no internal cause. Work-related accidents are considered relevant if they occur on the premises, on business trips, during goods transport, as a result of external influences (e.g. natural disasters), or due to criminal acts involving personal injury. Commuting accidents and accidents during company sporting activities are not included. First-aid incidents are generally not included in the LTIR since these usually do not result in more than one day of missed work.

Clear rules of conduct

Group-wide, all newly appointed site EHS managers must complete an EHS onboarding training that covers the topics of occupational health and safety as well as our “BeSafe!” safety culture program. Through the “BeSafe!” program, we raise employee awareness of occupational hazards and teach them rules for safe behavior. In addition, we regularly provide occupational safety training at our sites covering both legal requirements and the specific risks.

Social Matters and Respect for Human Rights

Responsible supply chain

With our supplier management endeavors, we aim for compliance with fundamental environmental and social standards in addition to high quality, reliable delivery and competitive prices. Therefore, we have introduced relevant strategies, processes and guidelines to prevent violations of supply chain standards and continuously improving our sustainability performance. Unless stated otherwise, the approaches presented apply to tier-1 suppliers, i.e. direct suppliers. Furthermore, our supplier management activities include special measures particularly for tier-n suppliers, i.e. indirect suppliers, working in the area of conflict minerals.

To achieve our sustainability goals, our Procurement team is working closely with our suppliers. We aim to create transparency in all our sourcing regions and fully integrate sustainability into all our value chains. To this end, we have defined two key indicators to measure our journey towards increasing this transparency by reviewing the sustainability performance of our relevant suppliers based on valid sustainability assessments. Our definition of valid sustainability assessment includes assessments carried out over the last three years and performed by a reliable, approved source. In accordance with our risk management approach, we define relevant suppliers as suppliers, which either indicate a specific country and/or industry risk or contribute to a significant percentage of our supplier spend (at least 50%). For the country risk evaluation, we have developed our own comprehensive country risk score.

In 2023, 66% (2022: 46%) of our relevant suppliers were covered by a valid sustainability assessment; 94% (2022: 82%) of our spend attributable to these suppliers was covered by suppliers with a valid sustainability assessment.

We consider all applicable legal requirements, such as the German Supply Chain Due Diligence Act, and initiate corresponding measures where necessary. Among other things and in conjunction with the implementation of the German Supply Chain Due Diligence Act, we have implemented a risk management approach focusing on human rights and environmental risks along our supply chain. This risk assessment is conducted annually and ad-hoc when required.

Risk management process

To ensure security of supply, we select our suppliers based on criteria such as country risk, material risk, supplier risk, and their strategic importance to the business. This process helps our Category Sourcing teams to identify potential mitigation actions with relevant suppliers and supports them in making improvements. Our risk management approach comprises four main elements:

- Supplier Risk Assessments: to capture the overarching risks at the supplier level we consider multiple risk domains.
- Alert system: to notify our Procurement organization about risk events arising with any of our suppliers.
- Material Risk Assessments: to identify and mitigate the risks of the materials used in our most significant finished products. This element focuses on our business sector Life Science. In 2023 we conducted assessments for more than 2,500 of our critical materials.
- Risk Response Tracker: a system to create and monitor risk mitigation activities in inter-disciplinary teams.

We calculate risk factors for suppliers and raw materials by multiplying risk probability and risk impact according to current human rights risk standards. We also include criteria for identifying supplier relationships impacted by key sustainability risks, such as mineral sourcing and animal welfare.

Due diligence process for responsible sourcing of minerals

We source and sell products that contain minerals commonly referred to as “3TG” (tin, tungsten, tantalum, gold – collectively also known as conflict minerals). These minerals involve the risk of being extracted, traded, handled, and exported from conflict-affected and high-risk areas (CAHRAs) where human rights are not always respected and violations thereof need to be prevented.

Our aim is to source materials in a responsible and conflict-free manner and not to contribute to adverse impacts through our activities. Therefore, we have a due diligence program that applies across all our business sectors and takes into account applicable laws and international standards. Additionally, we have engaged an external auditing firm to carry out an independent assessment in 2023 in order to **verify** our compliance with regard to the requirements of the EU Conflict Minerals Regulation (EU) 2017/821.

As part of our continuous improvement efforts, we worked on the recommendations from the audit and refined our procedures. Additionally, we established a supply chain traceability system that further increases our supply chain transparency. For our tin imports, which make up the majority of our conflict minerals imports, additional control mechanisms were implemented. These mechanisms include supply chain mapping, information on the country of origin of the mineral, request of audit reports from smelters and refiners, and the revision of agreements, including audit rights, with our suppliers. After careful analysis of the potential risks, no specific risks could be identified that would have required the development of an action plan. We remain in constant contact with our suppliers, industry colleagues and cross-company collaborations to improve the transparency and effectiveness of the framework.

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 measures, such as updating our guidelines where necessary, examining processes and coordinating our participation in external initiatives.

Our commitment: Guidelines and standards

We expect all our suppliers and service providers to comply with our environmental and social standards, which are primarily derived from the **core labor standards** of the International Labour Organization (**ILO**) and the **UN Global Compact**. We expect our suppliers to ensure that their subcontractors respect the same rules. For this purpose, our **Supplier Code of Conduct** details our expectations towards suppliers and business partners regarding human rights, health and safety, business integrity, environmental protection, continuous improvement, and management of their respective suppliers.

Our **Responsible Minerals Sourcing Charter** demonstrates our commitment to responsible sourcing of minerals from conflict-affected and high-risk areas. It applies to all our legal entities and subsidiaries worldwide. The charter complements the requirements set out in our Supplier Code of Conduct.

To ensure that we work on the basis of industry standards and can rely on comparable data analytics and expert analysis, we collaborate with our peer 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, and the Responsible Minerals Initiative (**RMI**). We call on our suppliers to allow us or trusted partners to conduct assessments or audits to increase the transparency of our supply chain and identify fields of activity to improve sustainability performance or mitigate infringement risks.

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 1,860 valid scorecards on the assessment of our suppliers (2022: 1,700), almost 1,790 of which completed a new assessment or re-assessment in 2023 (2022: 1,100). In some cases, these were initiated by us and in other cases by other TfS members.

Supplier Decarbonization Program

Our Supplier Decarbonization Program is a key element of achieving our **Science Based Target**. Through this ten-year program that was defined as part of the decarbonization strategy in 2021, we aim to reduce greenhouse gas emissions associated with purchased goods and services as well as capital goods.

In order to manage the large quantities of data on the CO_2 emissions of our suppliers, we have an automated carbon accounting tool in place to which we continuously add new functionalities. We offer our suppliers access to solutions to reduce their Scope 2 emissions. In addition, we joined the **Energize program** as a new sponsor. Energize is a collective initiative by a group of industry-leading pharmaceutical and fine chemical companies that have committed themselves to engaging their suppliers to support the adoption of renewable energy and reduce greenhouse gas emissions within their common supply chains. We offer all our suppliers the opportunity to join the program for free and to find out more about renewable electricity options leading to reduced Scope 2 emissions.

Mica supply chain

Mica is an important raw material for our effect pigments, which are used in automotive, cosmetic and industrial coatings as well as plastics. We procure the majority of our mica from the Indian states of Jharkhand and Bihar. We have special measures in place to comply with high social and environmental standards in our mica supply chain.

Our mica suppliers are informed of our standards and have confirmed that they adhere to the principles of our **Human Rights Charter** as well as the requirements of our **Supplier Code of Conduct**. In the event of non-compliance with our standards, we work with suppliers to ensure the appropriate implementation of corrective measures.

We do not tolerate child labor and contractually prohibit our suppliers from employing children. If one of our suppliers were found to be using child labor, we would terminate the business relationship immediately. We are driving initiatives and taking measures to improve the conditions of mica sourcing based on our high standards. For example, we have contractually agreed with our suppliers to pay at least a living wage to mine workers and workers in the processing units. Furthermore, we continuously review our monitoring processes to improve their effectiveness.

Auditing our mica supply chain

We have implemented a series of oversight mechanisms using a system that monitors and audits conformity with our social and environmental standards. In addition to visits by our company's employees, regular inspections are conducted by third parties, who conduct comprehensive announced audits as well as frequent, unannounced monitoring.

Environmental Resources Management (**ERM**), a leading global provider of environmental, health, safety, risk, and social consulting services, conducts external audits of mines and processing plants, investigating working conditions as well as environmental, health and safety issues. The audit reports document any identified shortcomings in this respect and propose corrective actions. Findings concerning safety of electrical installations and installing proper emergency exit signs were successfully addressed. Our employees in Kolkata, India, and Darmstadt, Germany, take action to address any identified issues. If the corrective measures are not respected, we may suspend or even terminate our business relationship.

Since 2013, IGEP Consult, an Indian non-governmental organization, has conducted regular unannounced monitoring to review labor standards throughout our supply chain. During these visits, IGEP officials monitor occupational safety and compliance with laws preventing child labor. In 2023, its inspections focused on checking the availability of physical examinations for workers and conducting mock fire drills. Additionally, we regularly optimize the escalation process together with IGEP, which holds bi-weekly review meetings with representatives of our company to assess suppliers. These meetings help to identify any required actions, which our sourcing teams then discuss and implement with our suppliers. As a result, our suppliers have successfully improved the working conditions at these sites.

Evaluating and tracking mica sources

We use a tracking system to help ensure that the mica we purchase is derived from sources qualified by our company. We also use this tracking system to monitor the productivity of our mica sources. Based on written records of the daily extraction quantities, we review the volumes of mica reported and supplied to the processing facilities. Furthermore, we use a digital traceability solution to increase transparency in the mica supply chain.

To maintain accuracy, our processes undergo constant review and improvement. We are also evaluating other mica sources in accordance with our quality, social and environmental standards, both in India and other regions. For example, we source a considerable amount of mica from Brazil. To monitor our suppliers' adherence to these standards, we have conducted an audit through a third party.

Human rights

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. That is why we integrate human rights due diligence into our business processes.

We view our human rights due diligence as a continuous process, which we constantly adapt and improve. This also prompts us to continually review our approach. We closely monitor regulatory developments such as the planned EU directive on human rights due diligence.

Roles and responsibilities

Our Executive Board has ultimate responsibility for human rights within our sphere of influence. The Executive Board exercises this responsibility by requiring our Managing Directors to comply with human rights.

Our Human Rights Officer from the Group function Corporate Sustainability, Quality and Trade Compliance (SQ) is responsible for monitoring due diligence obligations concerning human rights and environmental matters. The Executive Board is informed at least once a year of the work of the Human Rights Officer and the implementation status of risk management and of the due diligence processes.

Those responsible for the issue in the Group functions, business sectors and local units are tasked with implementing our human rights due diligence processes in operations by integrating human rights due diligence into existing processes, for instance.

Our commitment: Guiding principles, charters and laws

Our **Human Rights Charter** aligns with the **UN Guiding Principles for Business and Human Rights**. It is our overarching human rights directive and defines the relevant requirements for our company. We expect our employees as well as our suppliers and all companies with which we have business ties to comply with this charter.

In 2023, our Executive Board approved our Group Policy Statement on Compliance with Human Rights and Environmental Due Diligence Obligations in accordance with the German Supply Chain Due Diligence Act. It applies to our own business operations, in other words to our entire workforces, as well as to our suppliers. The statement describes how we undertake to comply with our human rights and environmental due diligence obligations and provides information on the risks identified.

Identifying actual and potential impacts on human rights

We perform risk assessments to understand the potential impacts our operations and business relationships could have on human rights. For instance, we investigate human rights risks at our sites as well as risks related to product and service sourcing. These risk assessments enable us to derive the corresponding strategies and measures. We track human rights risks through our strategic supplier risk process. More information on how we engage with suppliers can be found under "**Responsible supply chain**".

Risk analyses to determine human rights and environmental risks

We conduct special analyses to identify human rights and certain environmental risks. This enables us to identify potential risks, weight them appropriately and prioritize them. These risk analyses are carried out annually and on an ad hoc basis for our own business operations.

Our **Social and Labor Standards Policy** defines the corresponding commitments and principles as they relate to specific topics and sites. We regularly check compliance with the requirements using a risk-based approach. Among other things, this takes into account risks that may arise if relevant laws and regulations change or if there are violations of internationally recognized labor rights by governments and companies, as assessed by the **International Trade Union Confederation** and documented in the annual ITUC Global Rights Index. If we identify a violation during the audit, we define remedial actions together with the responsible Managing Director and/or local HR staff.

We also assess human rights aspects at our sites through security audits and as part of the risk analysis. The audits are one control mechanism of our security governance framework. Through increased risk transparency and central follow-up of corrective and preventive actions (CAPA) we help ensure that our sites comply with safety-related human rights aspects. Through the Together for Sustainability (**TfS**) initiative, we determine whether our strategically important suppliers comply with human rights standards.

Creating awareness among our employees

An online course trains our Managing Directors and senior management in how to meet the requirements of our **Social and Labor Standards Policy** in their area of responsibility.

Our reporting practices

We inform the public about our approaches and measures as well as the results of our human rights due diligence. We provide information on this annually in our Sustainability Report. Under laws in Australia, the United Kingdom and Norway, we are additionally required to publish information in these countries on our measures to combat forced labor and human trafficking. Apart from the **UK Modern Slavery Statement** and our **Australia Modern Slavery Statement**, we also published the Norway Transparency Statement for the first time in 2023.

Our complaint mechanisms

We have set up a Group-wide whistleblowing and complaints system that can be used to report potential violations of human rights, legal provisions and environmental issues, among other things. Our compliance hotline is a central element of this. Our employees as well as external stakeholders can report suspected cases via this Group-wide whistleblowing system in their respective national language, free of charge and anonymously, either by telephone or a web-based application. We are committed to thoroughly investigate all complaints that we receive and take countermeasures if necessary. More information on the compliance hotline can be found under "**Compliance Management**".

In addition, we published **Rules of Procedure**. These apply to tips or complaints that refer to human rights and certain environmental risks or violations at our company and along the supply chain in line with the German Supply Chain Due Diligence Act. In the reporting year, 184 violations of the **Social and Labor Standards Policy** were reported to us in our own business operations, 60 of which were confirmed. Furthermore, based on the complaint channels specified in the Rules of Procedure, there were no indications of child or forced labor or violations of the right to collective bargaining or freedom of association in our own business operations or in the supply chain in 2023.

Human rights violations

	2020	2021	2022	**2023**
Number of reported violations of Social and Labor Standards Policy	108	121	136	184
Number of confirmed Violations of Social and Labor Standards Policy	29	41	68	60
thereof: number of incidents of discrimination	2	6	7	7[1]

[1] As of 2023, the incidents of discrimination also include cases of harassment as a specific form of discrimination.

Patient safety

Through a rigorous benefit-risk management process, we help to ensure that the benefits of our medicinal products always outweigh the risks for patients. Every new medicine goes through a series of precisely defined development stages. Before any medicinal product is administered to human subjects, we conduct extensive preclinical testing both in vitro and in vivo. During clinical development, we diligently use all the collected data to continuously evaluate the medicinal product's benefit-risk profile. If we consider the medicinal product's benefit-risk profile to be positive, we then submit an application for marketing authorization to the relevant regulatory authorities.

Continual monitoring of product safety risk profiles

Once we launch a new medicinal product, the number of patients being treated with the product increases significantly. In rare circumstances, there may be adverse and potentially serious effects that were not detected during clinical development, which is why we continuously monitor risks and assess the benefit-risk profiles of the products after their market launch. Pharmacovigilance includes the process of monitoring a medicinal product on an ongoing basis to detect and assess safety signals as part of signal management activities. Our pharmacovigilance system and our pharmacovigilance business continuity management help to ensure continuous monitoring of adverse effects, allowing us to proactively and transparently minimize and communicate any risks. Emergency response procedures for business continuity are managed in accordance with global and local business continuity plans, tested in regular, defined intervals or with mock scenarios. In addition, we provide healthcare professionals and patients with the latest information on the safety of our marketed medicinal products. The scope of continuous safety monitoring covers the entire life cycle of a product, ranging from development, market launch and commercialization to the expiration or cancellation of its marketing authorization.

By 2025, we aim to deliver product specific safety and benefit-risk strategies to support the execution of all key priority programs in line with internal and external stakeholders' expectations. These strategies will enable us to understand in greater detail the benefit-risk profiles at each stage of product development and post-marketing. During the reporting year, we worked toward achieving this goal by providing high-level safety and benefit-risk contributions for development programs with priority in oncology, neurology and immunology.

Roles and responsibilities

Our Global Patient Safety unit is responsible for drug safety. It continuously collects current safety data from a wide variety of sources across the globe, including clinical studies, early access programs, spontaneous reports on adverse effects, patient support programs, and articles published in medical and scientific journals. Our vision is to embed a deep knowledge of safety into early decision-making as we evolve to practice predictive safety.

Our experts help to ensure that all information on the risks and adverse effects of our medical products are properly documented, tracked and reported to the respective health authorities in accordance with regulatory requirements. Our Global Patient Safety unit analyzes all data and reassesses the benefit-risk profile based on these data, where required. We then inform regulatory authorities, healthcare professionals and patients about new risks, additional risk mitigation measures and potential changes in the benefit-risk profile. We convey this information through stipulated regulatory reports, safety communications (as applicable) and corresponding product label updates.

Our Global Patient Safety unit hosts a Pharmacovigilance Intelligence Council that focuses on changes in pharmacovigilance legislation and their impacts on our global and local pharmacovigilance systems. This council enables us to make strategic decisions and govern changes in pharmacovigilance requirements, which fosters our target to ensure continuous compliance with regulatory requirements.

Our Medical Safety and Ethics Board

Our Medical Safety and Ethics Board (MSEB) is the governance board that oversees the safety and benefit-risk assessments of our medicinal products throughout their clinical development and commercialization. This internal board is chaired by our Chief Medical Officer and comprises experienced physicians, scientists and

experts from our company. Throughout a medicinal product's entire life cycle, the MSEB reviews and assesses important medical safety risks and benefit-risk issues and endorses appropriate measures to minimize risks, such as updates to product information. The MSEB also assess human-related bioethical matters as appropriate and is accountable for the use of our medicinal products in early and post-study access.

Our commitment: Guidelines and statutory requirements

We rigorously aim to follow international guidance and standard procedures. These include the International Council for Harmonisation (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.

Inspections and audits for drug safety monitoring

Regulatory authorities conduct periodic inspections to verify that we comply with statutory requirements as well as our own internal pharmacovigilance standards. We follow up on the findings of health authority inspections and take necessary actions to ensure the ongoing compliance of our pharmacovigilance system. In 2023, we had five pharmacovigilance inspections (2022: four).

We also perform audits to our systems and processes to ensure that all our units and subsidiaries involved in pharmacovigilance consistently meet all global requirements. In 2023, we conducted a total of seven pharmacovigilance audits (2022: 19) and found no significant deviations in our pharmacovigilance systems from these requirements and standards. We also conducted twelve external audits (2022: 16) at our vendors and licensing partners involved in pharmacovigilance, helping us to improve our pharmacovigilance processes and to comply with regulatory requirements.

Applying our proactive safety strategy to benefit-risk assessments

Regarding product safety risk assessments, we have successfully implemented in the past years an improved benefit-risk management strategy to become a more proactive and benefit-risk-focused organization. This strategy firmly establishes the concepts and principles for conducting benefit-risk assessments at each stage of product development and post-marketing. In addition, our Benefit-Risk Action Team co-leadership model, created in 2022, enables us to understand in even greater detail the benefit-risk profiles of our products and enable early decision-making within our organization to protect patient safety. Ultimately, we aim to provide the right medicine to the right patient at the right time.

Up-to-date labeling and product information

Our product information explains to healthcare professionals and patients how to correctly use the respective product and make informed treatment decisions. We review and update product information documents, such as package leaflets, thereby, we want to ensure our medicinal products contain the latest information on safety, efficacy and pharmaceutical formulation. In accordance with regulatory requirements, we submit modifications to our leaflets to the respective regulatory authorities for approval. In 2023, there were no reportable incidents of non-compliance with regulations concerning the labeling of our medicinal products.

Internal and external training

Our pharmacovigilance experts are regularly trained so that they gain and maintain the required experience and knowledge to carry out their activities. We manage our training via a global learning platform and verify compliance with our training requirements by producing training completion reports.

Our approximately 25,000 internal and external Healthcare employees receive basic pharmacovigilance training once a year that covers the procedure for reporting adverse effects or special circumstances associated with the use of our medicinal products.

Prices of medicines

The prices of our products reflect the value they deliver to patients as well as broader society. We price our products responsibly and work to prevent costs from becoming a barrier to treatment. In doing so, we strive to deliver on our steadfast commitment to providing the broadest possible patient access. We also continue to invest in meaningful scientific innovation to address the high number of unmet medical needs still faced by many patients and their caregivers. Therefore, we adapt the prices of our medicines in different geographic and socioeconomic segments according to people's ability to pay.

We acknowledge the affordability challenges many healthcare systems face amid growing financial pressures. We recognize the unique characteristics of each health system and adapt our pricing based on local market considerations, including unmet medical and treatment needs, health system capacity, infrastructure, socioeconomic standards as well as affordability within the respective healthcare system and the ability of patients to pay. We apply intra-country and inter-country equitable pricing approaches to all our brands.

This approach involves working closely with governments and other stakeholders. In addition, we continuously monitor dynamic healthcare environments and markets, pricing and reimbursement systems as well as legal and regulatory guidelines, adjusting our prices as necessary. 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.

To increase the availability, accessibility and affordability of our medicines in Africa, Asia, Latin America, and the Middle East, we have adopted a new systematic approach known as the SHAPE program. This will enable us to address these access barriers for underserved patient populations in low- and middle-income countries.

Additionally, we support innovative risk-sharing agreements and are working to improve data efficiency in health systems to help distribute funds and resources more optimally.

Roles and responsibilities

Our Global Value Demonstration, Market Access & Pricing (GVAP) unit, formerly called GMAP, reporting directly to a member of our Healthcare Executive Committee, evaluates market launch prices in coordination with the respective franchises. In addition, the GVAP unit systematically evaluates our medicine portfolios and applies equal access initiatives to them. Our local affiliates are responsible for managing prices and adapting them to evolving local conditions in compliance with our pricing governance and the defined price approval process.

Our commitment: Medicine price guidelines and principles

The affordability of our health solutions is part of our broader patient value proposition. Our medicine pricing adheres to the stipulations of our overarching **Charter on Access to Health in Developing Countries** and is defined in detail in an internal guideline. Additionally, our Patient Access Programs Policy sets out standards for offering medicines at affordable prices.

Value-based contracting models

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 2023, we continued to implement and maintain innovative risk-sharing agreements (RSAs) that provide immediate access to Mavenclad® for patients with multiple sclerosis (MS). We broadened access to this medicine through specific agreements in eligible countries across Europe, Latin America and the Middle East including Argentina, Hungary, Kuwait, South Africa and the United Arab Emirates.

Programs for low- and middle-income countries

We have set ambitious goals for our SHAPE program to improve access to our medicines for underserved patient populations in low- and middle-income countries. The program covers both existing and upcoming products, focusing on therapeutic areas such as head and neck, colorectal and bladder cancers as well as thyroid disorders.

In 2023 we served more than 57 million patients in low- and middle-income countries with our healthcare portfolio. Boosted by our SHAPE program, we aim to reach 80 million patients per year by 2030. As of 2023, 15 pilots have been initiated in countries such as Argentina, Brazil, Egypt, Indonesia, and Mexico as well as several countries of Central America.

Tenders constitute a significant percentage of our global sales and are a crucial growth driver for our established portfolio. We participate in government tenders for products used in public hospitals serving low-income patients, often in low- and middle-income countries.

For some of our existing high-quality products, we offer second brands at affordable prices, particularly in countries with a large percentage of low-income patients.

Patient access programs (PAPs) are self-sustaining commercial programs that provide registered medicinal products for underserved populations. They primarily seek to address affordability challenges. We operate PAPs in several countries.

Clinical studies

Our aim is to conduct high-caliber clinical research that is in compliance 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 trials.

We only conduct clinical studies to investigate issues relevant to patients, healthcare professionals or society, and only when our established methodology finds the given medicines show significant therapeutic promise and a positive benefit-risk ratio. Accordingly, to ensure patient safety and avoid interrupting the development of promising products, we carefully select patients based on known risk factors. These include age and comorbidities, which we reflect in the design of our clinical studies. Notably, we only enroll the specific number of patients needed to answer the posed scientific and medical questions. 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 Benefit Risk Assessment teams adapt the benefit-risk assessment and development strategy of each product to ensure it delivers maximum safety and efficacy to our patients. In addition, a sound, established scientific methodology must be available to investigate these scientific or medical questions.

Protecting the safety, well-being, dignity, and rights of the patients and healthy volunteers participating in our clinical studies is of utmost importance to us. We do not intentionally expose study participants to undue risk or irreversible harm. Data privacy is also very important to us, and we maintain a strong focus on data protection and confidentiality in compliance with statutory regulations.

Diversity, equity and inclusion in clinical trials

Based on our Standard on Human Research, we aim to conduct clinical studies that adequately represent the diverse patient populations expected to use our products once they are approved. To ensure fair, balanced and scientifically justified study representation, we cemented our commitment to Diversity, Equity and Inclusion in clinical trials by collaborating with healthcare providers and community advocates to eliminate common barriers to clinical trial participation.

Patient-focused drug development

We are improving our approach to research and development by committing to patient-focused drug development that more actively involves patients, caregivers, and their advocates in our work. Their valuable insights into disease and treatment management will help us make more informed decisions at each stage of the medicine development process. We aim to make our studies easy for patients to understand while ensuring all participants have positive experiences as they contribute to our understanding of the particular disease and its treatment. At every level of our organization and based on the function, we are additionally either offering or mandating to educate staff about the value of a close, more consistent patient interaction and the requirements to protect our patients' independence and privacy.

Roles and responsibilities

Clinical development, including clinical studies and their related governance processes, are the responsibility of our Global Development unit. The Head of Global Research & Development reports to the CEO Healthcare, who is a member of the Executive Board.

We have established two internal committees to oversee our clinical studies. The Integrated Protocol Review Committee is responsible for the studies performed by the company on products that are under clinical development, while the Global Medical Decision Board is responsible for our own studies with approved products as well as for all studies performed by independent investigators and supported by us (so-called investigator-sponsored studies). Both bodies consist of medical-scientific experts and executives with long-standing experience in clinical research.

Before administering a new product to humans, there must be sufficient evidence that it offers a potential therapeutic benefit, is sufficiently safe for use in humans and has a positive benefit-risk ratio. We only take the critical step of a first-in-human clinical trial after diligently conducting extensive preclinical testing. The decision lies with a separate committee, the Human Exposure Group, chaired by our Global Chief Medical Officer.

We continuously analyze potential risks for study participants before and during our clinical studies. Our Medical Safety and Ethics Board (MSEB) oversees the safety of the participants in our clinical studies and, as necessary, reviews the benefit-risk profiles of investigational products.

Our commitment: International guidelines and requirements

Our Quality Policy defines the strategic framework that ensures our products, services and systems deliver high quality, safety and efficacy to our patients. It details the most relevant laws and codes, criteria and guidance (e.g. for product development and manufacturing), and our senior management's responsibility to ensure quality is embedded in everything we do.

Our Standard on Human Research provides the framework for conducting clinical studies and helps ensure we adhere to all applicable legal, ethical and scientific standards. Further quality documents detail for instance the strategic direction of all quality related activities or disclose our position on data privacy. In addition to the relevant national laws and regulations, these documents also include:

- 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 Pharmacovigilance/Laboratory/Manufacturing/Distribution Practices (GVP/GLP/GMP/GDP),
- The **International Ethical Guidelines for Health-related Research Involving Humans**, published by 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 **Principles for Responsible Clinical Trial Data Sharing**, published by EFPIA and PhRMA, and the IFPMA Principles for Responsible Clinical Trial Data Sharing.

Regular supervision of clinical studies

Our clinical study processes and procedures are regularly inspected by relevant regulatory authorities to verify their compliance with applicable laws and guidelines.

The Research & Development Quality and Risk Management (RDQRM) unit applies a risk-based identification strategy to determine areas that need to be audited. Quality assurance audits are performed internally within Healthcare R&D (for example, process audits) and externally (e.g. investigator sites and vendor audits). We respond immediately to observations made during audits by investigating their root causes and, according to their criticality, defining and implementing corrective and preventive actions to improve processes, prevent reoccurrence of irregularities and ensure compliance. As planned, in 2023, RDQRM concluded most of the audits of the Annual Audit Plan.

Conducting clinical studies responsibly

Every clinical study follows defined procedures to ensure it is conducted to high quality standards in line with good working practices (GxP) for the development and manufacturing of drugs, the ethical principles of the **Declaration of Helsinki** and other international guidelines and regulations. As in the previous year, in 2023, none of the regulatory inspections conducted on our clinical research activities resulted in regulatory action.

Disclosure of clinical studies and publication of results

We are obligated to disclose findings from our clinical studies. We strive to do this publicly in a complete, accurate, balanced, transparent, and timely manner as laid out in our Standard on Clinical Trial Data Transparency. We publish results from our clinical studies in medical journals in line with applicable laws and industry codes. In particular, we adhere to the current version of the Good Publication Practice (**GPP3**) and align with the recommendations of the International Committee of Medical Journal Editors (**ICMJE**). Our **Standard on Clinical Trial Data Transparency** underscores our strong commitment in this area.

Enabling early access to new medicines

Not all patients have the opportunity to take part in a clinical study and must therefore wait for a new pharmaceutical product to be approved. Through our Early Access Program, we can, under specific circumstances, 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. Here, too, we meet stringent statutory, ethical and scientific standards. By performing a thorough assessment of all available data, we ensure that the potential benefits outweigh the potential risks for patients.

Bioethics

Our goal is to conduct research in a responsible manner, which is why we develop ethical guidelines – also in close collaboration with external experts – in order to make well-founded decisions for responsible research. Moreover, we discuss in our committees the ethical aspects of providing products such as organoids for both academic research purposes and the biopharmaceutical industry. We carefully evaluate our position when it comes to controversial topics. We always prioritize the well-being of and benefit for various groups of patients, whether in clinical studies or during treatment with our medicines.

Roles and responsibilities

Since 2010, our Ethics Advisory Panel for Science and Technology (MEAP) has been making clear recommendations on ethical questions in science and technology as well as on questions extending beyond the field of traditional bioethics, in line with our transformation into a science and technology company. The recommendations of the MEAP guide our actions and business activities.

The members of the MEAP are renowned international experts from the fields of bioethics, medicine, philosophy, law, and the natural sciences as well as technology and sustainability. The MEAP has its mandate from the Executive Board and is chaired jointly by the two members of the Executive Board with responsibility for the Healthcare and Life Science business sectors.

All employees may address their concerns to the Bioethics team via our **compliance hotline** and a dedicated e-mail address (accessible via the intranet).

A further board, the Stem Cell Oversight Committee (SCROC), reviews and decides on all planned in-house research activities involving the use of human embryonal or pluripotent stem cells, ensuring compliance with legal requirements as well as our ethical guidelines. This also applies to joint projects with external partners. Up until the end of 2022, the SCROC consisted of internal experts from our business sectors as well as external advisors from the fields of bioethics, medicine, and law. In 2023 and in line with a resolution by the MEAP, we transformed the SCROC into a primarily internal board. The reason for this is that research plans that call for separate committee approval pursuant to the SCROC charter are currently not being carried out within the company.

Furthermore, for ethical questions arising for instance in the context of forward-looking business decisions, targeted Ethics Foresight projects can be initiated. We specifically engage external experts to work on these projects. No Ethics Foresight projects were commissioned in 2023.

Our commitment to policies and standards

Our **Genome Editing Principle** provides a binding ethical and operational framework for our employees. Apart from our position on genome editing, it includes information on human germline editing. It sets clear boundaries for us both as a supplier of customized CRISPR/Cas nucleases and genetically modified cell lines and as a company that uses genome editing technologies in our research.

This is complemented by further guidelines that form the ethical framework of our research and business activities. Our **Stem Cell Principle** sets the ethical boundaries for the use of human stem cells in our research. Our **Fertility Principle** regulates our fertility treatment and in-vitro fertilization research activities.

Using genome-editing techniques

CRISPR/Cas opens up new possibilities in genetic engineering research that could bring about major advances in the treatment of serious diseases. Laws in different countries allow for a varying degree of latitude in applying this technique. Bioethical positions on germline editing have been evolving for years through academic and social discourse. Our position on human germline editing is as follows:

“In accordance with the German Embryo Protection Act, we do not support the use of genome editing in human embryos and clinical applications of germline interventions in humans. We recognize that there may be value in responsibly conducted related research.”

Stem cell research

We neither participate in clinical programs that utilize human embryonic stem cells or cloned human cells for the treatment of diseases, nor do we pursue such approaches ourselves. However, we use human embryonic stem cells in our research and offer our customers several select stem cell lines. In both applications, we allow the use of human embryonic stem cells only if clearly defined conditions have been met. For instance, we only utilize stem cells for research purposes if our SCROC has reviewed the respective project and given approval. In fiscal 2023, no projects required the approval of the SCROC (2022: one project). We exclusively make use of cell lines that have been approved by the United States National Institutes of Health (NIH) and are allowed under the German Embryo Protection Act as well as the German Stem Cell Law.

Digital ethics

As it is our aim is to develop and use new digital technologies responsibly, we evaluate ethical issues that may arise from algorithms, artificial intelligence (AI) and data-based business models in an early stage. Since 2021, our Digital Ethics Advisory Panel (DEAP) has been focusing on complex ethical issues surrounding digital technologies.

Roles and responsibilities

One of the main tasks of the DEAP is to support us in developing digital applications responsibly while addressing ethics questions that could result from collecting and processing data as well as from the use of these innovative technologies. It issues recommendations for our entrepreneurial activities.

The panel comprises external international science and industry experts from the fields of digital ethics, law, Big Data technologies, digital health, medicine, and data governance. In addition, we involve bioethics experts as well as representatives from patient organizations as needed. The DEAP has its mandate from the Executive Board; our employees may submit topics for the panel to discuss. As in the previous year, the panel held four meetings in 2023. These focused on issues concerning the use of generative AI. Summary minutes of the DEAP meetings have been accessible on our intranet since 2023 insofar as they do not contain any business secrets. They also document the recommendations issued.

Our commitment: Guidelines and standards

As a company, we want to position ourselves in the digital ethics sphere. We are therefore developing clear ethical standards in this new field, primarily for critical areas, for instance handling health data. In this effort, we collaborate with various stakeholders and experts.

Together with the DEAP, we apply our Code of Digital Ethics (**CoDE**) in order to address questions pertaining to the ethical use of data and algorithms. The CoDE serves as a guideline for our digital business models, as a tool for analyzing ethical challenges, and a basis for practical DEAP recommendations. As one of our overarching governance documents, it applies to all employees and is publicly accessible as well.

Developments in the field of generative AI, for instance ChatGPT, are growing in importance. All our business sectors are developing applications based on generative AI. To apply these innovative technologies responsibly and to the benefit of all, an ethical framework is currently being developed. The DEAP is intensively evaluating the guidelines. The aim is to roll out this framework company-wide in 2024.

Ethical use of data and algorithms

In June 2023, online training on the CoDE was assigned to approximately 12,000 managers with personnel responsibility who can access the training in eight languages via our internal training platform. In addition, an advanced training course is available specifically for employees working in the fields of data science, AI and other digital areas of specialization. The course serves to illustrate the importance of the CoDE and empowers participants to make responsible decisions concerning the ethical aspects of data use and algorithms in digital products and business models.

Since 2022, we have been looking at potential ethical risks that could result from projects by the Life Science Data Intelligence and Analytics unit of our Life Science business sector with the aim of developing suitable processes. The unit analyzes data from the business sector in order to obtain insights for our business.

Data privacy and cyber security

The mandate and goal of our Group Data Privacy unit is to mitigate risks and create a global framework for data privacy-compliant business operations. This unit helps train our employees to handle data responsibly and with clear accountability. It safeguards our company by providing data privacy risk assurance and ensuring compliance with relevant data privacy laws globally. Group Data Privacy also contributes to creating value for the development of digital business models.

It is of critical importance to our business to protect our information systems, their contents and our communication channels against any criminal or unwanted activities. These include e-crime and cyberattacks, such as unauthorized access, information leakage and misuse of data or systems.

Roles and responsibilities

Group Data Privacy is an independent function, organizationally integrated into Group Compliance and Data Privacy. We have a Group Data Privacy Officer and a network of local Data Privacy Officers at various sites Group-wide. In line with external regulations, the Data Privacy Officers and their respective teams act independently and without receiving internal or external instructions. Group Data Privacy regularly prepares data privacy updates and a comprehensive data privacy report. This report is submitted to the Executive Board and the Supervisory Board.

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 and Group functions who hold risk ownership, act as our first line of cyber security defense and are supported by dedicated networks. 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.

Our Cyber Security organization strengthens resilience against cyberattacks and data breaches. It defines policies and standards for cyber security (including data security) while providing oversight, tools and systems to manage and monitor our overall cyber security risk exposure. The organization is also responsible for providing cyber security monitoring and incident response capabilities across the entire company. Additionally, we train our employees on how to protect data properly.

Our commitment: Guidelines and standards

Our Data Privacy Policy and the corresponding standards and procedures define our principles for processing personal data. This approach allows us to achieve a high level of data protection for our employees, contract partners, customers, and suppliers as well as patients and participants in clinical studies. Our Group-wide understanding of data privacy is based on European legislation, in particular the European Union General Data Protection Regulation (EU GDPR). We are also taking steps to meet local data privacy requirements, where these are stricter than our Group-wide standards.

Our Group cyber security governance framework contains organizational, process-related and technical information security countermeasures based on recognized international standards. In addition, we apply harmonized electronic and physical security controls (e.g. access controls and security monitoring) to bolster our ability to securely handle sensitive data, such as trade secrets.

Training and IT tools

In line with the EU GDPR and our global approach to data privacy, we regularly conduct e-learning training courses in ten languages. In 2023, the completion rate for our e-learning courses was 99%.

We maintain a central IT tool to provide a single source for data privacy processes, such as registering data processing activities and reporting potential data privacy incidents. In 2023, we reported seven cases of minor personal data breaches to the supervisory authority. One of them related to identified data leaks, theft, or loss of customer data. However, none of these cases were sanctioned.

Data Privacy

	2020	2021	2022	**2023 Group**	**2023 thereof: Merck KGaA, Darmstadt, Germany**
Reported violations of Data Privacy Guidelines	3	3	4	7	0
Customer Privacy[1]					
Total number of substantiated complaints received from outside parties	0	0	0	0	0
Total number of complaints from regulatory bodies	0	0	0	0	0
Total number of identified leaks, thefts, or losses of customer data	0	0	0	1	0

[1] These data only reflect incidents classified as significant.

Anti-Corruption and Anti-Bribery

Compliance management

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 the highest ethical standards.

Roles and responsibilities

Our Group Compliance function is responsible for the framework of the following core topics: our Code of Conduct, anti-corruption and anti-bribery (including healthcare compliance, third-party due diligence, transparency reporting), anti-money laundering, and conflicts of interest.

To cover these topics, we have Group-wide policies, standards and procedures in place that ensure our business activities comply with the relevant laws, regulations and international ethical standards. Other compliance-related issues, including the respective internal regulations and guidelines, such as Pharmacovigilance, Export and Import Controls, and Environment, Health, Safety, Security, Quality, are managed by the responsible functions.

Our Group Compliance function is responsible for our compliance portfolio, which consists of the following elements:

- Risk Assessment: Identifying internal and external critical risks in regular business operations
- Policies & Procedures: Global policies, procedures and standards to mitigate identified risks
- Compliance Committee/Forums: Platform for compliance-related discussion and decision making, including relevant key functions
- Training & Awareness: Appropriate training and additional measures to educate and keep awareness high
- Programs & Tools: Comprehensive compliance programs and supporting tools contributing to internal controls and overall governance
- Monitoring & Reporting: Tracking of compliance-related data; perform internal and external reporting
- Case Management: Timely response to reports of misconduct and implementation of corrective actions
- Continuous Improvement: Based on and applicable to all compliance program elements

Our Chief Compliance Officer reports on the status of our compliance activities, potential risks and serious compliance violations to the Executive Board and Supervisory Board twice a year at a minimum. As part of our regular reporting processes, we compile a comprehensive compliance and data privacy report annually for the Executive Board. This includes the status of our compliance program, continuous improvement initiatives and key figures on compliance and data privacy cases. Additionally, we prepare a mid-year update to highlight ongoing developments and the status of relevant projects and initiatives.

Our Chief Compliance Officer oversees all Compliance departments and the subordinate Compliance Officers and Compliance experts around the world. The Compliance Officers implement our compliance program within their respective areas of responsibility (adapting to local regulations) and receive guidance from our Group Compliance Center of Expertise. This is a centralized body that drives the design and evolution of our compliance program across all business sectors and Group functions.

Our commitment: Guidelines and standards

Our compliance program builds on our company values and integrates these into our compliance framework, which consists of Group-wide policies, standards and procedures for entrepreneurial conduct. The following are mandatory for all our employees:

- **Code of Conduct**
- **Human Rights Charter**
- Anti-Corruption Standard
- Anti-Money Laundering Group Standard
- Conflict of Interest Policy
- Antitrust and Competition Law Policy
- Whistleblowing and Investigations Standard
- **Supplier Code of Conduct**

Risk assessment

Proper compliance risk management is crucial to identify undetected risks and ensure our company remains protected. For this purpose, we have a compliance risk assessment process covering all of our business sectors. The assessment is based on a comprehensive risk matrix that improves objectivity and enables a data-driven risk approach. It focuses on bribery and corruption risks, illustrated through in-depth risk categorization and risk scenarios. It also utilizes country risk segmentation, classifying countries where we actively operate in terms of their risk exposure regarding bribery and corruption by applying objective and consistent criteria. We use the outcome as a model to prioritize initiatives and intensify activities in countries with higher risk levels.

Conflicts of interest

We take all potential conflicts of interest seriously. Employees must avoid situations where their professional judgment could come into conflict with their personal interests. They must also disclose every potential conflict of interest to their supervisor and document the disclosure. Such issues are typically resolved directly between the employee and the supervisor but can also be routed to Human Resources, Legal, Compliance or other relevant functions.

Management and requirements of third parties

For compliance management to be effective, it must not be restricted to the boundaries of our own company. While our supplier management processes focus on vendor compliance with our standards, our global Third Party Risk Management process governs interactions with sales parties, such as commercial agents, distributors, dealers, and high-risk vendors. We expect our third parties worldwide to adhere to our compliance principles. We collaborate only with parties who pledge to comply with relevant laws, reject all forms of bribery, and adhere to environmental, health and safety guidelines.

We apply a risk-based approach to select the third parties with whom we do business. The greater the estimated risk regarding a particular country, region, or type of service, the more in-depth we examine the third party before entering into a business relationship. We also explore background information from various databases and information reported by third parties.

If we encounter compliance concerns, we further analyze and verify the relevant information. Based on the outcome, we decide whether to reject the potential third party, impose conditions to mitigate identified risks or terminate the existing relationship.

Compliance training

We provide regular compliance training (both classroom and online) on our Code of Conduct and critical compliance topics such as anti-corruption, conflict of interest, antitrust, data privacy, anti-money laundering and healthcare compliance standards. We require employees to take these courses based on their exposure to risk. Some courses also apply to independent contractors and supervised workers, such as temporary employees. In 2023, we launched a new Anti-Corruption, Anti-Bribery and Anti-Money Laundering e-learning course based on the updated Global Anti-Corruption and Anti-Money Laundering standards introduced in 2022.

Anti-money laundering

We have implemented a global anti-money laundering (AML) program consisting of a global Anti-Money Laundering Group Standard, training and a dedicated process to report and investigate red flags and any high-risk transactions. Suspicious transactions are reported to the German Financial Intelligence Unit or other authorities as required. We continuously work to improve our AML program. Following in-depth AML risk assessments of jurisdictions with stricter regulatory frameworks than our AML program, we implemented additional local AML programs where required.

Reporting potential compliance violations

We encourage all employees worldwide to report potential compliance violations. Depending on the type of misconduct and the reporting person's preference, they can choose from various reporting channels. We recommend using one of our central channels that are directly received and reviewed by a dedicated, independent and qualified team within Group Compliance. Depending on the nature, content and type of report, Compliance may investigate a submission directly or assign it to another responsible function for further investigation. One central reporting channel is our global whistleblowing compliance hotline, which can be used free of charge and anonymously to report violations. It is available in several languages by telephone or as a web-based application. The compliance hotline is also available to external stakeholders. The relevant information can be found in the "contact us" and the Compliance and Ethics section of our **website**.

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's duties include assessing and classifying specific compliance issues and addressing identified issues using appropriate measures.

In all Compliance-relevant cases, based on the investigation outcome and recommendations from Compliance or the Compliance Case Committee, we aim to take appropriate remediation measures. These can include disciplinary actions against employees who have committed a compliance violation. If the investigation identifies a root cause that could lead to the risk of further compliance violations, we take additional preventive and corrective actions.

Both the number of new Compliance-relevant cases and the number of cases with confirmed compliance violations increased compared with the previous year. In 2023, 106 Compliance-relevant new cases with reports via the compliance hotline and other channels were created. In 32 concluded cases, it was confirmed that the principles of the Code of Conduct or other internal or external guidelines had been violated.

Reported compliance violations

	2020	2021	2022	2023 Group	2023 thereof: Merck KGaA, Darmstadt, Germany
Total number of reported compliance violations					
Number of reported compliance incidents	81	79	79	106	9
Number of confirmed cases	41	42	28	32	1
Confirmed cases by category					
Bribery and corruption	6	1	2	1	0
Violation of cartel laws and fair competition rules	0	0	1	0	0
Fraudulent actions against the Group	11	6	11	3	0
Other violations of the Group Compliance Principles for the relations with business partners	0	0	2	3	0
Other violations of Group values, internal guidelines or legal requirements	24	35	12	25	1

Compliance audits

Compliance is ensured by Group Compliance and Group Internal Auditing as the second and third lines of defense. As part of the audits, Group Internal Auditing regularly reviews functions, processes and legal entities worldwide. These reviews include an assessment of the effectiveness of the respective compliance guidelines, processes and structures in place. The units also check for violations of our Code of Conduct, Anti-Corruption Standard, Anti-Money Laundering Group Standard, and Antitrust and Competition Law Policy.

Our audit planning aims to provide comprehensive risk assurance through the best possible audit coverage of our processes, countries and projects. We take a risk-based approach to our annual audit planning process, considering factors such as sales, employee headcount, systematic stakeholder feedback and the Corruption Perceptions Index (CPI) published by the non-governmental organization Transparency International. If an internal audit gives rise to recommendations, Group Internal Auditing performs a systematic follow-up and monitors the implementation of the recommended corrective actions. In 2023, Group Internal Auditing conducted 80 internal audits involving bribery and corruption-related risks (2022: 79), including 52 operational and 27 IT audits and 1 special audit which may be conducted to meet legal requirements.

Interactions with health systems

We support health systems by collaborating with our healthcare stakeholders, such as professional medical associations, patient and carer organizations, university clinics and other institutions that provide healthcare. We follow clearly defined internal approval requirements and procedures for each type of interaction, in line with applicable laws and codes. In countries with statutory or industry obligations on the disclosure of transfers of value to healthcare stakeholders, we aim to comply with these obligations.

In some countries we inform consumers directly. For example, in the United States direct-to-consumer (DTC) advertising for prescription medicines is permitted. In line with applicable local laws, we use DTC advertising in these countries to help increase people’s awareness of certain diseases and the available therapies.

Roles and responsibilities

For all interactions with healthcare stakeholders, we have established internal policies and review processes and tools, such as record-keeping systems. Thereby, we want to ensure adherence to statutory requirements and transparency obligations.

Our Global Regulatory Affairs unit has established a dedicated standard and corresponding process document on the review and approval of our promotional materials for our Healthcare business sector. At the operational level, the relevant business and all employees involved in our sales and marketing activities must adhere to our internal policies, standards and procedures. To ensure that all promotional materials meet our standards as well as local regulations end-to-end, we apply a harmonized Group-wide review and approval system.

Our commitment: Group-wide guidelines and industry standards

In addition to applicable laws and our own internal standards, we also strive to comply with the codes of conduct of various international industry organizations, such as the **Code of Practice** published by the International Federation of Pharmaceutical Manufacturers & Associations (**IFPMA**) and the Code of Practice of the European Federation of Pharmaceutical Industries and Associations (**EFPIA**) or the regulations of the U.S. Pharmaceutical Research and Manufacturers of America **(PhRMA)**.

Moreover, we apply various specific internal rules and regulations:

- Pharma Code for Conducting Pharmaceutical Business and Pharmaceutical Operations (Pharma Code)
- Healthcare Ethical Guiding Principles
- Standard on Medical Activities

For the collaboration with patient organizations:

- Policy on Interactions with Patients, Patient Opinion Leaders, and Patient Organizations
- Guideline Good Practice and Process Guidance: Engagement with Patients, Patient Opinion Leaders, and Patient Organizations

Transparent reporting

We publish the financial and non-financial contributions we make to healthcare stakeholders in the healthcare industry, such as healthcare professionals and healthcare organizations, as appropriate and in accordance with local laws and codes. The published information includes the names of individual recipients, their addresses, the purpose, and the contributed amount or value as required by the applicable laws and codes. In addition, before publishing, we secure all necessary informed consent forms, as required by the applicable data privacy regulations.

Regular employee training

In 2023, we continued our Code of Conduct training curriculum on managing dilemmas in sector-specific situations. Moreover, employees who are responsible for the promotion of our pharmaceutical products receive regular training on current guidelines. Depending on their roles and responsibilities, new employees participate in onboarding training dealing with the review and approval of promotional materials. Based on their roles and responsibilities and in order to remain up-to-date, employees participate in mandatory e-learning courses and classroom training on our policies and guidelines as well as important changes to the reporting requirements for transfers of value.

Other Topics

Sustainable innovation and technology

The sustainable innovation that we envision and drive forward must align with and support the three goals of our sustainability strategy. We define sustainable innovation as new or improved products, services, technologies, or processes that generate economic benefits and have positive environmental and social impacts. Therefore, we develop long-term solutions for our innovation and research activities that consider the entire value chain and evaluate each product's impact over its lifecycle.

Today, our products are already having positive impact on human progress and global health, namely our medicines and our biological and chemical innovations that utilize the latest technologies. We want to continuously improve the way we measure our progress by adapting to upcoming regulations and integrating quantitative sustainability criteria into our product development processes across all business sectors.

In 2023, we continued our partnership with the patent information platform LexisNexis® PatentSight® and evaluated the sustainability impact of our intellectual property. In the reporting year, 29% (2022: 40%) of our patent families published had a positive sustainability impact. However, this key indicator is not comparable with the previous year's figure as LexisNexis® PatentSight® updated the underlying **evaluation methodology**.

Roles and responsibilities

The organizational set-up of our R&D activities reflects the overall structure of our company. All three of our business sectors operate in independent R&D units that pursue their own innovation strategies. Group Corporate Sustainability supports our business sectors and Group functions to advance sustainability within the R&D and innovation processes. This includes the coordination and alignment of common core sustainability criteria in line with our shared goals as well as quality and quantification requirements. In 2022, we created a Group-wide dashboard, showing the potential contribution of our R&D portfolio to sustainable solutions. In 2023, we integrated a procedure describing the global sustainability evaluation in our R&D process.

Our Group Science & Technology Office leads the implementation of our combined strategy for innovation as well as data and digital, enabling innovation across our business sectors while harnessing the power of advanced data and digital capacities. It aims to identify and integrate transformative and strategically relevant technology trends into our business sectors while maintaining a Group-wide overview of our technology roadmap and innovation portfolio. Fostering data and digital capacities is key to accelerating sustainable innovation and enabling rapid action and personalized offerings. Innovation projects are incubated either through our corporate innovation teams or in the business sectors.

Our venture capital fund, M Ventures, prioritizes sustainable innovations through equity investments. The fund's mandate is to invest in innovative technologies and products that have the potential to significantly impact our core business areas. In addition, the fund focuses on investments in two areas of high strategic relevance to our company: digital technology and sustainability.

M Ventures' sustainability investment strategy follows two fundamental approaches. First, it invests in sustainable solutions relevant to our three business sectors, such as novel solutions for reducing emissions and waste, green life science technologies and green electronics technologies. These solutions may be more energy- or resource-efficient or may create products designed for circularity or with a lower carbon footprint. As many of these technologies are still in their early stages, M Ventures is partnering with **SEMI.org** along with the leading corporate venture capital funds to help accelerate the innovation and adoption of potential sustainable semiconductor solutions. The second approach involves making investments that leverage our core competencies to drive sustainability in other markets. These may include start-ups addressing sustainable foods, bio-manufacturing or carbon capture and utilization.

Our commitment: Aiming for circularity

Within our 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. We have integrated and tailored Design for Sustainability (DfS) across all business sectors and use our overarching dashboard to monitor progress on key sustainability criteria. In 2023, we assessed almost all relevant R&D projects and thus enhanced transparency around the sustainability performance of our global R&D portfolio. We integrated a sustainability in R&D key indicator to track progress and continued advancing the use of evaluation tools such as **DOZN™** and GreenSpeed. We aim to combine the insights from the R&D dashboard with those gained from our commercial portfolio evaluation to steer our future R&D activities.

We have dedicated corporate resources for our circular economy strategy and we are driving several circular economy pilots and initiatives throughout the organization. In addition, we held a global circular economy summit to provide a platform for best practice sharing with internal and external participants.

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 performance indicators and qualitative information that the Group 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 on establishing a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (hereinafter "EU Taxonomy Regulation") and the Delegated Acts adopted in this regard is being carried out in multiple phases:

- For the 2021 reporting period, key performance indicators were stated only for so-called 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 qualifies as taxonomy-eligible if it is within the scope of the EU Taxonomy.
- For the 2022 reporting period, apart from the degree of taxonomy-eligible economic activities making a substantial contribution to climate change mitigation or climate change adaptation within the meaning of the EU Taxonomy Regulation, it is also necessary to report the taxonomy-aligned share of the identified economic activities. According to the EU Taxonomy, an economic activity qualifies as taxonomy-aligned if it is taxonomy-eligible and makes a substantial contribution to one or more of the environmental objectives without doing significant harm to the other objectives or failing to fulfill minimum social standards.
- As well as the aforementioned information, the degree of taxonomy-eligible economic activities making a substantial contribution to the following four additional environmental objectives of the EU will be included in the disclosure obligation from the 2023 reporting period: 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 have been added for which the degree of taxonomy eligibility will be required to be disclosed in the 2023 reporting year. Reporting on the degree of taxonomy alignment for the newly added environmental objectives is not planned for the time being.
- From the 2024 reporting year, the degree of taxonomy eligibility and the degree of taxonomy alignment will have to be reported for all six environmental objectives.

Approach

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

Identification of taxonomy-eligible economic activities

In the course of implementing the EU Taxonomy requirements, the Group business model underwent a comprehensive analysis. Taxonomy-eligible economic activities were identified in line with a top-down approach using 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, information was used that can also be found in connection with the requirements of the REACH regulation as well as in the context of customs declarations. The economic activities for the other four environmental objectives were also identified by reference 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”), and
- Manufacture of electrical and electronic equipment in the Life Science business sector (environmental objective “transition to a circular economy”).

With respect to capital expenditure, 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), and
- Capital expenditure related to the acquisition of products from taxonomy-eligible economic activities and individual measures that carry out the target activities in a low-carbon manner or reduce greenhouse gas emissions (category C).

Owing to its business model, the Group only engages in taxonomy-eligible economic activities in conjunction with the manufacture of active pharmaceutical ingredients, manufacture of medical products, the manufacture of electrical and electronic equipment and, to a small extent, the manufacture of energy-efficient building equipment, it has only limited taxonomy-eligible capital expenditure in category A. There is no capital expenditure in category B to date as the Group does not prepare any capital spending plans to transform taxonomy-eligible economic activities into taxonomy-aligned economic activities. Furthermore, the Group has capital expenditure resulting from the acquisition of products classified as taxonomy-eligible economic activities or attributable to qualifying individual measures (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 be implemented and operational within 18 months.

In the Group, such capital expenditure exists especially in connection with the environmental objective of climate change mitigation in 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), and
- 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 check the taxonomy alignment of the taxonomy-eligible economic activities, the relevant regulations for the technical screening criteria under which certain economic activities qualify as contributing substantially to the environmental objective as well as for determining whether the activity causes no significant harm to any of the other environmental objectives were systematically analyzed. The basis for this was the Delegated Acts on the EU Taxonomy, which were used for the identification of taxonomy-eligible economic activities. In these, corresponding requirements are defined for the respective economic activities, which must be fulfilled for a classification as taxonomy-aligned. For this purpose, interviews were conducted with business and project managers and the physical climate risks at the sites were analyzed. Furthermore, operating permits, product data sheets, environmental product declarations, energy performance certificates and internal training documents were inspected, among other things.

Net sales, capital expenditure and operating expenditure in connection with the “climate change mitigation” environmental objective were identified as taxonomy-aligned economic activities to a very small extent only. 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 will have to be reported for the other four environmental objectives in addition to the degree of taxonomy eligibility. Based on the information currently available, the degree of taxonomy alignment for the other four environmental objectives will also be very low. A more accurate statement is not yet possible owing to the uncertain questions regarding the interpretation of the regulations and the current progress of the project.

Minimum safeguards

The minimum safeguard frameworks 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 was systematized and compared with internal documents. This included 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 measures are derived from these.

Determination of the taxonomy KPIs

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

Accounting and measurement policies

The EU Taxonomy Regulation and the corresponding Delegated Acts contain wording and requirements which, even taking into account the supplementary publications of the EU Commission and the "EU Platform on Sustainable Finance", are subject to interpretation and/or for which clarifications have not yet been published in every case. The most significant interpretive issues and Our approach 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 check the taxonomy eligibility of an economic activity, the Group applies an end-product oriented approach for manufacturing-related activities. This means that 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, the corresponding economic activities qualify as taxonomy-eligible in the interpretation of the Group only if the manufacturing activities of 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 the Group does not control the circumstances under which the contract manufacturing is performed in many cases.

In the area of fossil gas, the Group operates a gas turbine and a co-generation facility to generate electricity and heat from fossil gaseous fuels. The facilities serve to generate our own power and heat. These activities in the area of electricity generation from fossil gaseous fuels as well as the operation of co-generation units with fossil gaseous fuels have been classified as not material. Additional activities in the field of nuclear energy and fossil gas are 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 on assets or processes associated with economic activities classified as taxonomy-eligible or taxonomy-aligned is determined as follows: Share of total capital expenditure that is taxonomy-eligible or taxonomy-aligned divided by total capital expenditure according to the EU Taxonomy Regulation. In the Group 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 changes in property, plant and equipment and intangible assets disclosed 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 exclude double counting, capital expenditure on products from taxonomy-aligned economic activities and individual measures that have already been checked under category A (i.e. capital expenditure that relates to assets or processes associated with taxonomy-aligned economic activities) are included under this category only. Against this background, capital expenditure for production buildings, for example, is subject to a taxonomy-eligibility check 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: Share of total operating expenditure that is taxonomy-eligible or taxonomy-aligned 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 have not been included as taxonomy-eligible operating expenditure in the numerator for the economic activities of pharmaceutical ingredients and medical products.

Taxonomy KPIs

The following tables present the share of sales, capital expenditure and operating expenditure attributable to taxonomy-eligible and taxonomy-aligned economic activities in respect of the environmental objective "climate change mitigation". The tables also contain information on the share of taxonomy-eligible economic activities for the four additional environmental objectives:

Economic activities	Code	Turnover 2023	Proportion of Turnover 2023	Criteria for a substantial contribution: Climate change mitigation	Climate change adaptation	Water	Pollution	Circular Economy	Biodiversity	DNSH criteria ("Do no significant harm"): Climate change mitigation	Climate change adaptation	Water	Pollution	Circular Economy	Biodiversity	Minimum safeguards	Proportion of Taxonomy-aligned or eligible turnover 2022	Category enabling activity	Category transitional 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	7	0.03	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		7	0.03	0.03	-	-	-	-	-								0.03	E	
Of which transitional		-	-	-													-		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	99	0.47	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
Manufacture of medicinal products	PPC 1.2	5,778	27.52	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
Manufacture of electrical and electronic equipment	CE 1.2	98	0.47	N/EL	N/EL	N/EL	N/EL	EL	N/EL								0.00		
Turnover of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		**5,975**	**28.46**	**-**	**-**	**-**	**27.99**	**0.47**	**-**								0.00		
A. Turnover of taxonomy eligible activities (A.1 + A.2)		**5,982**	**28.49**	**0.03**	**-**	**-**	**27.99**	**0.47**	**-**										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
Turnover of taxonomy-non-eligible activities (B)		**15,011**	**71.51**																
Total (A + B)		**20,993**	**100.00**																

Economic activities	Code	CapEx 2023	Proportion of CapEx 2023	Criteria for a substantial contribution						DNSH criteria ("Do no significant harm")							Proportion of taxonomy aligned or eligible CapEx 2022	Category enabling activity	Category transition-al activity
				Climate change mitigation	Climate change adaptation	Water	Pollution	Circular Economy	Biodiversity	Climate change mitigation	Climate change adaptation	Water	Pollution	Circular economy	Biodiversity	Minimum safeguards			
		€ 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	0.06	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	4	0.17	Y	N/EL	N/EL	N/EL	N/EL	N/EL		Y	Y	Y	Y	Y	Y	0.00	E	
Renovation of existing buildings	CCM 7.2	10	0.43	Y	N/EL	N/EL	N/EL	N	N/EL		Y	Y	Y	Y	Y	Y	0.51		T
CapEx of environmentally sustainable activities (taxonomy aligned) (A.1)		**16**	**0.66**	**0.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**								**0.58**		
Of which enabling		5	0.23	0.23	0.00	0.00	0.00	0.00	0.00									E	
Of which transitional		10	0.43	0.43															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	32	1.35	EL	N/EL	N/EL	N/EL	N/EL	N/EL								1,26		
Manufacture of active pharmaceutical ingredients (API) or active substances	PPC 1.1	1	0.04	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
Manufacture of medicinal products	PPC 1.2	101	4.27	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
CapEx of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		**135**	**5.67**	**1.35**	**0.00**	**0.00**	**4.31**	**0.00**	**0.00**								1,26		
A. CapEx of taxonomy eligible activities (A.1 + A.2)		**150**	**6.33**	2.02	0.00	0.00	4.31	0.00	0.00										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
CapEx of taxonomy-non-eligible activities (B)		**2,226**	**93.67**																
Total (A + B)		**2,377**	**100.00**																

Economic activities	Code	OpEx 2023	Proportion of OpEx 2023	Criteria for a substantial contribution						DNSH criteria ("Do no significant harm")							Proportion of taxonomy aligned or eligible OpEx 2022	Category enabling activity	Category transition-al activity
				Climate change mitigation	Climate change adaptation	Water	Pollution	Circular Economy	Biodiversity	Climate change mitigation	Climate change adaptation	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	0.00	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	0.00		T
OpEx of environmentally sustainable activities (taxonomy aligned) (A.1)		**1**	**0.02**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**								**0.00**		
Of which enabling		1	0.02	0.02	-	-	-	-	-								0.00	E	
Of which transitional		0	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	3	0.11	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
Manufacture of medicinal products	PPC 1.2	49	1.73	N/EL	N/EL	N/EL	EL	N/EL	N/EL								0.00		
Manufacture of electrical and electronic equipment	CE 1.2	4	0.16	N/EL	N/EL	N/EL	N/EL	EL	N/EL								0.00		
OpEx of taxonomy-eligible but not environmentally sustainable activities (not taxonomy-aligned activities) (A.2)		**56**	**1.99**	**0.00**	**0.00**	**0.00**	**1.83**	**0.16**	**0.00**								0.00		
A. OpEx of taxonomy eligible activities (A.1 + A.2)		**57**	**2.02**	0.02	0.00	0.00	1.83	0.16	0.00										
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																			
OpEx of taxonomy-non-eligible activities (B)		**2,761**	**97.98**																
Total (A + B)		**2,817**	**100.00**																

(a) The Code constitutes the abbreviation of the relevant objective to which the economic activity is eligible to 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, Taxonomy-eligible and Taxonomy-aligned activity with the relevant environmental objective
N – No, Taxonomy-eligible but not Taxonomy-aligned activity with the relevant environmental objective
N/EL – not eligible, Taxonomy-non-eligible activity for the relevant environmental objective.

Research and development expenses accounted for 2,445 Mio. € (2022:2,521 Mio. €) of the reported operating expenditure, with 1,657 Mio. € (2022: 1,694 Mio. €) of this being attributable to the Healthcare business sector.