

FACTS & FIGURES

181 Report profile

184 Indicators

184 Economics

185 Business ethics

188 Employees

202 Environment

209 Community

211 GRI content index

211 General disclosures

214 Economic Standards

217 Environmental Standards

221 Social Standards

227 Additional material topics

228 SASB index

237 TCFD index

242 Assurance report

Report profile

Our company has a long history of corporate responsibility. This is also reflected in our reporting practices. We have been publishing reports on our efforts to live up to our corporate responsibility since 1993, focusing initially on environmental topics. In 2003, we began reporting on sustainability topics every two years. Since 2016, we have been publishing a report annually.

In this Sustainability Report, we describe the **strategic direction** of our sustainable entrepreneurship as well as focus areas in which we intend to achieve our sustainability goals. We want to inform our **stakeholders** transparently and comprehensively about our activities and successes as well as the challenges we face. This also includes classifying actual and potential positive and negative **impacts** of our business activities.

Effective immediately, we report our progress towards implementing the principles of the United Nations Global Compact via the **portal** dedicated to this purpose. For this reason, our Sustainability Report no longer includes Communication on Progress.

Reporting framework

This report covers fiscal 2022 and pertains to our entire Group, including its 224 fully consolidated companies with personnel in 66 countries. Any deviations from this reporting framework are indicated on a case-by-case basis.

Determining report content

We align the content of our report with the internationally recognized sustainability reporting standards of the Global Reporting Initiative (**GRI**). In doing so, we observe prescribed reporting principles, such as accuracy, balance, topicality, and verifiability. The report has been prepared in accordance with the current **GRI standards 2021**.

Moreover, we are integrating our disclosures pursuant to the **SASB** standards (Sustainability Accounting Standards Board) and the requirements of the Task Force on Climate-Related Financial Disclosures (**TCFD**) into the Sustainability Report. In doing so, we intend to meet the increasing transparency expectations of various investor groups and other stakeholders.

Every year, we carry out a materiality analysis to determine the sustainability topics of relevance to our Group. We have derived the content of this Sustainability Report from the results of the materiality analysis, which can be found together with the materiality matrix under **Materiality analysis**.

Our Executive Board has reviewed and approved the Sustainability Report for 2022.

Data collection and consolidation systems

The 2022 Sustainability Report generally provides non-financial indicators for the entire Group. The majority of the figures we publish reflect the status as of December 31, 2022. We explicitly state when, in individual cases, the information provided deviates from these parameters.

We use a Group-wide electronic data collection system to collect environmental and occupational health and safety data. The data are recorded at site level and are subject to approval in accordance with the dual-control principle. To improve the quality of these data, we support the sites both in optimizing their collection processes and their corresponding quality assurance measures. Moreover, our Corporate Sustainability, Quality and Trade Compliance function takes measures, such as internal EHS audits, to review both the processes and the data provided.

We collect environmental performance indicators across all our production sites. We also record these indicators for the warehouse, research and office locations that are relevant in terms of their environmental impact. This report's scope of consolidation therefore covers all Group sites that have relevant impacts on the environment.

All employee master data is continually updated in an SAP database. Some employee data are only disclosed for select sites or countries, which are indicated accordingly in the respective text passages.

We use community data management software to track data pertaining to our community engagement activities.

Non-financial statement pursuant to the German Commercial Code

The combined management report of Merck KGaA and the Merck Group for fiscal 2022 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 non-financial statement is aligned with the requirements of the Global Reporting Initiative (GRI) standard. It also includes reporting in accordance with the EU Taxonomy Regulation. The content of this non-financial declaration has also been reviewed by the Supervisory Board in accordance with section 111 (2) of the German Stock Corporation Act (AktG).

External audit

KPMG AG Wirtschaftsprüfungsgesellschaft has audited the consolidated financial statements and combined management report of our company for the fiscal year spanning January 1 to December 31, 2022 and has issued an unqualified opinion. The combined non-financial statement contained in the management report underwent an audit with limited assurance by KPMG AG Wirtschaftsprüfungsgesellschaft.

Furthermore, our company also received an [independent audit certificate](#) with limited assurance for this Sustainability Report for 2022.

The additional content provided on both the company's websites as well as external web pages that are linked in this report are not part of the information assured by KPMG. This also applies to the voluntary information in the [SASB](#) and [TCFD](#) indexes.

Contacts:

We welcome your feedback and would be happy to answer any questions.

Merck KGaA

Corporate Sustainability, Quality and Trade Compliance
Group Corporate Sustainability

Maria Schaad

Frankfurter Str. 250
64293 Darmstadt Germany

Tel.: +49 6151 72-0

E-mail: corporate-sustainability@merckgroup.com

The current report was published on April 13, 2023. We published the previous Sustainability Report in April 2022. Our next Sustainability Report is scheduled for publication in April 2024.

Gender-neutral language:

It is our aim to ensure that our communication is inclusive and so we strive to use language that is both non-discriminatory and easy to read. This report attempts to use gender-neutral language, which may not yet be consistent in all instances.

Indicators

Economics

Net sales, operating result (EBIT) and research and development costs, by business sector¹

€ million	Life Science	Healthcare	Electronics	Group
2021				
Net sales ²	8,992	7,089	3,606	19,687
Operating result (EBIT) ²	2,480	1,823	508	4,179
R&D costs ³	351	1,712	278	2,426
2022				
Net sales	10,380	7,839	4,013	22,232
Operating result (EBIT)	2,808	1,895	572	4,474
R&D costs ³	399	1,694	308	2,521

1 As a non-operating segment, Corporate and Other is not shown here as a separate item, but rather under Segment Reporting in our [2022 Annual Report](#) (p. 247-251).

2 2021 figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

3 Not presented are research and development costs of € 119 million (2021: € 85 million) allocated to Corporate and Other. The 2021 figure has been adjusted due to a change in functional allocation between administration expenses, research and development costs as well as other operating expenses.

Business ethics

Compliance training

	2019 ¹	2020 ²	2021	2022 Merck Group	2022 thereof Merck KGaA
Total number of persons trained on anti-corruption guidelines ³	36,109	28,827	5,790	5,082	431
Total number of employees trained on anti-corruption guidelines	35,673	28,805	5,772	5,071	431
% of employees trained on anti-corruption	63	50	10	8	5
by employee category⁴					
Number of Role 2+ employees trained on anti-corruption	26,890	27,123	5,284	4,658	430
% of Role 2+ employees trained on anti-corruption	96	90	17	14	9
% of employees below Role 2 trained on anti-corruption	30	6	2	1	0
by region (%)					
Europe	71	51	8	7	5
North America	59	45	11	8	not applicable
Asia-Pacific (APAC)	47	44	12	9	not applicable
Latin America	62	44	8	7	not applicable
Middle East and Africa (MEA)	80	66	12	9	not applicable

1 As of 2019, we changed our reporting method. Previously, our reports covered the active workforce who has been trained on a specific subject during a particular year. In 2019, we report on the active, trained workforce in the company, regardless of whether their training has already taken place prior to the reporting year. The possibility of trend forecasts for year-to-year comparisons is therefore limited.

2 In 2020, we began using our own global learning management tool and therefore now have a different reporting structure. As of 2020, we report on the active workforce that is part of the target group and has completed the training in the reporting year. The possibility of trend forecasts for year-to-year comparisons is therefore limited.

3 Includes contractors, external supervised workers (e.g. temps) and contract partners working on-site who were trained on anti-corruption guidelines (2022: Merck Group: 11; Merck KGaA: 0).

4 Employees whose role level had not yet been recorded in our database by December 31 of the respective reporting year have been allocated to "employees below Role 2".

The (employee) target audience for a specific training is related to the risk level associated with employee positions and Role levels. Target audiences therefore may not include all Group employees and also may vary from training to training.

In order to address the special responsibility held by management personnel, and staff with HR responsibility, trainings on anti-corruption guidelines for these employees are in focus. This applies to all employees rated Role 2+.

Our new Anti-Corruption E-learning was rolled out in 2020. The majority of employees within the defined target group already completed the training in 2020. Therefore, the 2021 completion number is lower as the training was only assigned to new joiners, internal transfers or employees who did not complete the E-learning in 2020.

Internal audits on corruption

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA ¹
Number of audits relating to corruption	50	52	56	55	19
% of audits relating to corruption	65	66	67	70	24

1 Includes global audits which are conducted at the headquarters in Darmstadt and/or the management of the audited function is reporting into KGaA.

Human rights violations¹

	2019 ²	2020	2021	2022
Number of reported violations of Social and Labor Standards Policy	-	108	121	136
Number of confirmed violations of Social and Labor Standards Policy	-	29	41	68
thereof number of incidents of discrimination	-	2	6	7

1 In 2020, we modified our reporting structure for human rights violations. Previously, we reported on such violations in the "Reported compliance violations" table. Since 2020, we report on violations of our [Social and Labor Standards Policy](#), which was implemented across the entire Group in 2019.

2 Due to our revised reporting practices, we have decided not to report the data from previous years.

Reported compliance violations

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total number of reported compliance violations					
Number of reported compliance incidents	75	81	79	79	3
Number of confirmed cases	30	41	42	28	0
Confirmed cases by category					
Bribery and corruption	9	6	1	2	0
Violation of cartel laws and fair competition rules	0	0	0	1	0
Fraudulent actions against Merck	8	11	6	11	0
Other violations of the Merck Compliance Principles for the relations with business partners	4	0	0	2	0
Other violations of Merck values, internal guidelines or legal requirements	9	24	35	12	0

Data Privacy

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Reported violations of Data Privacy Guidelines	1	3	3	4	1
Customer Privacy¹					
Total number of substantiated complaints received from outside parties	0	0	0	0	0
Total number of complaints from regulatory bodies	1	0	0	0	0
Total number of identified leaks, thefts, or losses of customer data	1	0	0	0	0

1 These data only reflect incidents classified as significant.

Legal actions

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total number¹ of legal actions pending or completed (for anti-competitive behavior, violations of anti-trust or violations of monopoly legislation)	3	4	4	3	2
pending	3	4	3	2	1
completed	0	0	1	1	1

1 As published in the annual reports, the herein listed total number of legal actions refers to the significant legal risks as per the company's definition. The significance of legal risks is based on potential negative effects on projected financial objectives as well as on the probability of occurrence.

For further information please see our annual reports:

[Annual Report 2019](#), pages 120-122 and pages 243-245, No. 26

[Annual Report 2020](#), pages 125-127 and pages 252-256, No. 27

[Annual Report 2021](#), pages 100-101 and pages 280-284, No. 27

[Annual Report 2022](#), pages 97-98 and pages 282-285, No. 27

Employees

Total number of employees

As of Dec. 31	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total number of employees	57,071	58,127	60,348	64,243	8,485
Men	32,531	33,204	34,274	36,452	5,510
Women	24,540	24,923	26,074	27,791	2,975

Number of employees by hierarchical level

As of Dec. 31	2019 ¹	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total employees	57,071	58,127	60,348	64,243	8,485
Senior management (Role 6+)	190	193	194	191	66
Middle management (Role 4 & 5)	3,352	3,637	3,831	4,018	886
Low management (Role 3)	9,499	10,286	10,880	11,877	2,277
Other employees (below Role 3)	44,030	44,011	45,443	48,157	5,256
% of women (total)	43	43	43	43	35
thereof in senior management (Role 6+)	39	42	49	51	18
thereof in middle management (Role 4 & 5)	1,146	1,284	1,413	1,550	281
thereof in low management (Role 3)	4,029	4,352	4,669	5,123	879
thereof other employees (below Role 3)	19,326	19,245	19,943	21,067	1,797
% of men (total)	57	57	57	57	65
thereof in senior management (Role 6+)	151	151	145	140	48
thereof in middle management (Role 4 & 5)	2,206	2,353	2,418	2,468	605
thereof in low management (Role 3)	5,470	5,934	6,211	6,754	1,398
thereof other employees (below Role 3)	24,704	24,766	25,500	27,090	3,459
by age group					
Up to 29 years old (%)	15	15	15	15	14
thereof in senior management (Role 6+)	0	0	0	0	0
thereof in middle management (Role 4 & 5)	8	6	8	12	5
thereof in low management (Role 3)	190	199	241	263	61
thereof other employees (below Role 3)	8,362	8,365	8,880	9,651	1,115
30 to 49 years old (%)	60	60	60	60	54
thereof in senior management (Role 6+)	69	68	63	58	24
thereof in middle management (Role 4 & 5)	1,933	2,032	2,172	2,235	525
thereof in low management (Role 3)	6,516	6,926	7,298	8,007	1,495
thereof other employees (below Role 3)	25,859	25,948	26,624	28,124	2,505
50 years or older (%)	25	25	25	25	32
thereof in senior management (Role 6+)	121	125	131	133	42
thereof in middle management (Role 4 & 5)	1,411	1,599	1,651	1,771	356
thereof in low management (Role 3)	2,793	3,161	3,341	3,607	721
thereof other employees (below Role 3)	9,809	9,698	9,939	10,382	1,636

1 In 2019, the position assessment had not yet been carried out for employees of Versum Materials as well as of Allergopharma. In the figures, employees whose positions have not been assessed have been allocated to "other employees (below Role 3)".

Average number of employees by functional area¹

	2019 ²	2020 ³	2021	2022
Group	53,645	57,612	58,731	62,565
thereof women	23,503	24,746	25,295	27,123
Production	16,455	17,624	19,782	22,086
thereof women	5,529	6,043	6,541	7,510
Logistics/Supply Chain	4,109	4,298	4,557	4,850
thereof women	1,626	1,734	1,838	1,928
Marketing and Sales/Commercials	13,970	14,127	14,318	15,095
thereof women	6,608	6,787	6,906	7,349
Administration	10,342	11,342	11,824	11,889
thereof women	5,194	5,499	5,718	5,868
Research and Development	7,561	7,504	7,168	7,335
thereof women	4,053	3,996	3,694	3,740
Infrastructure and Other	1,208	2,717	1,083	1,309
thereof women	493	687	598	727

1 The average employee headcount is calculated by adding up all employees at the end of each of the last 13 months, and dividing this total by 13.

2 To calculate the average number of employees in fiscal 2019, the employee headcount of Versum Materials has been included on a pro rata basis as of October 2019 owing to the acquisition. They are allocated to the functional area "Infrastructure and Other".

3 The average employee headcount for fiscal 2020 incorporates the Allergopharma employees on a pro rata basis up until the end of March 2020 due to the divestment of the Allergopharma business as of March 31, 2020.

Number of employees by region

As of Dec. 31	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total	57,071	58,127	60,348	64,243	8,485
Europe	26,715	26,587	27,217	28,244	8,485
Women	11,909	11,743	12,098	12,620	2,975
Women (%)	45	44	44	45	35
Number of employees with temporary contracts	1,137	1,105	988	882	219
% of employees with temporary contracts	4	4	4	3	3
North America	12,829	13,312	14,070	15,847	0
Women	5,285	5,527	5,800	6,501	not applicable
Women (%)	41	42	41	41	not applicable
Number of employees with temporary contracts	158 ¹	139	115	31	not applicable
% of employees with temporary contracts	1 ¹	1	1	0	not applicable
Asia-Pacific (APAC)	12,728	13,518	14,285	15,412	0
Women	5,049	5,425	5,874	6,351	not applicable
Women (%)	40	40	41	41	not applicable
Number of employees with temporary contracts	3,263 ¹	3,362	3,660	3,726	not applicable
% of employees with temporary contracts	26 ¹	25	26	24	not applicable
Latin America	3,433	3,387	3,529	3,490	0
Women	1,690	1,630	1,721	1,715	not applicable
Women (%)	49	48	49	49	not applicable
Number of employees with temporary contracts	55	67	12	8	not applicable
% of employees with temporary contracts	2	2	0	0	not applicable
Middle East and Africa (MEA)	1,366	1,323	1,247	1,250	0
Women	607	598	581	604	not applicable
Women (%)	44	45	47	48	not applicable
Number of employees with temporary contracts	182	420	59	9	not applicable
% of employees with temporary contracts	13	32	5	1	not applicable

¹ Employees whose contract type had not yet been recorded in our database by December 31, 2019 were divided up proportionally between the categories "employees with permanent contracts" and "employees with temporary contracts".

Employees by business sector

As of Dec. 31	2019	2020	2021	2022
Life Science employees	21,934	23,196	25,323	28,013
thereof women	9,487	10,175	11,255	12,473
thereof women (%)	43	44	44	45
Healthcare employees	18,136	17,463	17,269	17,339
thereof women	9,232	8,788	8,717	8,805
thereof women (%)	51	50	50	51
Electronics employees	7,329	7,228	7,432	8,262
thereof women	1,712	1,666	1,704	1,870
thereof women (%)	23	23	23	23

Employees by contract type

As of Dec. 31	2019	2020	2021	2022
Total employees	57,071	58,127	60,348	64,243
Number of employees with permanent contracts	52,276 ¹	53,034	55,514	59,587
% of employees with permanent contracts	92 ¹	91	92	93
thereof women	22,237 ¹	22,500	23,640	25,418
thereof women (%)	43 ¹	42	43	43
Number of employees with temporary contracts	4,795 ¹	5,093	4,834	4,656
% of employees with temporary contracts	8 ¹	9	8	7
thereof women	2,303 ¹	2,423	2,434	2,373
thereof women (%)	48 ¹	48	50	51
full-time employees	54,265	55,220	57,091	60,127
% full-time	95	95	95	94
thereof women	22,208	22,572	23,585	24,872
thereof women (%)	41	41	41	41
part-time employees	2,806	2,907	3,257	4,116
% part-time	5	5	5	6
thereof women	2,332	2,351	2,489	2,919
thereof women (%)	83	81	76	71

¹ Employees whose contract type had not yet been recorded in our database by December 31, 2019 were divided up proportionally between the categories "employees with permanent contracts" and "employees with temporary contracts".

New employees

As of Dec. 31	2019 ¹	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total number of new employee hires	7,924	6,669	8,960	10,682	647
by age group					
up to 29 years old	3,432	2,889	3,679	4,314	318
30 to 49 years old	4,055	3,347	4,610	5,397	302
50 or older	437	433	671	971	27
by gender					
Women	3,622	3,016	4,101	4,569	252
Men	4,302	3,653	4,859	6,113	395
by region					
Europe	2,529	2,160	2,567	3,015	647
North America	1,733	1,789	2,855	3,971	not applicable
Asia-Pacific (APAC)	2,729	2,206	2,803	3,071	not applicable
Latin America	578	396	579	460	not applicable
Middle East and Africa (MEA)	355	118	156	165	not applicable
Rate of new employee hires² (%)	14	11	15	17	8
by age group³					
up to 29 years old	43	43	41	40	49
30 to 49 years old	51	50	51	51	47
50 or older	6	7	8	9	4
by gender³					
Women	46	45	46	43	39
Men	54	55	54	57	61
by region³					
Europe	32	32	29	28	100
North America	22	27	32	37	not applicable
Asia-Pacific (APAC)	34	33	31	29	not applicable
Latin America	7	6	6	4	not applicable
Middle East and Africa (MEA)	5	2	2	2	not applicable

1 These figures exclude the approximately 2,400 Versum Materials and Intermolecular employees who are not classified as new hires because they joined our company as part of the acquisitions.

2 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.

3 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}

	2019	2020 ³	2021	2022 Merck Group	2022 thereof Merck KGaA
Total turnover rate	9.07	8.22	10.82	10.16	2.58
Turnover rate by gender					
Men	8.69	8.22	10.69	10.40	2.66
Women	9.54	8.22	11.00	9.93	2.44
Turnover rate by age group					
Up to 29 years old	13.13	11.30	16.64	15.91	2.99
30 to 49 years old	8.90	7.74	10.05	9.55	2.26
50 or older	7.03	7.52	9.22	8.05	2.94
Turnover rate by region					
Europe	5.72	5.64	6.00	5.91	2.58
North America	11.02	9.79	15.44	14.33	not applicable
Asia-Pacific (APAC)	13.18	10.60	14.66	12.84	not applicable
Latin America	13.47	11.40	12.95	13.38	not applicable
Middle East and Africa (MEA)	12.14	11.80	16.57	13.04	not applicable
Total number of leavers	4,863	4,721	6,354	6,358	215
by gender					
Men	2,621	2,697	3,575	3,673	144
Women	2,242	2,024	2,779	2,685	71
by age group					
Up to 29 years old	1,042	974	1,451	1,542	35
30 to 49 years old	2,898	2,677	3,545	3,569	100
50 or older	923	1,070	1,358	1,247	80
by region					
Europe	1,500	1,490	1,601	1,640	215
North America	1,264	1,281	2,078	2,182	not applicable
Asia-Pacific (APAC)	1,484	1,394	2,015	1,905	not applicable
Latin America	459	398	449	467	not applicable
Middle East and Africa (MEA)	156	158	211	164	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 2022, the average length of service for employees Group-wide was 9.2 years (2021: 9.5 years), with 15.4 years (2021: 15.7 years) for Merck KGaA employees.

Work-related accidents¹

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Lost Time Injury Rate (LTIR = workplace accidents resulting in missed days of work per one million hours worked)	1.6	1.3	1.2	1.2	2.0
by region					
Europe	2.6	2.4	2.1	1.7	2.0
North America	1.0	0.8	1.2	1.7	not applicable
Asia-Pacific (APAC)	0.2	0.1	0.1	0.3	not applicable
Latin America	1.7	0.8	0.4	0.6	not applicable
Middle East and Africa (MEA)	0.0	0.4	0.0	1.1	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.

We aim to sustainably lower our LTIR to 1.0 by 2025.

The LTIR is the key occupational safety indicator for the Merck Group as a whole. Therefore, we do not publish any other indicators such as workplace accidents, lost days or days of absence. The LTIR is not broken down by gender as this differentiation is not relevant to our strategic planning.

For Merck KGaA (about 13% of the employees of the Merck Group), we only report work-related illnesses if these have been certified as an occupational illness by the employers' liability insurance association. In 2022 period, two cases of work-induced illness were verified.

Employees who regularly receive a performance and development evaluation¹

	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
% of employees who receive a performance and development evaluation	98	98	98	98	100
by gender					
Women	98	98	98	99	100
Men	98	98	98	98	100
by employee category					
Senior management (Role 6+)	100	100	100	100	100
Middle management (Role 4 & 5)	100	100	100	100	100
Low management (Role 3)	100	100	100	100	100
Other employees (below Role 3)	98	98	98	98	100

¹ Employees whose role level had not yet been recorded in our database by December 31 of the reporting year are included under "other employees (below Role 3)".

Regular feedback and employee performance evaluations are essential to fairly ranking individual performance and to helping all employees follow their own career path at Merck. Our globally uniform Performance Management Process requires annual feedback meetings and performance assessments. Apart from evaluating employee performance, this helps us to identify individual development opportunities.

In Germany, all permanent employees have been participating in the Performance Management Process since 2013. In 2022, a total of 63,043 employees worldwide were involved in the process. The Performance Management Process is coordinated via our online platform HR4You.

Internationality of employees

As of Dec. 31	2019 ¹	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Number of nationalities	139	141	142	139	83
Number of nationalities in management positions (Role 4 or above)	73	75	79	78	34
% of non-Germans in management positions (Role 4 or above)	64	66	66	66	13

¹ In 2019, the position assessment had not yet been carried out for employees of Versum Materials as well as of Allergopharma.

Employee age by region

As of Dec. 31

Number of employees	Worldwide	North America	Europe	Merck KGaA	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
2021							
Up to 29 years old	9,129	2,219	3,341	1,125	2,912	482	175
thereof women	4,359	961	1,598	415	1,437	265	98
30 to 49 years old	36,157	6,939	15,653	4,288	10,260	2,404	901
thereof women	15,888	2,958	7,224	1,550	4,081	1,225	400
50 or older	15,062	4,912	8,223	2,668	1,113	643	171
thereof women	5,827	1,881	3,276	824	356	231	83
Average age	41.6	43.9	43.1	43.1	37.1	40.8	39.7
Total employees	60,348	14,070	27,217	8,081	14,285	3,529	1,247
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

Age of youngest employee

As of Dec. 31

	2019	2020	2021	2022
Age of youngest employee, excluding apprentices	18	18	18	18

Voluntary insurance benefits (voluntarily introduced and (co-) financed)

As of Dec. 31	2019 ¹	2020 ¹	2021	2022 Merck Group	2022 thereof Merck KGaA
% of employees with healthcare benefits ²	68	63	64	62	0
% of employees with Group accident insurance ³	36	41	41	37	6
% of employees with life insurance ⁴	58	56	59	59	0
% of employees with disability insurance (short-term and long-term) ⁵	39	39	39	43	0

1 The figures exclude Versum Materials and Intermolecular since the integration process was still underway at this point of time.

2 Any spend on voluntarily introduced and (co-) financed healthcare benefits for employees and possibly their dependents. Not taking into consideration any mandatory social security cover (mostly covered by an insurance policy).

3 Any spend on voluntarily introduced and (co-) financed accident insurance that pays a defined amount in case of death or disability caused by a work-related accident (not taking into consideration any mandatory social security cover, e.g. workman's compensation).

4 Any spend on voluntarily introduced and (co-) financed life insurance cover that pays a defined amount of money in case of natural death (not accidental).

5 Any spend on voluntarily introduced and (co-) financed insurance cover that disability pays for salary continuation in case of inability to work caused by an insured incident.

All our employees are where possible covered by either statutory or voluntary accident insurance and health benefits. Employees of Merck KGaA are covered by statutory insurance as stipulated by the regulations in force in Germany.

We offer a company pension in numerous countries along with various programs for supplemental company pensions and survivor's benefits.

The global benefits listed in the table above are designed to provide additional security to our workforce and their families and to improve their quality of life. Benefits represent voluntarily employer-initiated as well as employer-financed assistance to our workforce in addition to the regular compensation package.

Our benefits offer meaningful choices, where possible, to support a diverse workforce and are sensitive to the needs and customs of the employees who use them, regardless of country, age, family status, interests, or values.

Long-term pension obligations and post-employment benefits

€ million	2019	2020	2021	2022
Present value of all defined benefit obligations as of Dec. 31	5,644	6,352	5,995	4,287
Pension expenses	357	408	461	460

Depending on the legal, economic and fiscal circumstances prevailing in each country, different retirement benefit systems are provided for the employees. Generally, these systems are based on the years of service and salaries of the employees. Pension obligations include both defined benefit and defined contribution plans and comprise both obligations from current pensions and accrued benefits for pensions payable in the future. Further information can be found in the note on Provisions for employee benefits (p. 289-295, No. 33) of our Annual Report 2022.

Flexible working hours in Germany

As of Dec. 31	2019	2020	2021	2022
% of employees utilizing the "mywork@Merck" working model	43	48	51	55

In coordination with their teams and supervisors, employees taking advantage of "mywork@merck" can choose when and where they work.

Parental leave¹

As of Dec. 31	2019	2020	2021	2022
Number of employees with a right to parental leave	375	351	414	423
thereof women (recorded via maternity leave in the respective year)	239	225	255	287
thereof men (recorded via special paternity leave in the respective year)	136	126	159	136
Number of employees who took parental leave ²	542	538	617	564
thereof women	248	265	278	237
thereof men	294	273	339	327
Number of employees on parental leave who worked part time during their leave	164	104	198	164
thereof women	140	73	172	137
thereof men	24	31	26	27
Number of employees who returned from parental leave ²	536	529	597	581
thereof women	243	252	273	235
thereof men	293	277	324	346
Return to work rate (%)	98.9	98.3	96.8	103.01
thereof women	98.0	95.1	98.2	99.2
thereof men	99.7	101.5	95.6	105.81
Number of employees still working for Merck one year after their return from parental leave	496	490	556	_ ³
thereof women	218	220	250	_ ³
thereof men	278	270	306	_ ³
Retention rate (%)	92.5	92.6	93.1	_ ³
thereof women	89.7	87.3	91.6	_ ³
thereof men	94.9	97.5	94.4	_ ³

1 Figures pertain only to Merck KGaA (which accounted for around 13% in 2022). Figures are calculated on the basis of the data from one entire year, which also includes those employees who took parental leave during the calendar year but who had not yet returned by Dec. 31.

2 Since parental leave can be taken for a period ranging from one month to three years, it is possible for employees to be recorded across a period of up to four calendar years. This explains why the number of employees on parental leave exceeds the number of employees who have a right to it. It also explains why the "Number of employees who returned from parental leave" might exceed the "Number of employees who took parental leave".

3 Figure will be available on December 31, 2023.

Employees with disabilities¹ (%)

	2019	2020	2021	2022
Employees with disabilities	4.4	4.7	4.8	4.9

1 Only pertains to Merck KGaA (which accounted for around 13% of Merck Group employees in 2022, calculations based on the German Social Code IX - SGB IX).

Apprentices in Germany

As of Dec. 31	2019	2020	2021	2022
Number of apprentices	589	607	602	595
% of apprentices	4.3	4.6	4.1	4.0

Environment

Total greenhouse gas emissions (Scope 1 and 2 of the GHG Protocol)^{1,2}

metric kilotons	2019	2020 ³	2021	2022 Merck Group	2022 thereof Merck KGaA
Total CO₂eq⁴ emissions	621	2,028	1,843	1,667	148
Thereof					
direct CO ₂ eq emissions (Scope 1)	341	1,706	1,522	1,425	108
indirect CO ₂ eq emissions ⁵ (Scope 2)	280	322	321	242	40
Biogenic CO₂ emissions	13	13	15	13	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 Includes Versum Materials as of 2020.

4 eq = equivalent

5 The figures presented here have been calculated in accordance with the market-based method.

Our response to the [CDP Climate change](#) contains a detailed description of our calculation methods.

We have included the following gases in our calculation of direct and indirect CO₂eq emissions:

Direct CO₂ emissions: CO₂, HFCs, PFCs, CH₄, N₂O, NF₃, SF₆.

Indirect CO₂ emissions: CO₂.

In 2022, we emitted 0.07 kg of CO₂eq per euro of net sales.

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

in metric kilotons of CO ₂ eq ²	2019	2020	2021	2022
Total gross other indirect emissions	339	5,030	5,716	6,616
Purchased goods & services (category 1) ³	n/a	3,040	3,572	4,200
Capital goods (Category 2) ³	n/a	293	291	388
Fuel- and energy-related emissions, not included in Scope 1 or 2 (category 3)	127	102	143	121
Upstream transportation & distribution (category 4) ⁴	n/a	264	264 ⁵	319 ⁶
Waste generated in operations (category 5)	50	85	79	85
Business travel (category 6)	87	32	26	78
Employee commuting (category 7)	75	90	94	99
Upstream leased assets (category 8) ⁷	0	0	0	0
Downstream transportation & distribution (category 9) ⁴	n/a	8	8 ⁵	6 ⁶
Processing of sold products (category 10) ⁸	0	0	0	0
Use of sold products (category 11) ⁴	n/a	1,091	1,213	1,290 ⁹
End-of-life treatment of sold products (category 12) ⁴	n/a	23	23 ⁵	26 ⁹
Downstream leased assets (category 13)	0	2	2	2
Franchises (category 14) ¹⁰	0	0	0	0
Investments (category 15)	n/a	0	1	2

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 eq = equivalent

3 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.

4 Compared to other Scope 3 categories, the screening of the emissions in this category contains more uncertainties. Their impact cannot be estimated more precisely at this time. We are working on improving the accuracy of these data.

5 Due to high efforts for data preparation, we reference 2020 data for 2021.

6 Since 2022, we have applied a new calculation approach – a mix of primary data, distance-based data and a small share of spend-based data. The previous years' figures have not been recalculated retrospectively.

7 Already covered under Scope 1 and 2 emissions

8 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.

9 Due to high efforts for data preparation, we partly use 2020 data for 2022.

10 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.

Details on the calculation (methodology, assumptions, uncertainties) of the Scope 3 categories can be found in the [Scope 3 document](#).

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

Emissions of ozone-depleting substances

metric tons	2019	2020	2021	2022
Total emissions of ozone-depleting substances	1.0	2.2	1.5	1.1
CFC-11eq ¹	0.1	0.1	0.1	0.1

¹ CFC-11eq is a unit of measure used to compare the potential of various substances to deplete the ozone. Reference value 1 indicates the potential of CFC-11 to cause the depletion of the ozone layer.

Substances included: R-12, R-22, R-123, R-141b, R-401a, R-402a, R408a, R-409a, R-502, R-503.

Source for the emission factors: Montreal Protocol.

Other air emissions

metric kilotons	2019	2020	2021	2022
Volatile organic compounds (VOC)	0.3	0.3	0.3	0.3
Nitrogen oxide	0.3	0.2	0.3	0.2
Sulfur dioxide	0.010	0.004	0.004	0.005
Dust	0.010	0.010	0.020	0.020

The VOC, nitrogen oxide, sulfur dioxide, and dust emissions reported here are attributable to production activities as well as energy generation. These figures do not include emissions from vehicles. Emissions are determined partially based on measurements and partially based on calculations or estimates. Only some sites are required to measure individual parameters.

Transport of finished goods, by means of transportation

	2019	2020	2021	2022
% truck	70	70	71	73
% boat	19	22	21	19
% airplane	11	8	8	8
% rail	0	0	0	0.03

The figures contain the volumes of the biggest global distribution centers of our Life Science, Healthcare and Electronics business sectors. These figures pertain to the total weight of transported products and indicate the primary means of transport.

In shipping finished goods from our production sites to the local warehouses of our subsidiaries, we have been working to reduce the use of air shipping in favor of sea freight. This change aims to both reduce costs as well as lower transport-related CO₂ emissions.

In 2023, we used rail transportation for the first time.

Energy consumption¹

In GWh	2019	2020	2021	2022 Merck Group	2022 thereof Merck KGaA
Total energy consumption	2,178	2,374	2,454	2,432	586
Direct energy consumption	1,288	1,266	1,318	1,294	521
Natural gas	1,222	1,179	1,232	1,188	492
Liquid fossil fuels ²	33	52	48	70	29
Biomass and self-generated renewable energy	33	35	38	36	0
Indirect energy consumption	890	1,108	1,136	1,138	65
Electricity	745	945	958	984	65
Steam, heat, cold	145	163	178	154	0
Total energy sold	0.1	0.2	0.1	0.01	0.0
Electricity	0.1	0.2	0.1	0.01	0.0
Steam, heat, cold	0.0	0.0	0.0	0.0	0.0
In TJ					
Total energy consumption	7,839	8,546	8,834	8,755	2,110
Direct energy consumption	4,637	4,558	4,745	4,658	1,876
Natural gas	4,399	4,244	4,435	4,277	1,771
Liquid fossil fuels ²	119	187	173	252	104
Biomass and self-generated renewable energy	119	126	137	130	0
Indirect energy consumption	3,202	3,989	4,090	4,097	234
Electricity	2,682	3,402	3,449	3,542	234
Steam, heat, cold	520	587	641	554	0
Total energy sold	0.5	0.7	0.4	0.04	0.0
Electricity	0.5	0.7	0.4	0.04	0.0
Steam, heat, cold	0.0	0.0	0.0	0.0	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/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.

Our Darmstadt and Gernsheim sites in Germany consume the most energy, representing 24% of our Group-wide total. Here, fossil energy (coal, gas, etc.) accounts for approx. 42%, nuclear energy approx. 13% and renewable energies approx. 45% of the energy mix. Renewable energies account for a higher share of electricity generation at production sites in Switzerland, with nuclear energy taking the lead in France. Based on an estimated global energy efficiency of 37% for the conversion and distribution of generated electricity, this results in a primary energy consumption of 2,659 GWh for 2022. Based on an estimated global energy efficiency of 85% for heat/steam/cold, this results in a primary energy consumption of 181 GWh for 2022. This yields a total primary energy consumption of 2,840 GWh for 2022. (The calculation is based on factors stated in the “Manual for energy management in practice - Systematically reducing energy costs” published by DENA, 12/2012).

In 2022, our energy intensity relative to net sales totaled 0.11 kWh/€.

Water withdrawal

millions of m ³	2019	2020	2021	2022 Merck Group	2022 Water stress areas
Total water withdrawal	14.0	14.0	13.5	13.2	0.17
Surface water (rivers, lakes)	1.9	1.8	1.9	1.8	0.004
Groundwater	6.8	6.7	6.3	6.3	0.003
Drinking water (from local suppliers)	5.2	5.4	5.2	5.0	0.16
Rain water and other sources	0.05	0.06	0.06	0.06	0.004

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.

The volume of seawater and produced water withdrawn is not significant and is therefore not reported separately.

Water reused

millions of m ³	2019	2020	2021	2022
Water reused	23.3	22.0	23.5	20.7

The recirculating cooling system at our Darmstadt, Germany facility accounts for the majority of reused water as it allows the water to be re-utilized multiple times. The volume of reused water is thus greater than the total volume of consumed water.

Wastewater volume

	2019	2020	2021	2022 Merck Group	2022 Water stress areas
Total wastewater volume (millions of m³)	13.2	13.4	13.3	12.4	0.130
Wastewater discharged directly	9.3	9.2	9.5	8.6	0.000
Wastewater discharged to third parties	3.8	4.1	3.8	3.8	0.110

The volume of seawater and groundwater discharged is not significant and is therefore not reported separately.

Discrepancies between total wastewater volume and the sum of directly discharged wastewater and wastewater sent to third parties arise from other disposal methods, which, however, only result in minor amounts of wastewater. Direct discharges correspond to the “freshwater” classification of the GRI. Indirect discharges correspond to their “other water” classification.

Wastewater quality¹

	2019	2020	2021	2022
Chemical oxygen demand (metric tons of O ₂)	1,568	1,482	1,426	1,013
Phosphorous (metric tons)	12	15	11	10
Nitrogen (metric tons)	481	291	392	363
Nickel (kg)	32	30	37	46
Lead (kg)	34	37	15	16
Cadmium (kg)	6	6	3	5
Mercury (kg)	0	0	1	0

1. In alignment with ICCA reporting requirements specified by Cefic, we track heavy metal emissions from lead, cadmium, nickel, and mercury.

The wastewater treatment plant at our site in Gernsheim, Germany also treats wastewater from a neighboring municipality. The communal wastewater from this municipality is included in the emissions stated in the table.

Emissions are determined partially based on measurements and partially based on calculations or estimates. Only some sites are required to measure individual parameters.

These figures reflect the wastewater as it is when it leaves our facilities. Some of the substances in the water are then later removed by third-party purification plants before the water is ultimately discharged into the ecosystem.

Hazardous and non-hazardous waste

metric kilotons	2019	2020	2021	2022
Total waste	244	229	214	371
Hazardous waste disposed ¹	44	38	34	36
Non-hazardous waste disposed ¹	41	34	33	31
Hazardous waste recycled ²	78	90	84	84
Non-hazardous waste recycled ²	81	67	63	220

1 Disposed = incineration (without energy recovery) and landfill

2 Recycled = incineration (with energy recovery) and material recycling

Exported/Imported hazardous waste

metric kilotons	2019	2020	2021	2022
Exported ¹	4.3	4.0	4.6	3.7
Imported	0.000	0.000	0.000	0.000

1 Disposal primarily within the EU and the United States.

In 2022, approx. 3% of hazardous waste was shipped internationally.

Waste by disposal method

	2019	2020	2021	2022
Total waste (metric kilotons)	244	229	214	371
Disposed waste	85	72	66	67
Landfilled waste	26	17	18	20
Incinerated waste	59	55	48	47
Recycled waste	159	157	148	304
Material recycling	132	133	124	274
Waste-to-energy	27	24	24	30
Recycling rate (%)	65	69	69	82

As in previous years, the total waste generated continues to be heavily influenced by the waste from construction and remodeling activities. Construction, excavation and demolition waste accounted for 53% of our waste in 2022. Around 181 metric kilotons of construction, excavation and demolition waste was recycled.

Significant spills

	2019	2020	2021	2022
Total number of significant spills	0	0	0	2

Community

Spending on community engagement

€ million	2019	2020	2021	2022
Total spending	46.2	53.6	43.3	48.1

We calculate the value of pharmaceutical product donations according to the WHO Guidelines for Medicine Donations; for other product donations, we apply their fair value.

The main reasons for the decline in total spending in 2021 were lower Covid-19-related donations as well as a drop in demand for praziquantel tablets in the affected countries due to Covid-19.

Community engagement spending by region¹

	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
2021					
€ million	10.8	5.0	7.2	0.6	19.7
%	25	12	17	1	45
2022					
€ million	13.1	5.3	5.9	1.3	22.5
%	27	11	12	3	47

¹ This table presents the regions across the globe in which we support initiatives. For projects that benefit multiple regions, we have calculated the amount per region by dividing the project spending evenly per country.

Focus of our local community engagement¹

%	2019	2020	2021	2022
Health	33	36	33	33
Education and culture	38	43	45	32
Environment	3	1	2	5
Disaster relief	2	1	2	8
Other	24	19	18	22

¹ Based on number of projects

Motivations for our community engagement¹

%	2019	2020	2021	2022
Charitable activities	6	23	21	12
Community investment	91	72	76	86
Commercial initiatives in the community	3	5	3	2

1 Based on total spending on all projects

We categorize the motivations for our activities based on the London Benchmarking Group model as well as the guidelines of the Bertelsmann Foundation for corporate social responsibility. Projects that primarily aim to make improvements within the community are classified as community investment.

Initiatives that are predominantly aimed at company-relevant factors such as image or personnel recruitment are classified as commercial initiatives in the community. Charitable activities cover any other projects that benefit a charitable organization, but cannot be listed under either of the other two motivation categories due to missing data or their narrow scope.

GRI content index

General disclosures

GRI Standard and disclosure	Reference	Omission reason and Comment
2-1 Organizational details	Company profile List of shareholdings	
2-2 Entities included in the organization's sustainability reporting	Report profile List of shareholdings	
2-3 Reporting period, frequency and contact point	Report profile	
2-4 Restatements of information	Report profile	
2-5 External assurance	Assurance report	
2-6 Activities, value chain and other business relationships	Company profile Supply chain management Mica supply chain Report profile Fundamental information about the Group Macroeconomic and sector-specific environment	
2-7 Employees	Report profile Indicators: employees	Comment: We report employee figures in line with internal management categories, possibly independent of the region. The employment format "non-guaranteed hours employees" stipulated by the GRI does not represent a relevant employment category for us and is therefore not reported.
2-8 Workers who are not employees	Career with us	Omission reason: Information unavailable/incomplete Comment: Workers who are not employees (e.g. supervised temporary staff) are not logged in our employee data base.
2-9 Governance structure and composition	Sustainability strategy & goals Management Statement on corporate governance Procedures of the Boards Objectives of the Supervisory Board	

2-10 Nomination and selection of the highest governance body	Procedures of the Boards Objectives of the Supervisory Board Promote women in management positions Diversity policy	
2-11 Chair of the highest governance body	Statement on corporate governance	
2-12 Role of the highest governance body in overseeing the management of impacts	Sustainability strategy & goals Report of the supervisory board Risk & opportunities	
2-13 Delegation of responsibility for managing impacts	Sustainability strategy & goals	
2-14 Role of the highest governance body in sustainability reporting	Report profile	
2-15 Conflicts of interest	Information on corporate governance practices	
2-16 Communication of critical concerns	Sustainability strategy & goals Compliance management Indicators: business ethics Information on corporate governance practices	<p>Omission reason: Confidentiality constraints</p> <p>Comment: Due to the sensitive nature of critical concerns, these figures are only for internal use (except where external reporting is legally required). Significant additions to or changes in the risk register are disclosed in due course to the Executive Board on an ad hoc basis, as per stipulations in the risk policy.</p>
2-17 Collective knowledge of the highest governance body	Sustainability strategy & goals Information on corporate governance practices	
2-18 Evaluation of the performance of the highest governance body	Procedures of the boards Articles of association Compensation report	
2-19 Remuneration policies	Compensation report	
2-20 Process to determine remuneration	Compensation report Voting results Annual General Meeting 2022	
2-21 Annual total compensation ratio	Career with us	<p>Omission reason: Not applicable</p> <p>Comment: Competitive salaries and additional benefits not only increase our attractiveness as an employer; they also motivate our people and build loyalty to the company. The compensation we offer is based on market analyses in the relevant field, the value of the respective position, and the employee's skill set and performance.</p>

Compensation and benefits across the entire Group are defined by our global HR policies and frameworks. As far as possible, we strive to offer all our employees comparable compensation structures. Furthermore, we monitor our compliance with minimum standards. We do not consider the information required under GRI 2-21 to be relevant to assessing the fairness of our compensation structures.

2-22 Statement on sustainable development strategy	Letter from the CEO	
2-23 Policy commitments	Governance Compliance management Human rights	
2-24 Embedding policy commitments	Governance Compliance management Human rights Information on corporate governance practices	
2-25 Processes to remediate negative impacts	Sustainability strategy & goals Materiality analysis Compliance management Human rights Indicators: business ethics Report on Risks and Opportunities	
2-26 Mechanisms for seeking advice and raising concerns	Sustainability strategy & goals Stakeholder dialogue Compliance management	
2-27 Compliance with laws and regulations	Other provisions Compliance management Interactions with health systems Indicators: business ethics	
2-28 Membership associations	Stakeholder dialogue	
2-29 Approach to stakeholder engagement	Stakeholder dialogue	
2-30 Collective bargaining agreements	Corporate culture	
GRI Standard and disclosure	Reference	Omission reason and Comment
3-1 Process to determine material topics	Materiality analysis	
3-2 List of material topics	Materiality analysis	

Economic Standards

GRI Standard and disclosure	Reference	Omission reason and Comment
GRI 201: Economic Performance 2016		
3-3 Management of material topics	Company profile Statement on Corporate Governance Economic performance Pension schemes Report on Risks and Opportunities	
201-1 Direct economic value generated and distributed	Indicators: employees Indicators: economics Indicators: community Consolidated income statement Consolidated cash flow statement Operating activities Personnel expenses	
201-2 Financial implications and other risks and opportunities due to climate change	Climate action Water management TCFD index CDP Climate change CDP Water security Report on Risks and Opportunities	<p>Comment: We report in detail on various aspects of climate change as part of our participation in the CDP (formerly known as the Carbon Disclosure Project).</p>
201-3 Defined benefit plan obligations and other retirement plans	Indicators: employees Pension schemes	
201-4 Financial assistance received from government	Accounting: Property, plant and equipment Research and development costs	
GRI 202: Market Presence 2016		
3-3 Management of material topics	Career with us Corporate culture	
202-1 Ratios of standard entry level wage by gender compared to local minimum wage	Career with us Diversity, equity & inclusion	<p>Omission reason: Not applicable</p> <p>Comment: This indicator is not relevant to us, which is why we do not collect data on the ratio of the standard entry-level wage compared to the local minimum wage. Our Global Rewards Policies apply to all our subsidiaries worldwide and guarantee a systematic compensation structure. Both base pay and short-term variable compensation are oriented to the median</p>

		base pay of the relevant reference market. Our pay ranges are reviewed on an annual basis and reflect market conditions. We adhere to local minimum wage levels.
202-2 Proportion of senior management hired from the local community	Career with us Diversity, equity & inclusion	Omission reason: Not applicable Comment: We promote both the recruitment of local employees and their international deployment at all hierarchical levels. However, we do not record the proportion of local managers, as this is not relevant for the strategic personnel management of our company.
GRI 203: Indirect Economic Impacts 2016		
3-3 Management of material topics	Global health Prices of medicines Health capacity & awareness	
203-1 Infrastructure investments and services supported	Global health Health capacity & awareness Mica supply chain Community engagement	
203-2 Significant indirect economic impacts	Prices of medicines Health capacity & awareness Community engagement Materiality analysis	
GRI 204: Procurement Practices 2016		
3-3 Management of material topics	Sustainable supply chain management Mica supply chain Human rights	
204-1 Proportion of spending on local suppliers	Sustainable supply chain management	Omission reason: Not applicable Comment: We have no internal guidelines stipulating that preference be given to local vendors in allocating contracts and therefore do not collect this type of data. In some countries, local laws require contracts to be awarded to regional suppliers.
GRI 205: Anti-corruption 2016		
3-3 Management of material topics	Compliance management Responsible interactions with health systems	
205-1 Operations assessed for risks related to corruption	Compliance management Indicators: business ethics Report on Risks and Opportunities	

205-2 Communication and training about anti-corruption policies and procedures	Compliance management Indicators: business ethics	
205-3 Confirmed incidents of corruption and actions taken	Compliance management Indicators: business ethics Report on Risks and Opportunities	Comment: As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.
GRI 206: Anti-competitive Behavior 2016		
3-3 Management of material topics	Compliance management Responsible interactions with health systems	
206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Indicators: business ethics Report on Risks and Opportunities	

Environmental Standards

GRI Standard and disclosure	Reference	Omission reason and Comment
GRI 301: Materials 2016		
3-3 Management of material topics	Sustainable products & packaging	
301-1 Materials used by weight or volume	Sustainable products & packaging	<p>Omission reason: Information unavailable/incomplete</p> <p>Comment: We only record the weight of the raw materials that are directly used in our pharmaceuticals and chemicals, which came to 416 metric kilotons in 2022 (2021: 400 metric kilotons). Additionally, we utilize operating supplies and packaging materials, such as folding boxes, glass bottles and ampules.</p>
301-2 Recycled input materials used	Sustainable products & packaging	<p>Omission reason: Information unavailable/incomplete</p> <p>Comment: In all our endeavors, we attempt to efficiently utilize materials and recycle as much as possible. Where feasible, we use recycled materials (in packaging, for instance.) Overall, our company considers material consumption to be a major concern. There are few opportunities to use recycled material in our production processes because our business model puts us at the start of the value chain. We therefore do not collect such data at Group level. Individual data and measures are reported in the respective chapters.</p>
301-3 Reclaimed products and their packaging materials	Sustainable products & packaging	<p>Omission reason: Information unavailable/incomplete</p> <p>Comment: Owing to the multitude of products we supply and the minimal comparability of our various initiatives, we do not collect quantitative data at the Group level. The individual measures taken by our various businesses are reported in the respective chapters.</p>
GRI 302: Energy 2016		
3-3 Management of material topics	Climate action Environmental protection Sustainable products & packaging	
302-1 Energy consumption within the organization	Climate action Indicators: environment	

302-2 Energy consumption outside of the organization	Climate action Indicators: environment	Omission reason: Information unavailable/incomplete Comment: To date, we have not been tracking energy consumption outside our organization, but we are working to create more transparency on our Scope 3 emissions. Going forward, we will also make efforts to track energy consumption outside of our organization.
302-3 Energy intensity	Climate action Indicators: environment	
302-4 Reduction of energy consumption	Climate action Indicators: environment	
302-5 Reductions in energy requirements of products and services	Climate action Indicators: environment	
GRI 303: Water and Effluents 2018		
3-3 Management of material topics	Water management Environmental protection	
303-1 Interactions with water as a shared resource	Water management	
303-2 Management of water discharge-related impacts	Water management	
303-3 Water withdrawal	Water management Indicators: environment	Omission reason: Not applicable Comment: The amount of seawater and produced water withdrawn is not significant and is therefore not reported separately. The breakdown of the water withdrawal sources in accordance with the GRI categories "fresh water" and "other water" is not relevant for us owing to the high water quality required and is therefore not reported.
303-4 Water discharge	Water management Indicators: environment	Omission reason: Not applicable Comment: The volume of seawater and groundwater discharged is not significant and is therefore not reported separately.
303-5 Water consumption	Water management Indicators: environment	Omission reason: Not applicable Comment: Most of the water we use in our production streams is released back into aquatic ecosystems through direct or indirect discharges. Evaporation processes are not a material part of our manufacturing operations. At individual manufacturing sites, we incorporate small amounts of water into our products. We do not operate processes that withdraw water in relevant volumes from

the aquatic environment like incorporation in products or evaporation into the atmosphere. Neither do we operate technical installations like water reservoirs with the purpose of water withdrawal. Thus, water consumption is not material to our company.

GRI 304: Biodiversity 2016

3-3 Management of material topics	Environmental protection Sustainable products & packaging	
304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Environmental protection	Omission reason: Information unavailable/incomplete Comment: Our land use planning takes biodiversity impacts into account, with appropriate protective measures being taken on a case-by-case basis.
304-2 Significant impacts of activities, products and services on biodiversity	Environmental protection Materiality analysis	
304-3 Habitats protected or restored	Environmental protection	
304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Environmental protection	Omission reason: Information unavailable/incomplete Comment: Our land use planning takes biodiversity impacts into account, with appropriate protective measures being taken on a case-by-case basis.

GRI 305: Emissions 2016

3-3 Management of material topics	Climate action Environmental protection	
305-1 Direct (Scope 1) GHG emissions	Climate action Indicators: environment	
305-2 Energy indirect (Scope 2) GHG emissions	Climate action Indicators: environment	
305-3 Other indirect (Scope 3) GHG emissions	Climate action Indicators: environment CDP Climate change	
305-4 GHG emissions intensity	Climate action Indicators: environment	
305-5 Reduction of GHG emissions	Climate action Sustainable products & packaging Indicators: environment CDP Climate change	
305-6 Emissions of ozone-depleting substances (ODS)	Indicators: environment	

305-7 Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	Indicators: environment	
GRI 306: Waste 2020		
3-3 Management of material topics	Waste & recycling Environmental protection	
306-1 Waste generation and significant waste-related impacts	Waste & recycling	
306-2 Management of significant waste-related impacts	Waste & recycling	
306-3 Waste generated	Waste & recycling	
306-4 Waste diverted from disposal	Indicators: environment	
306-5 Waste directed to disposal	Waste & recycling Indicators: environment	
GRI 306: Effluents and Waste 2016		
306-3 Significant spills	Waste & recycling	
GRI 308: Supplier Environmental Assessment 2016		
3-3 Management of material topics	Sustainable supply chain management Mica supply chain	
308-1 New suppliers that were screened using environmental criteria	Sustainable supply chain management	Omission reason: Not applicable Comment: We do not report the “percentage of new suppliers that were screened using environmental criteria” since this information is not relevant for managing our sustainable supplier management activities.
308-2 Negative environmental impacts in the supply chain and actions taken	Sustainable supply chain management Mica supply chain	Omission reason: Information unavailable/incomplete Comment: We work closely with our strategic suppliers and monitor various risk domains via our supplier risk assessments. In this context, we help our suppliers to achieve improvements and to set up risk mitigation measures. The GRI disclosures 308-2-d and 308-2-e are not reported since they are not relevant for us.

Social Standards

GRI Standard and disclosure	Reference	Omission reason and Comment
GRI 401: Employment 2016		
3-3 Management of material topics	Career with us Corporate culture Human rights	
401-1 New employee hires and employee turnover	Indicators: employees	
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Career with us	Omission reason: Information unavailable/incomplete Comment: Part-time employees receive the same eligibility for employee benefits as full-time workers. Employees with temporary contracts, however, may not be entitled to all company benefits, such as a company pension.
401-3 Parental leave	Career with us Indicators: employees	
GRI 402: Labor/Management Relations 2016		
3-3 Management of material topics	Corporate culture	
402-1 Minimum notice periods regarding operational changes	Corporate culture	Omission reason: Not applicable Comment: The regulations on periods of notice vary worldwide. We apply the rules that are in force locally. There is no need for us to track periods of notice at Group level.
GRI 403: Occupational Health and Safety 2018		
3-3 Management of material topics	Health & safety Plant, process & transport safety	Comment: The disclosures under GRI 403 pertain to our employees as well as supervised temporary staff. They do not include employees of contractors. Consequently, not all the employee groups specified by GRI are reflected.
403-1 Occupational health and safety management system	Health & safety	
403-2 Hazard identification, risk assessment, and incident investigation	Health & safety Plant, process & transport safety	
403-3 Occupational health services	Health & safety	

403-4 Worker participation, consultation, and communication on occupational health and safety

[Health & safety](#)

Comment: Occupational health and safety committees are required by law in Germany. All employees of Merck KGaA are therefore represented by such committees, which operate at site level. These employees represent around 13% of our global workforce. The majority of sites outside Germany also have health and safety committees to represent their employees. The organization of these committees is the responsibility of our individual sites. Health and safety issues are governed Group-wide by our EHS Policy. The organizational implementation of this policy is the responsibility of our individual sites and is subject to local laws and regulations. Merck KGaA, which accounts for approximately 13% of our global workforce, has company agreements in place on occupational health and safety.

403-5 Worker training on occupational health and safety

[Health & safety](#)
[Plant, process & transport safety](#)

403-6 Promotion of worker health

[Health & safety](#)

403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships

[Health & safety](#)
[Human rights](#)
[Plant, process & transport safety](#)

403-8 Workers covered by an occupational health and safety management system

[Health & safety](#)

403-9 Work-related injuries

[Health & safety](#)
[Plant, process & transport safety](#)
[Indicators: employees](#)

Comment: We have identified the lost time injury rate (LTIR) as a key performance indicator for our company.

403-10 Work-related ill health

[Health & safety](#)
[Plant, process & transport safety](#)
[Indicators: employees](#)

Omission reason: Information unavailable/incomplete

Comment: At Group level, we do not collect data regarding the types of potential work-related illnesses or fatalities. Our sites may collect data on the incidence of occupational illness as needed.

GRI 404: Training and Education 2016

3-3 Management of material topics	Career with us Diversity, equity & inclusion Corporate culture	
404-1 Average hours of training per year per employee	Career with us	<p>Omission reason: Not applicable</p> <p>Comment: We do not keep track of the average hours our employees spend on vocational training and continuing education because this indicator does not have any bearing on the quality or success of our efforts.</p>
404-2 Programs for upgrading employee skills and transition assistance programs	Sustainable supply chain management Human rights Product-related crime Plant, process & transport safety Career with us Corporate culture Diversity, equity & inclusion Environmental protection	
404-3 Percentage of employees receiving regular performance and career development reviews	Career with us Indicators: employees	

GRI 405: Diversity and Equal Opportunity 2016

3-3 Management of material topics	Diversity, equity & inclusion Career with us Corporate culture Objectives of the Supervisory Board with respect to its composition	
405-1 Diversity of governance bodies and employees	Diversity, equity & inclusion Indicators: employees The Executive Board The Supervisory Board Objectives of the Supervisory Board with respect to its composition Diversity policy	

405-2 Ratio of basic salary and remuneration of women to men	Career with us Diversity, equity & inclusion	Omission reason: Not applicable Comment: As a core principle, our compensation systems and processes do not distinguish between women and men. The salaries we offer are predicated on the respective job description and are based on our Global Job Catalog, which has fixed salary bands that are identical for men and women. Variable salary components that fall under performance-based compensation are paid based on whether mutually agreed targets have been achieved. A performance management system governs this process.
GRI 406: Non-discrimination 2016		
3-3 Management of material topics	Diversity, equity & inclusion Corporate culture	
406-1 Incidents of discrimination and corrective actions taken	Diversity, equity & inclusion Indicators: business ethics	
GRI 407: Freedom of Association and Collective Bargaining 2016		
3-3 Management of material topics	Sustainable supply chain management Human rights Corporate culture	
407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Sustainable supply chain management Human rights	
GRI 408: Child Labor 2016		
3-3 Management of material topics	Sustainable supply chain management Mica supply chain Human rights	
408-1 Operations and suppliers at significant risk for incidents of child labor	Sustainable supply chain management Human rights Mica supply chain	
GRI 409: Forced or Compulsory Labor 2016		
3-3 Management of material topics	Sustainable supply chain management Mica supply chain Human rights	
409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	Sustainable supply chain management Mica supply chain Human rights	

GRI 410: Security Practices 2016

3-3 Management of material topics	Human rights Sustainable supply chain management	
410-1 Security personnel trained in human rights policies or procedures	Human rights	Omission reason: Information unavailable/incomplete Comment: As part of our Security Governance Framework, we plan to integrate human rights aspects even more strongly into security-relevant processes, for instance in training courses for security personnel. To this end, we will offer webinars on the topic of human rights on the established Security Academy platform in regular intervals, among other things.

GRI 414: Supplier Social Assessment 2016

3-3 Management of material topics	Sustainable supply chain management Mica supply chain Human rights	
414-1 New suppliers that were screened using social criteria	Sustainable supply chain management	Omission reason: Not applicable Comment: We do not report the “percentage of new suppliers that were screened using social criteria” since this information is not relevant for managing our sustainable supplier management activities.
414-2 Negative social impacts in the supply chain and actions taken	Sustainable supply chain management Mica supply chain	

GRI 415: Public Policy 2016

3-3 Management of material topics	Stakeholder dialogue	
415-1 Political contributions	Stakeholder dialogue	

GRI 416: Customer Health and Safety 2016

3-3 Management of material topics	Clinical studies Patient safety Product-related crime Chemical product safety Sustainable products & packaging Report on Risks and Opportunities	
416-1 Assessment of the health and safety impacts of product and service categories	Chemical product safety	

416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Clinical studies Chemical product safety Report on Risks and Opportunities	Comment: As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.
GRI 417: Marketing and Labeling 2016		
3-3 Management of material topics	Compliance management Responsible interactions with health systems Patient safety Chemical product safety	
417-1 Requirements for product and service information and labeling	Patient safety Chemical product safety	Comment: All pharmaceuticals are subject to reporting and notification requirements, which we fulfill. In line with the statutory requirements, we provide our customers with easily accessible and relevant information on the safe handling and use of our chemical products. We report on the individual requirements in the respective chapters.
417-2 Incidents of non-compliance concerning product and service information and labeling	Patient safety Chemical product safety Report on Risks and Opportunities	
417-3 Incidents of non-compliance concerning marketing communications	Report on Risks and Opportunities	Comment: As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.
GRI 418: Customer Privacy 2016		
3-3 Management of material topics	Data protection & cyber security Clinical studies	
418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	Data protection & cyber security Clinical studies Indicators: business ethics	

Additional material topics

Additional material topics

Clinical studies

3-3 Management of material topics [Clinical studies](#)

Animal welfare

3-3 Management of material topics [Animal welfare](#)

Bioethics

3-3 Management of material topics [Bioethics](#)

Digital ethics

3-3 Management of material topics [Digital ethics](#)

Health for all (incl. prices of medicines, access to health, health awareness)

3-3 Management of material topics [Global health](#)
[Open innovation sharing](#)
[Prices of medicines](#)
[Health capacity & awareness](#)

Product-related crime

3-3 Management of material topics [Product-related crime](#)

SASB index

SASB disclosure 2022

We integrated our Sustainability Accounting Standards Board (SASB) disclosures into our 2022 Sustainability Report. In addition to our disclosures pursuant to the SASB standard “Biotechnology & Pharmaceuticals”, we voluntarily report information for the “Medical Equipment & Supplies” and “Semiconductors” industries. We thus cover our three business sectors. With our voluntary SASB disclosures, we want to meet the increasing demands of our investors and other stakeholders. The reported data provide transparent, financially material and meaningful information on sustainability. To meet the evolving interests and requirements of our stakeholders in the future as well, we will continuously develop and expand our SASB reporting.

The SASB disclosures were not part of the [limited assurance engagement](#) conducted by an independent auditor for our 2022 Sustainability Report.

Biotechnology & Pharmaceuticals

Safety of Clinical Trial Participants		
HC- BP-210a.1	Discussion, by world region, of management process for ensuring quality and patient safety during clinical trials	Clinical studies Patient safety R&D: Positions & Policies (Healthcare)
HC- BP-210a.2	Number of FDA Sponsor Inspections related to clinical trial management and pharmacovigilance that resulted in: (1) Voluntary Action Indicated (VAI) and (2) Official Action Indicated (OAI)	There were no FDA Good Clinical Practice (GCP) sponsor inspections related to clinical trials in 2022.
HC- BP-210a.3	Total amount of monetary losses as a result of legal proceedings associated with clinical trials in developing countries	Not reported
Access to Medicines		
HC- BP-240a.1	Description of actions and initiatives to promote access to health care products for priority diseases and in priority countries as defined by the Access to Medicine Index	Global Health Open innovation sharing Prices of medicines Health capacity & awareness
HC- BP-240a.2	List of products on the WHO List of Prequalified Medicinal Products as part of its Prequalification of Medicines Programme (PQP)	Currently there is no product on the list.
Affordability & Pricing		
HC- BP-240b.1	Number of settlements of Abbreviated New Drug Application (ANDA) litigation that involved payments and/or provisions to delay bringing an authorized generic product to market for a defined time period	Not reported

HC- BP-240b.2	Percentage change in: (1) average list price and (2) average net price across U.S. product portfolio compared to previous year	The following overview shows the percentage change in the average list price (WAC) of our Healthcare US product portfolio compared to the previous year: <ul style="list-style-type: none"> ◆ Rebif®: 4.0% ◆ Mavenclad®: 4.7% ◆ Bavencio®: 3.3% ◆ Gonal-f®: 6.4% ◆ Cetrotide®: 6.4% ◆ Ovidrel®: 6.4% ◆ Serostim®: 6.1% ◆ Saizen®: 4.9% See also: Prices of medicines
HC- BP-240b.3	Percentage change in: (1) list price and (2) net price of product with largest increase compared to previous year	We only report the percentage change in average list price across our U.S. product portfolio. The largest increase compared with the previous year amounted to 6.4% (Gonal-f®, and Ovidrel®).
Drug Safety		
HC- BP-250a.1	List of products listed in the Food and Drug Administration's (FDA) MedWatch Safety Alerts for Human Medical Products database	See FDA website: <ul style="list-style-type: none"> ◆ Safety information and adverse event reporting program ◆ Adverse event reporting system (FAERS) public dashboard
HC- BP-250a.2	Number of fatalities associated with products as reported in the FDA Adverse Event Reporting System	See FDA website: Adverse event reporting system (FAERS) public dashboard
HC- BP-250a.3	Number of recalls issued, total units recalled	In 2022, we had three drug product recalls in total. None of these recalls was global; they affected individual countries only. None of the recalls was related to the USA. None of the recalls was related to serious injury or fatality, all were either Class II or III. According to our internal policies, any recall type is reported and discussed with the relevant national regulatory authority, including the U.S. FDA. All recall processes are managed under a Global Standard Procedure "Product Recall and Withdrawal Management" which is applied worldwide for medicinal products (pharmaceutical prescription, biological) and devices.
HC- BP-250a.4	Total amount of product accepted for take-back, reuse, or disposal	We do not take back products for reuse. In line with legal requirements in each country we take back products for disposal.
HC- BP-250a.5	Number of FDA enforcement actions taken in response to violations of current Good Manufacturing Practices (cGMP), by type	We had no such FDA enforcement actions in 2022.

Counterfeit Drugs

HC- BP-260a.1	Description of methods and technologies used to maintain traceability of products throughout the supply chain and prevent counterfeiting	Product-related crime
HC- BP-260a.2	Discussion of process for alerting customers and business partners of potential or known risks associated with counterfeit products	We have implemented processes and procedures to ensure that all suspected counterfeit medicines are assessed by a team of experts. The scope of any notification that we provide is the outcome of strategic alignment between relevant functions (e.g. Medical, Procurement, Legal, Quality, Corporate Security, Regulatory Affairs, Communications). Levels of details and format of any notification, including the HA information and collaboration, dedicated patient communication, information/awareness communication to distributors, pharmacies, physicians etc. about the presence of counterfeit or diverted products in the market, is decided on a case-by-case basis in accordance with the identified risks and taking into account corporate, legal and regulatory responsibilities. See also: Product-related crime
HC- BP-260a.3	Number of actions that led to raids, seizure, arrests, and/or filing of criminal charges related to counterfeit products	Product-related crime

Ethical Marketing

HC- BP-270a.1	Total amount of monetary losses as a result of legal proceedings associated with false marketing claims	Not reported
HC- BP-270a.2	Description of code of ethics governing promotion of off-label use of products	Responsible interactions with health systems

Employee Recruitment, Development & Retention

HC- BP-330a.1	Discussion of talent recruitment and retention efforts for scientists and research and development personnel	Career with us Diversity, equity and inclusion
HC- BP-330a.2	(1) Voluntary and (2) involuntary turnover rate for: (a) executives/senior managers, (b) mid-level managers, (c) professionals, and (d) all others	Indicators: employees

Supply Chain Management

HC- BP-430a.1	Percentage of (1) entity's facilities and (2) Tier I suppliers' facilities participating in the Rx-360 International Pharmaceutical Supply Chain Consortium audit program or equivalent third-party audit programs for integrity of supply chain and ingredients	<p>Our Healthcare business sector does not participate in the Rx-360 International Pharmaceutical Supply Chain Consortium. However, our facilities are frequently audited by the respective health authorities of the countries in which we distribute our healthcare products.</p> <p>As a major supplier to the pharmaceutical industry, our Life Science business sector participates in the Rx-360 audit program.</p> <p>Regarding our supplier base, we have access to sustainability audits and assessments of our suppliers through our membership in the industry initiatives "Together for Sustainability" (TfS) and "Pharmaceutical Supply Chain Initiative" (PSCI).</p> <p>See also: Supply chain management</p>
------------------	--	---

Business Ethics

HC- BP-510a.1	Total amount of monetary losses as a result of legal proceedings associated with corruption and bribery	Not reported
HC- BP-510a.2	Description of code of ethics governing interactions with health care professionals	Responsible interactions with health systems Compliance management

Activity metrics

HC-BP-000.A	Number of patients treated	<p>In 2022, our Healthcare medicines were used to treat around 94 million patients. Additionally, we donated more than 200 million praziquantel tablets, enough to treat schistosomiasis in more than 80 million school-aged children in 2022.</p> <p>See also: Global Health</p>
HC-BP-000.B	Number of drugs (1) in portfolio and (2) in research and development (Phases 1-3)	<p>Our Healthcare portfolio</p> <p>Research & Development (Healthcare)</p> <p>Our Healthcare pipeline</p>

Medical Equipment & Supplies

Affordability & Pricing

HC-MS-240a.1	Ratio of weighted average rate of net price increases (for all products) to the annual increase in the U.S. Consumer Price Index	Not reported
HC-MS-240a.2	Description of how price information for each product is disclosed to customers or to their agents	Our Life Science portfolio

Product Safety

HC-MS-250a.1	Number of recalls issued, total units recalled	<p>We conduct monthly reviews of key performance quality indicators which include a review of multiple quality metrics including number of recalls. Quarterly trends are evaluated and reported through management reviews.</p> <p>In 2022, there were no recalls for our Life Science business.</p>
HC-MS-250a.2	List of products listed in the FDA's MedWatch Safety Alerts for Human Medical Products database	In 2022, there were no Life Science products listed in the FDA's MedWatch Safety Alerts for Human Medical Products database .
HC-MS-250a.3	Number of fatalities related to products as reported in the FDA Manufacturer and User Facility Device Experience database	In 2022, there were no fatalities related to our Life Science products reported to the FDA's MedWatch Safety Alerts for Human Medical Products database .
HC-MS-250a.4	Number of FDA enforcement actions taken in response to violations of current Good Manufacturing Practices (cGMP), by type	Life Science received one U.S. FDA 483 forms in 2022.

Ethical Marketing

HC-MS-270a.1	Total amount of monetary losses as a result of legal proceedings associated with false marketing claims	Not reported
HC-MS-270a.2	Description of code of ethics governing promotion of off-label use of products	<p>Before any products can be purchased from our Life Science platform, we use a customer screening process to guard against the purchase of our products for illegal purposes. Core steps of this process cover data sourcing, hazard assessment, safe-use/risk assessment and labels/safety data sheets. Besides our own process, we cooperate with responsible authorities in the U.S. (FBI and the Bureau of Alcohol, Tobacco, Firearms and Explosives, ATF), as well as international authorities (Interpol). If we become aware that any of our Life Science products is used beyond our marketed intention, we evaluate the situation to determine whether to continue sales or not. Proper use of our products is included in our Terms and Conditions under Use of products.</p>

See also:

[Chemical product safety](#)

Product Design & Lifecycle Management

HC-MS-410a.1	Discussion of process to assess and manage environmental and human health considerations associated with chemicals in products, and meet demand for sustainable products	We assess environmental, human health, and further sustainability aspects of chemical products that we are sourcing and/or producing and selling. Furthermore, we screen our entire Life Science portfolio against growing demands arising from external stakeholders. For example, in alignment with the European Chemicals Strategy for Sustainability (CSS) we work towards a more sustainable product portfolio. Our Product Stewardship Council drives the transformation of existing products by considering appropriate measures like the substitution of chemical substances. Regarding future products, the selection of benign substance alternatives is done during ideation and early R&D through our Design for Sustainability program. In support of this, we have developed a tool which monitors latest chemical regulations. Besides flagging banned substances, it also flags substances that are already considered critical but not yet regulated. In addition to this, experts of the Chemicals Regulations teams are directly consulted for further insights and advice.
--------------	--	--

See also:

[Chemical product safety](#)

[Sustainable products & packaging](#)

HC-MS-410a.2	Total amount of products accepted for take-back and reused, recycled, or donated, broken down by: (1) devices and equipment and (2) supplies	Since 2013, we have been partnering with Seeding Labs, a non-profit organization dedicated to equipping scientists in resource-limited countries with scientific equipment and support. In 2022, we donated 434 items of scientific equipment valued at more than \$699,148.
--------------	--	--

See also:

[Sustainable products & packaging](#)

[Sustainability and Social Business Innovation](#)

Supply Chain Management

HC-MS-430a.1	Percentage of (1) entity's facilities and (2) Tier I suppliers' facilities participating in third-party audit programs for manufacturing and product quality	<p>As a major supplier to the pharmaceutical industry, our Life Science business participates in the Rx-360 audit program. The Life Science facilities are regularly audited by customers and respective health authorities for regulated products.</p> <p>(1) Rx-360 audit programs are conducted across the Life Science business on a multi-year cycle with approximately 15% of our manufacturing facilities audited annually.</p> <p>(2) Approximately 5% of our tier 1 supplier facilities participated in third party audit programs such as Rx-360.</p>
HC-MS-430a.2	Description of efforts to maintain traceability within the distribution chain	Product safety (Life Science) Quality & regulatory management (Life Science)
HC-MS-430a.3	Description of the management of risks associated with the use of critical materials	Sustainable supply chain management

Business Ethics

HC-MS-510a.1	Total amount of monetary losses as a result of legal proceedings associated with bribery or corruption	Not reported
HC-MS-510a.2	Description of code of ethics governing interactions with health care professionals	Responsible interactions with healthcare systems Compliance management

Activity metrics

HC-MS-000.A	Number of units sold by product category	Not reported
-------------	--	--------------

Semiconductors

Greenhouse Gas Emissions		
TC- SC-110a.1	(1) Gross global Scope 1 emissions	Indicators: environment
	(2) amount of total emissions from perfluorinated compounds	CDP Climate change
TC- SC-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Climate action
Energy Management in Manufacturing		
TC- SC-130a.1	(1) Total energy consumed	Indicators: environment
	(2) percentage grid electricity	40%
		See also: Indicators: environment
	(3) percentage renewable	Indicators: environment
Water Management		
TC- SC-140a.1	(1) Total water withdrawn	Indicators: environment
	(2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Water management CDP Water Security
Waste Management		
TC- SC-150a.1	Amount of hazardous waste from manufacturing, percentage recycled	Indicators: environment
Employee Health & Safety		
TC- SC-320a.1	Description of efforts to assess, monitor, and reduce exposure of employees to human health hazards	Health and safety
TC- SC-320a.2	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations	Not reported
Recruiting & Managing a Global & Skilled Workforce		
TC- SC-330a.1	Percentage of employees that are	Indicators: employees
	(1) foreign nationals and	
	(2) located offshore	Indicators: employees

Product Lifecycle Management		
TC-SC-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	Not reported
TC-SC-410a.2	Processor energy efficiency at a system-level for:	Not applicable
	(1) servers,	
	(2) desktops,	Not applicable
	(3) laptops	Not applicable
Materials Sourcing		
TC-SC-440a.1	Description of the management of risks associated with the use of critical materials	Research & Development (Electronics) Report on risks and opportunities
Intellectual Property Protection & Competitive Behavior		
TC-SC-520a.1	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations	Not reported
Activity metrics		
TC-SC-000.A	Total production	Not reported
TC-SC-000.B	Percentage of production from owned facilities	Not reported

TCFD index

TCFD disclosure 2022

The Task Force on Climate-related Financial Disclosures (**TCFD**) aims to develop consistent, comparable and accurate climate-related financial disclosures. Companies can use this data to provide information to investors, lenders, insurers, and other **stakeholders**, allowing them to assess and analyze climate-related risks and opportunities. TCFD reporting was not part of the **limited assurance engagement** conducted by an independent auditor for our 2022 Sustainability Report.

Our TCFD disclosure is based on our responses to the **CDP Climate Change answers** as well as a qualitative climate scenarios which we conducted this year for the first time. Going forward, we plan to continue expanding our quantitative disclosures on climate-related topics as we increasingly integrate the TCFD recommendations into our businesses.

Governance

TCFD core elements	Required information	CDP climate change questionnaire 2022 reference
Disclose the organization's governance around climate-related risks and opportunities.	A. Executive Board's oversight of climate-related risks and opportunities	C1.1a (p.4) C1.1b (p.5) C2.2 (p.11)
	B. Management's role in assessing and managing climate related risks and opportunities	C1.2a (p.7)
Related Chapters	Sustainability strategy Climate action	

Strategy

TCFD core elements	Required information	CDP climate change questionnaire 2022 reference
Disclose the actual and potential impacts of climate related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	A. Description of climate-related opportunities and risks the organization has identified over the short, medium and long term	C2.1a (p.9) C2.2 (p.11) C2.3a (p.16)
	B. Impact of climate-related risks on the organization's businesses, strategy, and financial planning	C3.3 (p.29) C3.4a (p.32)
	C. Resilience of the organization's strategy, taking into consideration different climate-related scenarios	C3.2b (p.28)
Related Chapters	Sustainability strategy Climate action	

Risk management

TCFD core elements	Required information	CDP climate change questionnaire 2022 reference
Disclose how the organization identifies, assesses, and manages climate-related risks.	A. Organization's processes for identifying and assessing climate-related risks	C2.2 (p.11) C2.2a (p.13)
	B. Organization's processes for managing climate-related risks	C2.2 (p.11)
	C. Integration of processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	C2.2 (p.11)
Related Chapters	Compliance management Climate action	

Metrics and targets

TCFD core elements	Required information	CDP climate change questionnaire 2022 reference
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	A. Metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	C4.1 (p.32) C4.2 (p.39) C5 (p.44) C7 (p.63) C8 (p.66)
	B. Disclosure of Scope 1, Scope 2, and Scope 3 greenhouse gas (GHG) emissions and the related risks	C6.1 (p.49) C6.3 (p.49) C6.5 (p.51) C7 (p.63)
	C. Targets used by the organization to manage climate-related risks and opportunities and performance against targets	C4.1 (p.32) C4.1a (p.33) C4.2 (p.39)
Related Chapters	Climate action Environmental protection Water management Waste & recycling	

Climate Scenarios

In 2022, we developed climate scenarios in accordance with the recommendation of the Task Force on Climate-Related Financial Disclosure (TCFD). Climate scenarios allow us to identify, assess and manage climate-related risks and opportunities we could face under different hypothetical futures. Risks and opportunities were developed in collaboration with our three business sectors Life Science, Healthcare and Electronics, as well as other functions like Finance, Environmental Health and Safety, and Group Corporate Sustainability. The outcome of the exercise was shared with the Merck Sustainability Board and the business sectors. Results can be taken into consideration in relevant processes, projects and decisions in the future. Additionally, we plan to quantify the effects of these climate-related risks and opportunities on our business sectors in 2023 to assess their financial impact.

We developed two qualitative scenarios, not considering mitigating measures, by asking ourselves the following questions: What are the relevant risk and opportunity drivers in the scenario narratives? What are the most relevant business activities along our value chain? And what risks and opportunities are most relevant for us along the value chain in 2030 and 2050? For both scenarios, we rely on the climate impact pathways, developed by an external consultancy, which describe the translation of risk types into material business impacts.

Physical and transitional risks and opportunities

Physical risks

If we do not contain climate change, more physical risks will materialize.

Acute



Cyclones & hurricanes



Floods



Drought



Fire



Heat waves



Sea level rise

Chronic

Transition risks

If we embark on a transition path, more transition risks will materialize.



Policy and legal



Technology



Markets



Reputation

...but also transition opportunities

At the same time, the transition can also open opportunities.



Resource efficiency



Energy source



Products and services



Markets



Resilience

The physical risk and opportunities analysis (4 °C)

The physical risk and opportunities analysis focuses on various physical hazards that could occur due to continuous and increased production of greenhouse gas emissions and a global temperature increase of 4 °C. In this scenario, the aggravation of physical risks is expected to be the most extreme. Physical risks are analyzed at country level along the value chain and at site level for selected production sites. Ten production sites were selected based on their financial impact, regulatory requirements and geographic distribution.

Within the value chain, own operations could be most affected by physical risks, including flooding, sea level rises and tropical cyclones. Even if supplier countries are affected by climate-related physical risks, the impact for our company could be limited because of a diversified supply chain. As an opportunity, Merck could also benefit by helping to contain the spread of infectious diseases that increase in line with changing climatic conditions.

The transition risk and opportunities analysis (1.5 °C)

Climate-related transition risks were analyzed along the whole value chain for suppliers, customers, transport as well as our own operations. Risks were assessed on a business sector basis for Life Science, Healthcare and Electronics, taking into consideration regional and product-specific differences. The scenario represents the ambitious target of the Paris Agreement to reach net zero emissions by 2050.

Supply Chain

In the applied transition scenario, the phasing out of fossil fuels and the increased use of renewable energies could lead to decreasing energy costs. These decreasing energy costs may lead to opportunities along the supply chain with lower prices for transport and packaging, as well as for chemicals and pharmaceutical raw materials. However, organic chemicals are an exception, as their production consumes large amounts of energy, and they are partially reliant on fossil fuels. This reliance on fossil fuels could result in CO₂ costs and thus, indirectly, influence procurement prices. At the same time, the use of renewable energies and more efficient production processes in the chemical sector could limit the impact of increasing CO₂ costs. As the demand for electronic products is expected to increase due to continued digitalization and automation, the prices for special equipment in this sector could increase, affecting supply costs for our Electronics business sector.

Production process

In the production process, electricity costs have a high cost share. As electricity costs are decreasing in the transition risk scenario, this could represent an opportunity. Also gas is used in production; however, prices are expected to remain relatively constant. The main risk is therefore expected to be increasing prices for greenhouse gas emissions if gas usage remains at the same level. In this scenario, the disposal of hazardous waste will show a significant price increase after 2030.

Demand

Demand in Life Science for solutions and equipment as well as demand in the Healthcare sector could be positively impacted by higher gross domestic product and population growth, enabling broader sections of the population to gain access to medical solutions, medical equipment and pharmaceuticals. In the Electronics business sector, demand for the whole product range could further increase. Growing demand for semiconductors and other electronic products is linked to a generally increasing trend towards digitalization and automation across sectors. Semiconductors are already the main growth driver for the Electronics business sector. In addition, growth in the real estate and automotive sectors driven by economic and population growth could positively impact the Display Solutions and Surface Solutions business units.

Assurance report

Limited Assurance Report of the Independent Auditor regarding Sustainability Information¹

To the Executive Board of Merck KGaA, Darmstadt

We have performed an independent limited assurance engagement on the qualitative and quantitative disclosures on sustainability in the “Sustainability Report 2022” (further “Sustainability Report”), published at <https://www.merckgroup.com/en/sustainability-report/2022/>, of Merck KGaA, Darmstadt, (further “Company” or “Merck”) for the period from January 1 to December 31, 2022.

It was not part of our engagement to review product- or service-related information, references to external information sources, expert opinions, future-related statements and information contained in the SASB and TCFD indices in the Sustainability Report.

As described in the Sustainability Report, Merck engaged external providers to perform assessments and audits. The evaluation of the adequacy and accuracy of the conclusions from these external assessments was not part of our limited assurance engagement.

Management’s Responsibility

The legal representatives of the Company are responsible for the preparation of the Sustainability Report in accordance with the Reporting Criteria. Merck applies the principles and standard disclosures of the Standards of the Global Reporting Initiative (GRI) in combination with the Corporate Accounting and Reporting Standard (Scope 1 and Scope 2) and the Corporate Value Chain Standard (Scope 3) of the Greenhouse Gas Protocol initiative by the World Resources Institute and the World Business Council for Sustainable Development (WBCSD) as Reporting Criteria (further “Reporting Criteria”).

The responsibility of the legal representatives includes the selection and application of appropriate methods to prepare the Sustainability Report and the use of assumptions and estimates for individual qualitative and quantitative sustainability disclosures which are reasonable under the circumstances. Furthermore, the legal representatives are responsible for the internal controls they deem necessary for the preparation of the Sustainability Report that is free of – intended or unintended – material misstatements.

Independence and Quality Assurance on the Part of the Auditing Firm

In performing this engagement, we applied the legal provisions and professional pronouncements regarding independence and quality assurance, in particular the Professional Code for German Public Auditors and Chartered Accountants (in Germany) and the quality assurance standard of the German Institute of Public Auditors (Institut der Wirtschaftsprüfer, IDW) regarding quality assurance requirements in audit practice (IDW QS 1).

Practitioner's Responsibility

It is our responsibility to express a conclusion on the Sustainability Report based on our work performed within a limited assurance engagement.

We conducted our work in the form of a limited assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of Historical Financial Information" and the International Standard on Assurance Engagements (ISAE) 3410: "Assurance Engagements on Greenhouse Gas Statements", published by IAASB. Accordingly, we have to plan and perform the assurance engagement in such a way that we obtain limited assurance as to whether any matters have come to our attention that cause us to believe that the Sustainability Report of the Company for the period from January 1 to December 31, 2022 has not been prepared, in all material respects, in accordance with the Reporting Criteria. We do not, however, issue a separate conclusion for each disclosure. As the assurance procedures in a limited assurance engagement are less comprehensive than in a reasonable assurance engagement, the level of assurance obtained is substantially lower. The choice of assurance procedures is subject to the auditor's own judgement.

Within the scope of our engagement, we performed, amongst others, the following procedures:

- Inquiries of group-level personnel responsible for the materiality analysis in order to understand the processes for determining material topics and respective reporting boundaries of Merck
- A risk analysis, including media research, to identify relevant information on Merck's sustainability performance in the reporting period
- Evaluation of the design and implementation of systems and processes for the collection, processing and monitoring of the sustainability disclosures included in the scope of this engagement, including the consolidation of data
- Inquiries of group-level personnel who are responsible for determining and consolidating disclosures and for performing internal controls, including the explanatory notes
- Inspection of selected internal and external documents
- Analytical evaluation of data and of the trends of quantitative disclosures as reported at group level by all sites
- Evaluation of local data collection, validation and reporting processes as well as of the reliability of reported data based on a sample of the sites in Nanke in Taiwan, Milwaukee & Sheboygan in USA and in Darmstadt in Germany in the form of virtual meetings
- Use of the insights and relevant work regarding audit procedures performed for the group and statutory audit of the (consolidated) financial statements for the fiscal year 2022 of Merck KGaA for the information and indicators that were derived from those consolidated financial statements
- Evaluation of the consistency of GRI Standards in accordance with option "In accordance with GRI" as reported by Merck with the qualitative and quantitative disclosures in the Sustainability Report
- Assessment of the overall presentation of the disclosures

In our opinion, we obtained sufficient and appropriate evidence for reaching a conclusion for the assurance engagement.

Conclusion

Based on the procedures performed and the evidence obtained, nothing has come to our attention that causes us to believe that the qualitative and quantitative disclosures on sustainability for the period from January 1 to December 31, 2022, published in the Sustainability Report, have not been prepared, in all material respects, in accordance with the Reporting Criteria.

Restriction of use/General Engagement Terms

This assurance report is issued for purposes of the Executive Board of Merck KGaA, Darmstadt, only. We assume no responsibility with regard to any third parties.

Our assignment for the Executive Board of Merck KGaA, Darmstadt, and professional liability as described above was governed by the General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften (Allgemeine Auftragsbedingungen für Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften) in the version dated January 1, 2017 (https://www.kpmg.de/bescheinigungen/lib/aab_english.pdf). By reading and using the information contained in this assurance report, each recipient confirms notice of the provisions contained therein, including the limitation of our liability as stipulated in No. 9, and accepts the validity of the General Engagement Terms with respect to us.

Mannheim, March 20, 2023

KPMG AG
Wirtschaftsprüfungsgesellschaft
[Original German version signed by:]

Beyer
Wirtschaftsprüfer
[German Public Auditor]

Brokof
Wirtschaftsprüferin
[German Public Auditor]

¹ Our engagement applied to the German version of the Sustainability Information contained in the Sustainability Report 2022. This text is a translation of the Independent Assurance Report issued in German, whereas the German text is authoritative.