

Facts & figures

Within this chapter:

- 140** Report profile
- 143** Indicators
 - 143** Economics
 - 144** Business ethics
 - 147** Employees
 - 160** Environment
 - 167** Community
- 169** Goals
- 180** Recognition and rankings
- 184** Non-financial report
- 189** GRI content index
 - 189** General disclosures
 - 194** Economic Standards
 - 197** Environmental Standards
 - 201** Social Standards
- 208** Global Compact CoP

Report profile

Part of the non-financial report

The global community is facing major challenges. We too are deeply engaged in tackling the social, economic and ecological issues of our time, which include a variety of developments. Digital innovation is opening up new avenues for social and technological development; advances in artificial intelligence and genetic engineering are giving rise to new ethical questions, and climate change is forcing us to fundamentally transform our mindset and consider new approaches.

In addressing these trends, we are continuing a long tradition of corporate responsibility, which is also reflected in our reporting practices. We have been detailing our efforts to meet our obligations to society since 1993. This initially took the form of environmental reports, but then in 2003 evolved into a full Corporate Responsibility (CR) Report released every two years. In 2016, we started publishing our CR Report on an annual basis.

In our 11th CR Report, we elaborate on our ambition to create **shared value** for both our company and society as a whole.

With transparency as a key goal, we aim to extensively inform our stakeholders of our activities and successes, along with the challenges we face. Our 2019 Corporate Responsibility Report meets the regulatory requirements for a combined separate non-financial report. The **index to the non-financial report** provides an overview of the relevant content.

This CR report also documents the progress we have made in implementing the principles of the United Nations Global Compact (**Communication on Progress**).

Reporting framework

This CR report covers fiscal 2019 and pertains to our entire Group including our subsidiaries in 66 countries. Any deviations from this reporting framework are indicated on a case-by-case basis.

Acquisitions of Intermolecular and Versum Materials

The closing of the acquisition of **Intermolecular, Inc. on September 20, 2019** and **Versum Materials, Inc. on October 7, 2019** marked two major milestones in the transformation journey of our Performance Materials business sector. Together, we are optimally positioned to enable next-generation digital devices for a smart, safe and connected world. The business combination is expected to make us a leading electronic materials player focused on the semiconductor and display industries. Intermolecular and Versum Materials will strengthen our Performance Materials business sector and become part of the Semiconductor Solutions business unit, one of the three Performance Materials business units alongside Display Solutions and Surface Solutions.

We are still in the process of consolidating the approaches, goals, results, and measures for the primary non-financial topics identified through our materiality analysis and expect this to be entirely completed by 2021. The sections of the non-financial report in which these acquisitions play a significant role reflect the December 2019 status of the consolidation.

Data collection and consolidation systems

In general, the 2019 CR Report provides non-financial indicators that represent the entire Group, including the recently acquired companies Intermolecular and Versum Materials. The majority of the figures we publish reflect the status as of December 31, 2019. We explicitly state when the information provided deviates from these parameters.

Since 2005, we have been using a Group-wide electronic data collection system to collect environmental and occupational health and safety data, which are tracked locally at our individual sites and approved following review. To maximize the quality of these data, we support the sites in optimizing their collection processes and their corresponding quality assurance measures. Moreover, our Group Environment, Health, Safety, Security, Quality (EQ) function takes measures such as internal EHS audits to review both the processes and the data provided.

We compile environmental performance indicators from all our production sites Group-wide, as well as those warehouse, research and administrative facilities that are relevant in terms of their environmental footprint. The scope of consolidation therefore covers all Group sites that have relevant impacts on the environment, with the exception of the newly acquired Versum Materials sites, which will be incorporated into our data collection process as of 2020 where pertinent.

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

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

Determining report content

We align the content of our CR Report with the internationally recognized guidelines of the Global Reporting Initiative (GRI) and the principles of completeness and materiality, as well as input from our stakeholders. This report has been prepared in accordance with the "GRI Standards: Comprehensive Option". Furthermore, we have taken into consideration the requirements of the capital market for assessing companies' sustainability performance.

In 2018, we performed a comprehensive materiality assessment to determine the CR topics of relevance to our Group, which we then updated in 2019. Experts from our business sectors and relevant Group functions reviewed the findings and validated them. Moreover, as stipulated by section 289c (2, 3) of the German Commercial Code (HGB), we checked the issues validated in 2018 for "double materiality". We have derived the content of this CR report from the results of the materiality assessment, which can be found together with the materiality matrix under [Materiality analysis](#).

Our Executive Board has reviewed and approved this report. The content of the non-financial report 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 annual financial statements and management report of our company for the fiscal year spanning January 1 to December 31, 2019 and has issued an unqualified opinion.

Additionally, after undergoing a limited assurance, our company received an independent assurance statement for the present [CR Report](#) as well as for the [non-financial report](#).

The additional content provided on both the company's websites as well as external web pages that is linked in this report does not form part of the information assured by KPMG.

Point of contact:

We welcome your feedback and are happy to answer any questions.

Merck KGaA, Darmstadt, Germany

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The previous CR report was published in April 2019. Our next CR report is scheduled for publication in April 2021.

Indicators

Economics

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

€ million	Healthcare	Life Science	Performance Materials	Group
2018²				
Net sales	6,246	6,185	2,406	14,836
Operating result (EBIT)	731	1,036	508	1,727
R&D costs ³	1,687 ⁴	251 ⁴	242	2,227⁴
2019				
Net sales	6,714	6,864	2,574	16,152
Operating result (EBIT)	1,149	1,280	307	2,120
R&D costs ³	1,666	276	267	2,268

1 As a non-operating segment, Corporate and Other is not shown here as a separate item, but rather under Segment Reporting in our [2019 Annual Report](#).

2 Figures comprise the continuing operations of the The Group excluding the Consumer Health business, which was divested on December 1, 2018.

3 Part of the non-financial report

4 Previous year's figures have been adjusted, see in our [2019 Annual Report](#) Note (45) "Effects from new accounting standards and other presentation changes" in the Notes to the Consolidated Financial Statements.

business ethics

Part of the non-financial report

Internal audits on corruption and Human Rights Charter

	2016	2017	2018 ¹	2019 The Group ²	2019 thereof Merck KGaA, Darm- stadt, Germany ³
Number of audits relating to corruption	55	50	54	50	25
% of audits relating to corruption	68	65	69	65	32
Number of audits relating to the workplace requirements of our Human Rights Charter	47	45	46	46	23

1 Consumer Health business has been out of Internal Auditing scope since September 2017.

2 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

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

In 2019, during 46 of our audits conducted in 22 countries, we reviewed workplace parameters as per our Human Rights Charter. No violations were identified.

Reported compliance violations

	2016	2017	2018	2019 The Group ¹	2019 thereof Merck KGaA, Darm- stadt, Germany
Total number of reported compliance violations					
Number of reported compliance incidents	36	39	72	75	5
Number of confirmed cases	12	14	19	30	1
Confirmed cases by category					
Violation of the Human Rights Charter	2	0	0	0	0
Bribery and corruption	2	1	1	0	0
Violation of the Pharmaceutical Guidelines	4	2	2	9	0
Violation of Data Privacy and Confidentiality Guidelines	0	2	3	3	0
Manipulation of business documents	2	1	0	0	0
Violation of cartel laws and fair competition rules	0	0	1	0	0
Infringements in the areas of finance, accounting and banking	0	0	0	0	0
Theft and fraudulent actions against the Group	1	1	5	8	0
Other violations of the Compliance Principles for the relations with business partners	1	2	1	4	1
Other violations of values, internal guidelines or legal requirements	0	5	6	6	0

1 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

Compliance training

	2016 ¹	2017 ¹	2018 ¹	2019 The Group ^{2,3}	2019 thereof Merck KGaA, Darm- stadt, Germany ³
Total number of persons trained on anti-corruption guidelines⁴	29,764	17,044	11,404	36,109	5,535
Total number of employees trained on anti-corruption guidelines	25,889	13,345	11,155	35,673	5,517
% of employees trained on anti-corruption	51	25	22	63	65
by employee category					
Number of Role 2+ employees trained on anti-corruption	14,379	7,080	9,257	26,890	3,943
% of Role 2+ employees trained on anti-corruption	84	27	36	96	100
% of employees below Role 2 trained on anti-corruption	34	23	7	30	35
by region (%)					
Europe	54	18	19	71	65
North America	57	46	36	59	not applicable
Asia-Pacific (APAC)	38	25	16	47	not applicable
Latin America	52	19	12	62	not applicable
Middle East and Africa (MEA)	66	29	18	80	not applicable

1 In 2016, 2017 and 2018 the job grading system had not yet been implemented for employees of all Sigma-Aldrich legal entities in Germany, or for employees of Allergopharma. In the facts and figures, these employees are included under "employees below Role 2".

2 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 "employees below Role 2".

3 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. From 2019 onwards, 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.

4 Includes contractors, external supervised workers (e.g. temps) and contract partners working on-site who were trained on anti-corruption guidelines (2019: 436).

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 compliance and anti-corruption principles are communicated to all our business partners, who undergo a Business Partner Risk Management (BPRM) process.

Legal actions

	2016	2017	2018 ¹	2019 The Group	2019 thereof Merck KGaA, Darmstadt, Germany
Total number² of legal actions pending or completed (for anti-competitive behavior, violations of anti-trust or violations of monopoly legislation)	2	3	3	3	2
pending	2	3	3	3	2
completed	0	0	0	0	0

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 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 2016](#), pages 135-136 and pages 228-229, No. 26

[Annual Report 2017](#), pages 148-150 and pages 252-253, No. 27

[Annual Report 2018](#), pages 146-148 and pages 247-251, No. 26

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

Customer privacy¹

	2016	2017 ²	2018	2019 ^{3,4}
Total number of substantiated complaints received from outside parties	0	0	0	0
Total number of complaints from regulatory bodies	0	0	0	1
Total number of identified leaks, thefts, or losses of customer data	1	0	1	1

1 These data only reflect incidents classified as significant.

2 Includes Sigma-Aldrich as of 2017.

3 Since 2019, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

4 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

Employees

Part of the non-financial report

Total number of employees

As of Dec. 31	2016	2017	2018	2019 The Group	2019 thereof Merck KGaA, Darm- stadt, Germany ¹
Total number of employees	50,414	52,941	51,749	57,071	8,474
Men	28,848	30,083	29,006	32,531	5,755
Women	21,566	22,858	22,743	24,540	2,719

¹ Owing to the hive-down of Merck Healthcare KGaA, Darmstadt, Germany an affiliate of Merck KGaA, Darmstadt, Germany as of April 1, 2019, effective 2019 the figures only include Merck KGaA, Darmstadt, Germany

Number of employees by hierarchical level

As of Dec. 31	2016 ¹	2017 ¹	2018 ¹	2019 The Group ²	2019 thereof Merck KGaA, Darm- stadt, Germany
Total employees	50,414	52,941	51,749	57,071	8,474
Senior management (Role 6+)	181	197	193	190	74
Middle management (Role 4 & 5)	2,685	2,927	3,095	3,352	730
Low management (Role 3)	8,139	8,904	9,019	9,499	1,943
Other employees (below Role 3)	39,409	40,913	39,442	44,030	5,727
% of women (total)	43	43	44	43	32
thereof in senior management (Role 6+)	25	30	36	39	14
thereof in middle management (Role 4 & 5)	805	917	1,025	1,146	199
thereof in low management (Role 3)	3,361	3,714	3,795	4,029	665
thereof other employees (below Role 3)	17,375	18,197	17,888	19,326	1,841
% of men (total)	57	57	56	57	68
thereof in senior management (Role 6+)	156	167	157	151	60
thereof in middle management (Role 4 & 5)	1,880	2,010	2,070	2,206	531
thereof in low management (Role 3)	4,778	5,190	5,224	5,470	1,278
thereof other employees (below Role 3)	22,034	22,716	21,554	24,704	3,886
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)	7	3	5	8	1
thereof in low management (Role 3)	183	194	211	190	65
thereof other employees (below Role 3)	7,229	7,479	7,279	8,362	1,142
30 to 49 years old (%)	62	62	61	60	51
thereof in senior management (Role 6+)	76	72	69	69	29
thereof in middle management (Role 4 & 5)	1,670	1,782	1,829	1,933	446
thereof in low management (Role 3)	5,784	6,308	6,206	6,516	1,237
thereof other employees (below Role 3)	23,996	24,733	23,536	25,859	2,643
50 years or older (%)	23	23	24	25	34
thereof in senior management (Role 6+)	105	125	124	121	45
thereof in middle management (Role 4 & 5)	1,008	1,142	1,261	1,411	283
thereof in low management (Role 3)	2,172	2,402	2,602	2,793	641
thereof other employees (below Role 3)	8,184	8,701	8,627	9,809	1,942

¹ In 2016, 2017 and 2018 the job grading system had not yet been implemented for employees of all Sigma-Aldrich legal entities in Germany, or for employees of Allergopharma. In the facts and figures, these employees are included under "other employees (below Role 3)".

² 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

	2016	2017	2018 ²	2019 ³
Group	50,439	52,053	53,809	53,645
thereof women	21,136	22,353	23,388	23,503
Production	14,829	15,571	16,240	16,455
thereof women	4,698	5,059	5,359	5,529
Logistics/Supply Chain ⁴	3,955	3,729	4,014	4,109
thereof women	1,459	1,442	1,569	1,626
Marketing and Sales/Commercials ⁴	14,887	15,115	15,479	13,970
thereof women	6,401	6,609	6,981	6,608
Administration	8,190	9,286	9,864	10,342
thereof women	4,421	4,798	5,067	5,194
Research and Development	6,249	6,789	7,245	7,561
thereof women	3,274	3,591	3,871	4,053
Infrastructure and Other	2,329	1,564	966	1,208
thereof women	883	854	541	493

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 The average employee headcount for fiscal 2018 incorporates the Consumer Health employees on a pro rata basis up until the end of November 2018 due to the divestment of the Consumer Health business as of December 1, 2018.

3 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".

4 In conjunction with the new job architecture implemented in 2017, some functional areas have been renamed and reorganized. Due to the new structure from 2017 on, it will only be possible to deliver a limited trend forecast in a year-on-year comparison.

Number of employees by region

As of Dec. 31	2016	2017	2018	2019 The Group	2019 thereof Merck KGaA, Darm- stadt, Germany
Total	50,414	52,941	51,749	57,071	8,474
Europe	24,438	25,980	25,792	26,715	8,474
Women	10,884	11,627	11,464	11,909	2,719
Women (%)	45	45	44	45	32
Number of employees with temporary contracts	1,031	1,279	1,209	1,137	254
% of employees with temporary contracts	4	5	5	4	3
North America	10,037	10,520	10,978	12,829	0
Women	4,308	4,518	4,742	5,285	not applicable
Women (%)	43	43	43	41	not applicable
Number of employees with temporary contracts	122	138	148	158 ¹	not applicable
% of employees with temporary contracts	1	1	1	1 ¹	not applicable
Asia-Pacific (APAC)	10,754	11,294	10,486	12,728	0
Women	3,981	4,298	4,348	5,049	not applicable
Women (%)	37	38	41	40	not applicable
Number of employees with temporary contracts	2,231	2,603	2,846	3,263 ¹	not applicable
% of employees with temporary contracts	21	23	27	26 ¹	not applicable
Latin America	4,140	4,050	3,340	3,433	0
Women	1,910	1,896	1,648	1,690	not applicable
Women (%)	46	47	49	49	not applicable
Number of employees with temporary contracts	40	40	62	55	not applicable
% of employees with temporary contracts	1	1	2	2	not applicable
Middle East and Africa (MEA)	1,045	1,097	1,153	1,366	0
Women	483	519	541	607	not applicable
Women (%)	46	47	47	44	not applicable
Number of employees with temporary contracts	153	172	189	182	not applicable
% of employees with temporary contracts	15	16	16	13	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".

External contractors are currently not logged in our employee data system, nor are there any plans to integrate them.

Employees by business sector

As of Dec. 31	2016	2017	2018	2019
Healthcare employees	18,837	19,795	17,456	18,136
thereof women	9,090	9,656	8,884	9,232
thereof women (%)	48	49	51	51
Life Science employees	19,178	19,607	20,667	21,934
thereof women	7,928	8,276	8,837	9,487
thereof women (%)	41	42	43	43
Performance Materials employees	5,469	5,529	5,278	7,329
thereof women	1,427	1,455	1,411	1,712
thereof women (%)	26	26	27	23

Employees by contract type

As of Dec. 31	2016	2017	2018	2019
Total employees	50,414	52,941	51,749	57,071
Number of employees with permanent contracts	46,837	48,709	47,295	52,276 ¹
% of employees with permanent contracts	93	92	91	92 ¹
thereof women	19,741	20,741	20,545	22,237 ¹
thereof women (%)	42	43	43	43 ¹
Number of employees with temporary contracts	3,577	4,232	4,454	4,795 ¹
% of employees with temporary contracts	7	8	9	8 ¹
thereof women	1,744	2,117	2,198	2,303 ¹
thereof women (%)	49	50	49	48 ¹
full-time employees	48,056	50,498	49,273	54,265
% full-time	95	95	95	95
thereof women	19,457	20,677	20,577	22,208
thereof women (%)	40	41	42	41
part-time employees	2,358	2,443	2,476	2,806
% part-time	5	5	5	5
thereof women	2,109	2,181	2,166	2,332
thereof women (%)	89	89	87	83

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	2016	2017	2018	2019 The Group ¹	2019 thereof Merck KGaA, Darm- stadt, Germany
Total number of new employee hires	7,085	7,285	7,129	7,924	454
by age group					
up to 29 years old	2,930	2,940	2,967	3,432	260
30 to 49 years old	3,736	3,848	3,728	4,055	180
50 or older	419	497	434	437	14
by gender					
Women	3,388	3,412	3,401	3,622	158
Men	3,697	3,873	3,728	4,302	296
by region					
Europe	2,689	3,058	2,560	2,529	454
North America	1,348	1,603	1,524	1,733	0
Asia-Pacific (APAC)	2,201	1,955	2,222	2,729	0
Latin America	636	497	583	578	0
Middle East and Africa (MEA)	211	172	240	355	0
Rate of new employee hires² (%)	14	14	14	14	5
by age group³					
up to 29 years old	41	40	42	43	57
30 to 49 years old	53	53	52	51	40
50 or older	6	7	6	6	3
by gender³					
Women	48	47	48	46	35
Men	52	53	52	54	65
by region³					
Europe	38	42	36	32	100
North America	19	22	21	22	not applicable
Asia-Pacific (APAC)	31	27	31	34	not applicable
Latin America	9	7	8	7	not applicable
Middle East and Africa (MEA)	3	2	3	5	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}

	2016	2017	2018 ³	2019 The Group	2019 thereof Merck KGaA, Darm- stadt, Germany
Total turnover rate	12.07	9.05	9.09	9.07	1.97
Turnover rate by gender					
Men	12.87	8.75	9.03	8.69	2.09
Women	10.96	9.46	9.18	9.54	1.75
Turnover rate by age group					
Up to 29 years old	19.20	13.66	14.24	13.13	2.94
30 to 49 years old	11.37	8.38	8.53	8.90	1.92
50 or older	9.19	7.87	7.39	7.03	1.65
Turnover rate by region					
Europe	6.23	6.22	5.73	5.72	1.97
North America	11.50	11.02	9.90	11.02	not applicable
Asia-Pacific (APAC)	22.37	12.53	14.51	13.18	not applicable
Latin America	18.85	13.74	15.41	13.47	not applicable
Middle East and Africa (MEA)	10.8	11.22	9.77	12.14	not applicable
Total number of leavers	6,087	4,710	4,613	4,863	183
by gender					
Men	3,771	2,596	2,578	2,621	128
Women	2,316	2,114	2,035	2,242	55
by age group					
Up to 29 years old	1,464	1,058	1,061	1,042	39
30 to 49 years old	3,589	2,713	2,649	2,898	93
50 or older	1,034	939	903	923	51
by region					
Europe	1,490	1,488	1,457	1,500	183
North America	1,132	1,143	1,064	1,264	0
Asia-Pacific (APAC)	2,543	1,387	1,468	1,484	0
Latin America	814	570	522	459	0
Middle East and Africa (MEA)	108	122	102	156	0

1 The table contains unadjusted turnover rates. The rate excludes employees who depart 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 Employee headcount is calculated as follows: Total number of leavers from the past 12 months divided by the average employee headcount multiplied by 100.

3 Since 2018, the figures exclude the Consumer Health business, which was divested on December 1, 2018.

In 2019, the average length of service for employees Group-wide was 9.5 years (2018: 10 years), with 16.3 years (2018: 14.9 years) for Merck KGaA, Darmstadt, Germany employees.

Work-related accidents¹

	2016	2017	2018	2019 The Group ²	2019 thereof Merck KGaA, Darm- stadt, Germany
Lost Time Injury Rate (LTIR = work- place accidents resulting in missed days of work per one million man-hours)	1.3	1.5	1.2³	1.5	3.3
by region					
Europe	2.2	2.4	1.8 ³	2.7	3.3
North America	1.1	1.0	1.1	0.9	not applicable
Asia-Pacific (APAC)	0.4	0.3	0.3	0.2	not applicable
Latin America	0.4	1.3	1.5	1.7	not applicable
Middle East and Africa (MEA)	1.6	0.0	0.7	0.0	not applicable
Number of deaths	0	0	0	0	0
by region					
Europe	0	0	0	0	0
North America	0	0	0	0	0
Asia-Pacific (APAC)	0	0	0	0	0
Latin America	0	0	0	0	0
Middle East and Africa (MEA)	0	0	0	0	0
by gender					
Women	0	0	0	0	0
Men	0	0	0	0	0

1 Including supervised workers

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 Figure retroactively adjusted

Both our employees as well as supervised workers have been included in the calculation of these indicators.

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.

By 2020, we intend to sustainably lower the LTIR to 1.5. The aim is to permanently stabilize or outperform this challenging number, which we achieved for the first time in 2015.

The LTIR is the key occupational safety indicator for the 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, Darmstadt, Germany (about 15% of the employees of the Group), we only report work-related illnesses if these have been certified as an occupational illness by the employers' liability insurance association. In 2019 period, two cases of work-induced illness were verified (as of the end of December 2019).

Employees who regularly receive a performance and development evaluation

	2016 ¹	2017 ¹	2018 The Group ^{1, 2}	2019 The Group ³	2019 thereof Merck KGaA, Darmstadt, Germany
% of employees who receive a performance and development evaluation	97	97	98	98	100
by gender					
Women	97	97	99	98	100
Men	97	97	98	98	100
by employee category⁴					
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)	96	96	98	98	100

1 In 2016, 2017 and 2018 the job grading system had not yet been implemented for employees of all Sigma-Aldrich legal entities in Germany, or for employees of Allergopharma. In the facts and figures, these employees are included under "other employees (below Role 3)".

2 Since 2018, the figures exclude the Consumer Health business, which was divested on December 1, 2018.

3 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

4 In 2017, we switched our job architecture from a Global Grading System to Roles. Figures have been retroactively adjusted for previous years.

Regular feedback and employee performance evaluations are essential to fairly ranking individual performance and to helping all employees follow their own career path at our company. Our globally uniform Performance and Talent Management Process requires annual feedback meetings and performance assessments for all employees rated Role 2 and up in the job grading system that is used in 2019. Apart from evaluating employee performance, this helps us to identify individual development opportunities.

When it comes to applying this process, our individual subsidiaries can decide for themselves whether to include employees rated below Role 2. In Germany, all permanent employees have been participating in the Performance and Talent Management Process since 2013. In 2019, a total of 53,605 employees worldwide were involved in the process. The Performance and Talent Management Process is coordinated via our online platform HR4You.

Internationality of employees

As of Dec. 31	2016 ¹	2017 ¹	2018 ¹	2019 The Group ²	2019 thereof Merck KGaA, Darmstadt, Germany
Number of nationalities	129	131	136	139	80
Number of nationalities in management positions (Role 4 or above)	70	65	70	73	30
% of non-Germans in management positions (Role 4 or above)	65	64	64	64	11

1 In 2016, 2017 and 2018 the job grading system had not yet been implemented for employees of all Sigma-Aldrich legal entities in Germany, or for employees of Allergopharma.

2 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 (including Germany)	Merck KGaA, Darmstadt, Germany	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
2018							
Up to 29 years old	7,494	1,573	3,175	1,574	2,082	470	195
thereof women	3,534	661	1,537	633	966	285	85
30 to 49 years old	31,638	5,636	15,247	5,987	7,616	2,342	799
thereof women	14,238	2,511	7,044	2,281	3,123	1,183	377
50 or older	12,611	3,769	7,370	3,572	788	528	159
thereof women	4,971	1,570	2,883	1,183	259	180	79
Average age	41.7	44.1	42.8	42.9	36.9	40.4	39.2
Total employees	51,749	10,978	25,792	11,133	10,486	3,340	1,153
2019							
Up to 29 years old	8,560	1,829	3,282	1,208	2,713	498	238
thereof women	3,983	773	1,595	440	1,225	289	101
30 to 49 years old	34,377	6,441	15,540	4,355	9,067	2,373	956
thereof women	15,076	2,733	7,191	1,465	3,531	1,200	421
50 or older	14,134	4,559	7,893	2,911	948	562	172
thereof women	5,481	1,779	3,123	814	293	201	85
Average age	41.7	44.4	43.0	43.4	36.8	40.3	38.6
Total employees	57,071	12,829	26,715	8,474	12,728	3,433	1,366

Age of youngest employee

As of Dec. 31	2016	2017	2018	2019
Age of youngest employee, excluding apprentices	17	18	17	18

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

As of Dec. 31	2016	2017	2018	2019 The Group ¹	2019 thereof Merck KGaA, Darm- stadt, Germany
% of employees with healthcare benefits ²	68	68	67	68	0
% of employees with Group accident insurance ³	39	42	39	36	4
% of employees with life insurance ⁴	57	58	58	58	0
% of employees with disability insurance (short-term and long-term) ⁵	32	35	37	39	0

1 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

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 covered by either statutory or voluntary accident and health insurance. Employees of Merck KGaA, Darmstadt, Germany 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	2016	2017	2018	2019
Present value of all defined benefit obligations as of Dec. 31	4,698	4,707	4,719	5,644
Pension expenses	226	304	319 ¹	357

1 Figure retroactively adjusted.

Depending on the legal, economic and fiscal circumstances prevailing in each country, different retirement benefit systems are provided for the employees of the Group. Generally, these systems are based on the years of service and salaries of the employees. Pension obligations of the Group include both defined benefit and defined contribution plans and comprise both obligations from current pensions and accrued benefits for pensions payable in the future. In the Group, defined benefit plans are funded and unfunded (see our [2019 Annual Report](#), Note on Provisions for pensions and other post-employment benefits).

Flexible working hours in Germany

As of Dec. 31	2016	2017	2018	2019
% of employees utilizing the "mywork" program working model	36	40	42	43

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

Parental leave in Germany

As of Dec. 31	2016 ¹	2017 ²	2018 ²	2019 ²
Number of employees with a right to parental leave	359	353	308	375
thereof women (recorded via maternity leave in the respective year)	191	151	188	239
thereof men (recorded via special paternity leave in the respective year)	168	202	120	136
Number of employees who took parental leave ³	480	352	500	542
thereof women	303	150	240	248
thereof men	177	202	260	294
Number of employees on parental leave who worked part time during their leave	102	49	128	164
thereof women	95	47	109	140
thereof men	7	2	19	24
Number of employees who returned from parental leave	174	312	312	536
thereof women	62	143	65	243
thereof men	112	169	247	293
Return to work rate (%)	36.3	88.6	62.4	98.9
thereof women	20.5	95.3	27.1	98.0
thereof men	63.3	83.7	95.0	99.7
Number of employees still working for Merck KGaA, Darmstadt, Germany one year after their return from parental leave	190	238	268	- ⁴
thereof women	73	89	26	- ⁴
thereof men	117	149	242	- ⁴
Retention rate (%)	95.6	89.8	93.1	- ⁴
thereof women	93.8	85.6	63.4	- ⁴
thereof men	96.8	92.5	97.9	- ⁴

- Figures only pertain to the Darmstadt and Gernsheim sites in Germany (which accounted for around 21% of The Group employees in 2016). 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 returned by Dec. 31.
- Figures pertain only to Merck KGaA, Darmstadt, Germany (which accounted for around 20% of the employees of the Group in 2017, roughly 22% in 2018 and around 15% in 2019). 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.
- 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.
- Figure will be available on December 31, 2020.

Employees with disabilities¹ (%)

As of Dec. 31	2016	2017	2018	2019
Employees with disabilities ¹	4.5	4.3	4.3	4.4

¹ Only pertains to Merck KGaA, Darmstadt, Germany (which accounted for around 15% of The Group employees in 2019, calculations based on the German Social Code IX - SGB IX).

Apprentices in Germany

As of Dec. 31	2016	2017	2018	2019
Number of apprentices	576	588	604	589
% of apprentices	4.6	4.4	4.5	4.3

Environment

Part of the non-financial report

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

metric kilotons	2006 ²	2016	2017	2018 ³	2019 ⁴
Total CO₂eq⁵ emissions	782	681	689	666⁶	665
Thereof					
direct CO ₂ eq emissions	378	384	373	353 ⁶	359
indirect CO ₂ eq emissions	404	297	316	313 ⁶	306
Biogenic CO₂ emissions	0	14	13	13	12

1 In line with the Greenhouse Gas Protocol, for all previous years (up to the 2006 baseline) the greenhouse gas emissions have been calculated based on the current corporate structure as of Dec. 31 of the reporting year and retroactively adjusted for acquisitions (e.g. Sigma-Aldrich in 2015) or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).

2 Baseline for our emission targets is 2006.

3 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

4 The figures exclude Versum Materials since the integration process is still underway. Based on the figures Versum Materials reported for the previous two years (not calculated in accordance with our metrics), we expect this to add roughly 1.3 million metric tons of CO₂eq per year to our carbon footprint. More information can be found under [Report profile](#).

5 eq = equivalent

6 Figure retroactively adjusted.

Our [response](#) to the Carbon Disclosure Project 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 negligible; SF₆/NF₃ not available.

Indirect CO₂ emissions: CO₂.

In 2019, we emitted 0.041 kg of CO₂eq per euro of net sales.

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

	2016	2017	2018 ²	2019 ³
Total gross other indirect emissions (metric kilotons CO₂eq⁴)	426	353	380	373
Fuel- and energy-related emissions, not included in Scope 1 or 2 (category 3)	127	118	131	127
Waste generated in operations (category 5)	127	68	80	84
Business travel - air travel (category 6)	103 ⁵	98	103	86
Business travel - rail travel ⁶ (category 6)	0.02	0.02	0.02	0.02
Business travel - rental car travel (category 6)	0.6	0.6	1.4	1.3
Employee commuting (category 7)	68	68	66	75
Upstream leased assets (category 8)	0.0 ⁷	0.0 ⁷	0.0 ⁷	0.0 ⁷
Processing of sold products (category 10)	0.0 ⁸	0.0 ⁸	0.0 ⁸	0.0 ⁸
Downstream leased assets (category 13)	0	0	0	0
Franchises (category 14)	0	0	0	0

1 Because of the characteristics of the Scope 3 emissions data we do not correct these data subsequently.

2 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

3 The figures exclude Versum Materials since the integration process is still underway. Exception: Category 7: The figure is based on the headcount as of December 31, 2019 and thus includes Versum Materials. With the exception of scope 3 category 6 emissions, the data from Intermolecular are already included. More information can be found under [Report profile](#).

4 eq = equivalent

5 This figure covers roughly 95% of the employees of the The Group because the data for the employees of Sigma-Aldrich, acquired in November 2015, are only partially available.

6 German Railway

7 Already covered under Scope 1 and 2 emissions

8 Merck KGaA, Darmstadt, Germany 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.

No data are available for Scope 3 categories not listed above. Their relevance to Merck KGaA, Darmstadt, Germany is assessed in the [Scope 3](#) document.

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

Emissions of ozone-depleting substances

metric tons	2016	2017	2018 ¹	2019 ²
Total emissions of ozone-depleting substances	2.2	1.9	1.5	1.0
CFC-11eq ³	0.1	0.1	0.1	0.1

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 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.

Source for the emission factors: Montreal Protocol.

Other air emissions

metric kilotons	2016	2017	2018 ¹	2019 ²
Volatile organic compounds (VOC)	0.3	0.3	0.3	0.3
Nitrogen oxide	0.2	0.2	0.3	0.3
Sulfur dioxide	0.05	0.03	0.01	0.01
Dust	0.02	0.04	0.01	0.01

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

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

	2016	2017	2018	2019 ¹
% truck	71	73	74	70
% boat	18	15	14	19
% airplane	11	12	12	11

1 The figures exclude Versum Materials and Intermolecular since the integration process is still underway. For more information, see [report profile](#).

The figures contain the volumes of the biggest global distribution centers of our Healthcare, Life Science and Performance Materials 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.

Energy consumption¹

In GWh	2016	2017	2018 ²	2019 ³
Total energy consumption	2,117	2,194	2,227⁴	2,240
Direct energy consumption	1,330	1,319	1,323⁴	1,339
Natural gas	1,260	1,254	1,257 ⁴	1,273
Liquid fossil fuels ⁵	36	32	32	33
Biomass and self-generated renewable energy	34	33	34	33
Indirect energy consumption	787	875	904⁴	901
Electricity	692	729	755 ⁴	756
Steam, heat, cold	95	146	149	145
Total energy sold	0.3	0.1	0.0	0.1
Electricity	0.3	0.1	0.0	0.1
Steam, heat, cold	0	0	0	0
In TJ				
Total energy consumption	7,621	7,898	8,016⁴	8,065
Direct energy consumption	4,788	4,748	4,762⁴	4,821
Natural gas	4,536	4,514	4,525 ⁴	4,583
Liquid fossil fuels ⁵	130	115	115	119
Biomass and self-generated renewable energy	122	119	122	119
Indirect energy consumption	2,833	3,150	3,254⁴	3,244
Electricity	2,491	2,624	2,718 ⁴	2,722
Steam, heat, cold	342	526	536	522
Total energy sold	1.1	0.4	0.0	0.4
Electricity	1.1	0.4	0.0	0.4
Steam, heat, cold	0.0	0.0	0.0	0.0

1 In line with the Greenhouse Gas Protocol, for all previous years (up to the 2006 baseline) the 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 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

3 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

4 Figure retroactively adjusted.

5 Light and heavy fuel oil, liquefied petroleum gas (LPG), diesel and gasoline

At our sites in Billerica (MA, United States), Bedford (MA, United States), Molsheim (France), Tel Aviv (Israel), Rome (Italy), Guatemala City (Guatemala), Shizuoka-ken (Japan), and Shanghai (China), we use photovoltaics to produce power.

Merck KGaA, Darmstadt, Germany currently only records 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 28% of our Group-wide total. Here, fossil energy (coal, gas, etc.) accounts for approx. 49%, nuclear energy approx. 13% and renewable energies approx. 38% 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 2,043 GWh for 2019. Based on an estimated global energy efficiency of 85% for heat/steam/cold, this results in a primary energy consumption of 170 GWh for 2019. This yields a total primary energy consumption of 2,213 GWh for 2019. (The calcula-

tion is based on factors stated in the "Manual for energy management in practice - Systematically reducing energy costs" published by DENA, 12/2012.)

In 2019, Merck KGaA, Darmstadt, Germany's energy intensity relative to net sales totaled 0.14 kWh/€.

Water withdrawal

millions of m ³	2016	2017	2018 ¹	2019 ²
Total water withdrawal	13.7³	14.0	14.7	14.0
Surface water (rivers, lakes)	1.8	1.9	2.1	1.9
Groundwater	7.2	7.3	7.2	6.8
Drinking water (from local suppliers)	4.7 ³	4.8	5.3	5.2
Rain water and other sources	0.01	0.00	0.05	0.05

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 Figure retroactively adjusted.

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.

Water reused

millions of m ³	2016	2017	2018 ¹	2019 ²
Water reused	22.7	22.4	24.4	23.3

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

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 and quality¹

	2016	2017	2018 ²	2019 ³
Total wastewater volume (millions of m³)	12.9	13.1	13.5	13.2
Chemical oxygen demand (metric tons of O ₃)	1,535	1,537 ⁴	1,509 ⁴	1,562
Phosphorous (metric tons)	12	8	10 ⁴	12
Nitrogen (metric tons)	378 ⁴	234	260 ⁴	481
Nickel (kg)	29	32	30 ⁴	32
Lead (kg)	31	35	30 ⁴	34
Cadmium (kg)	7	6	6	6
Mercury (kg)	2	1	0	0

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

2 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

3 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

4 Figure retroactively adjusted.

The wastewater volume includes indirect discharge into both public-owned wastewater treatment plants of Merck KGaA, Darmstadt, Germany, as well as direct discharge (such as rainwater and cooling water).

The wastewater treatment plant at our Gernsheim, Germany site also treats wastewater from the neighboring municipality of Biebesheim. The communal wastewater from Biebesheim is included in the wastewater volume as well as 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.

Hazardous and non-hazardous waste

metric kilotons	2016	2017	2018 ¹	2019 ²
Total waste	256	255	245³	244
Hazardous waste disposed ⁴	47	43	44	44
Non-hazardous waste disposed ⁴	38	33	54	41
Hazardous waste recycled ⁵	82	72	75 ³	78
Non-hazardous waste recycled ⁵	89	107	72	81

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 Figure retroactively adjusted.

4 Disposed = incineration (without energy recovery) and landfill

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

Exported/Imported hazardous waste

metric kilotons	2016	2017	2018 ¹	2019 ²
Exported ³	4.6	4.9	4.5	4.3
Imported	0.010	0.005	0.000	0.000

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 Disposal primarily within the EU and the United States.

In 2019, approx. 3% of hazardous waste was shipped internationally.

Waste by disposal method

	2016	2017	2018 ¹	2019 ²
Total waste (metric kilotons)	256	255	245³	244
Disposed waste	85	76	98	84
Landfilled waste	15	13	35	26
Incinerated waste	70	63	63	58
Recycled waste	171	179	147³	160
Material recycling	139	149	127 ³	132
Waste-to-energy	32	30	20	28
Recycling rate (%)	67	70	60	66

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

3 Figure retroactively adjusted.

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 31% of our waste in 2019. Around 49 metric kilotons of construction, excavation and demolition waste was recycled.

Significant spills

	2016	2017	2018 ¹	2019 ²
Total number of significant spills	0	0	0	0

1 Since 2018, our reported figures have excluded the Consumer Health business, which was divested on December 1, 2018.

2 The figures exclude Versum Materials since the integration process is still underway. More information can be found under [Report profile](#).

COMMUNITY

Spending on community involvement

€ million	2016	2017	2018 ¹	2019
Total spending	43.0	33.8	35.7	46.2

¹ From 2018 on, we are separating spending on programs of the Foundation sponsored by Merck KGaA, Darmstadt, Germany from our community involvement figures.

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.

Total spending includes the community outreach activities of Versum Materials and Intermolecular from October to December 2019.

Community involvement spending by region¹

	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
2018					
€ million	10.1	2.2	2.6	0.7	20.1
%	28	6	7	2	57
2019					
€ million	10.6	3.4	2.3	0.5	29.3
%	23	7	5	1	64

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.

Regional spending includes the community outreach activities of Versum Materials and Intermolecular from October to December 2019.

From 2018 on, we are separating spending on programs of the Foundation sponsored by Merck KGaA, Darmstadt, Germany from our community involvement figures.

Focus of our local community involvement¹

%	2016	2017	2018 ²	2019
Global Health	35	38	34	33
Broad Minds: Education and culture	36	43	42	38
Sustainable Solutions: Environment	5	4	2	3
Disaster relief	2	2	2	2
Other	22	13	20	24

¹ Based on number of projects

² From 2018 on, we are separating spending on programs of the Foundation sponsored by Merck KGaA, Darmstadt, Germany from our community involvement figures.

Spending per category includes the community outreach activities of Versum Materials and Intermolecular from October to December 2019.

Motivations for our community involvement¹

%	2016	2017	2018 ²	2019
Charitable activities	4	9	7	6
Community investment	87	84	88	91
Commercial initiatives in the community	9	7	5	3

¹ Based on total spending on all projects

² From 2018 on, we are separating spending on programs of the Foundation sponsored by Merck KGaA, Darmstadt, Germany from our community involvement figures.



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.

Spending per category includes the community outreach activities of Versum Materials and Intermolecular from October to December 2019.

Goals




Part of the non-financial report

Legend:  New Goal  Goal achieved  In Progress  Goal not achieved

business ethics




Compliance

Goal: Bring compliance closer to the business

Action(s):	By:	Progress by end of 2019:	Status:
Third Party Risk Management	July 2020	The new Third-Party Risk Management process is still in preparation and will be implemented step-wise as of July 2020. Until then, the existing Business Partner Risk Management process will remain in use; the specific procedures were maintained and updated in 2019.	
Money Laundering Prevention	June 2019	We rolled out a new Anti-money Laundering Policy along with a corresponding screening process for incoming payments in 2019.	
Self-monitoring as part of the Compliance Risk Assessment process: Integrate self-assessment of compliance program implementation status in existing Compliance Risk Assessment	July 2019	In 2019, the Compliance Programs and Support team launched a redesigned compliance risk management process. We adapted the risk evaluation process and added a new self-monitoring component.	


Supply chain standards

Goal: Ensure that suppliers adhere to ethical, social, environmental and compliance standards


Action(s):	By:	Progress by end of 2019:	Status:
Perform a qualitative analysis of the available assessment and audit findings and define potential courses of action.	End of Q2/2019	In 2019 we redirected our efforts and focused on strengthening and further developing our risk-based approach. We have also laid the foundation of cross-collaboration across the company for an overarching concept to more efficiently manage CR-related matters in 2020.	
Develop a due diligence process for Responsible Minerals Sourcing according to the OECD guidance for upstream processes and integrate it into the working processes of the affected units.	End of Q3/2019	In the second half of 2019, a working group with representatives from business sectors and Group functions was established. At the end of 2019, the elements of a draft conflict minerals system were developed and will be further defined in 2020.	
Develop a due diligence process for palm oil sourcing according to international guidance and implement it within the working processes of the affected units.	End of 2019	In 2019, we focused on other topics and therefore did not reach our goal for palm oil sourcing. However, we aim to develop a due diligence process by the end of 2020.	

Animal welfare


Goal: Re-accredit relevant animal facilities

Action(s):	By:	Progress by end of 2019:	Status:
Re-accredit relevant animal facilities.	Ongoing	In 2019, one site in Italy has completed its re-accreditation. Re-accreditations are conducted every three years.	

Goal: Ensure animal welfare in our supply chain

Action(s):	By:	Progress by end of 2019:	Status:
Develop and implement an audit plan for suppliers.	Ongoing	Audit plans were developed and implemented in 2019 as planned. The process is up and running.	

Goal: Promote the 3Rs (Reduce, Refine, Replace)

Action(s):	By:	Progress by end of 2019:	Status:
Develop a Group-wide 3R program.	Ongoing	The internal 3Rs Award for increasing internal awareness was held again in 2019.	





products

health for all

Focus programs





Goal: Eliminate schistosomiasis

Hand in hand with our partners, we aim to eliminate the tropical worm disease schistosomiasis worldwide

Action(s):	By:	Progress by end of 2019:	Status:
Donate up to 250 million praziquantel tablets annually to the World Health Organization (WHO) for African school-aged children.	Ongoing	Following the orders for 2019 by WHO, we donated nearly 233 million tablets for distribution in 35 countries, 32 of which in Africa. We continue to maintain production capacities at a level sufficient for manufacturing 250 million praziquantel tablets a year. We signed a new Memorandum of Understanding with WHO in July 2019, extending our partnership for another five years.	
Optimize the praziquantel formulation. Milestone for 2019: complete analysis of bioequivalence study.	End of 2020	In 2019, we analyzed the results of the first bioequivalence study, which had already been completed in 2018.	
Initiate new partnerships to promote behavioral change in African school children. Milestone for 2019: extend the project to two further districts in Ethiopia.	End of 2019	We extended the behavioral change project with NALA foundation to two new districts in Ethiopia. Health and education activities focusing on safe water, sanitation and hygiene were conducted in Mizan Aman and Guraferda.	
Continue to strengthen the position of the Global Schistosomiasis Alliance (GSA) as a partner platform for advocacy, implementation, research, communication, and strategy development.	Ongoing	The GSA has taken on the role to house and oversee the implementation of a Schistosomiasis Action Plan and adjusted its work program and working groups to drive progress on the Action Plan.	


Goal: Availability: Address unmet needs through the research, development and optimization of health solutions

We aim to improve global health for underserved populations in low- and middle-income countries, with a focus on combating infectious diseases.


Action(s):	By:	Progress by end of 2019:	Status:
Develop a pediatric formulation of praziquantel for the treatment of schistosomiasis in children under six. Milestone 2020: Develop access strategy for select African countries (Q4, 2020)	End of Q4/2020	The Phase III trial began at the Homa Bay clinical center in Kenya in September 2019. The study is ongoing. Based on the commitment to provide patients in need with sustainable access to pediatric praziquantel, an innovative access path is currently being designed together with international key stakeholders.	
Develop a pediatric formulation of praziquantel for the treatment of schistosomiasis in children under six. Milestone 2019: start of Phase III trial.	End of Q2/2019	The Phase III trial started in September 2019 at the Homa Bay clinical center in Kenya. The study is ongoing.	
Develop a new antimalarial (PeEF2 inhibitor). Milestone 2020: Design of Phase II and identification of combination partner (Q4, 2020)	End of Q4/2020	In addition to bringing Phase Ib to completion, our work focused on designing the Phase II study, identifying a combination partner and devising a commercialization path to tailor further development.	
Develop a new antimalarial (PeEF2 inhibitor). Milestone for 2019: Completion of Phase I/Ib.	End of Q4/2019	Testing of PeEF2 inhibitor completed under the seamless Phase I/human blood malaria challenge model (Phase Ib).	

Pharmaceutical supply chain

Goal: Accessibility: Strengthen supply chains and provide localized health solutions


Action(s):	By:	Progress by end of 2019:	Status:
Form a partnership to improve healthcare at the point of care in developing countries.	End of 2019	We successfully launched and implemented a project in Tanzania with Bahari, a local distributor, and in collaboration with Business for Health Solutions.	

Goal: Provide and further develop the GPHF Minilab™


Action(s):	By:	Progress by end of 2019:	Status:
Update the Minilab manuals and consolidate all test methods into one single volume.	End of 2020	A print version of a consolidated English manual was completed in 2019. French and Spanish versions will follow in 2020.	

Prices of medicines

Goal: Provide patients with access to affordable, high-quality products by making more of our branded generics available.

Action(s):	By:	Progress by end of 2019:	Status:
Continue with the expansion of our branded generics portfolio.	Ongoing	We launched four branded generic products in the Philippines, three in Angola, one in Brazil, and one in Mexico.	



Goal: Provide "beyond-the-pill" solutions to patients, caregivers and physicians to enable better management of the condition while maximizing treatment outcomes.

Action(s):	By:	Progress by end of 2019:	Status:
We entered a partnership on a leading medication adherence solution, Medisafe, to pilot a customized program to cardiometabolic patients in Brazil, Russia and Mexico.	Ongoing	Significant improvement in adherence to medication across all brands could be observed during the initial 12 months of the program delivery. We extended our partnerships in Russia and Brazil.	
We entered a partnership with a leading digital diabetes prevention program provider, Blue Mesa Health, to offer an effective and customized lifestyle counselling program to prediabetic patients across different regions.	Ongoing	A proof-of-concept pilot was completed in several countries and the program was or is being offered in Guatemala, Hong Kong, the United Arab Emirates and Brazil. Launch preparations are underway in the United Arab Emirates to make the program available commercially as well.	

product safety and quality

Chemical product safety

Goal: Guided by the precautionary principle, establish a globally aligned hazard and risk communication system for all our relevant chemical products in the supply chain

Action(s):	By:	Progress by end of 2019:	Status:
Implement the Global Product Strategy: Issue product safety summaries for all hazardous substances registered under REACH	End of 2020	The VCI has limited the product safety summaries to EU REACH lead substances. Following a review by the International Council of Chemical Associations (ICCA) and the UN, the ICCA took down the website with the product safety summaries on October 1, 2019 due the broad availability of such information on various portals, such as those of chemical agencies. It is therefore unnecessary for the ICCA to continue maintaining a web portal for product safety summaries.	-
Projects for hazard communication: Update safety data sheets for non-hazardous materials	By end of 2020	In both our Life Science and Performance Materials business sectors, all safety data sheets for non-hazardous materials had been updated by the end of 2019. These figures do not yet include the products/safety data sheets from the acquisition of Versum Materials and Intermolecular.	
Harmonize safety data sheets to align with a globally uniform standard	By end of 2020	In our Life Science business sector, the harmonization process was completed at the end of 2019. In Performance Materials, we have harmonized the majority of our safety data sheets Group-wide. However, national regulations limit what we can do in terms of completely harmonizing our safety information. In the process of integrating Versum Materials and Intermolecular, which we acquired in 2019, we are verifying whether their safety information complies with the applicable regulatory requirements as well as our internal standards, and are adapting the underlying processes where necessary.	




Patient safety

Goal: Enhance patient safety through stakeholder communication

Action(s):	By:	Progress by end of 2019:	Status:
Enhance the effective and timely communication to stakeholders in agreement with health authorities.	2019	New processes were introduced to meet new health authority requirements for the communication of safety signals. Mapping of local and regional requirements for safety issues were completed.	
Enhance patient interface in agReporter application and rollout of patient-centric pharmacovigilance videos.	2019	In 2019, we made the mobile patient-centric app for reporting adverse effects (agReporter) available in six additional languages: Russian, Simplified Chinese, Italian, Taiwan Traditional Chinese, German, and Turkish (simple form) In order to promote the use of the app by patients to report adverse effects, we introduced new features:	

- Application enhanced to support mobile browser as well as Safari and Chrome
- Improvement of data quality for reported adverse effects

Goal: Empower early and fully informed decisions by addressing unmet medical needs, deep biology and drug safety




Action(s):	By:	Progress by end of 2019:	Status:
Define a scoring model as basis for product prioritization and tiered portfolio management.	2023	We formed a workstream for portfolio prioritization and tiered portfolio management to enhance focus on high-priority assets. This action will be supported by an end-to-end vendor management framework.	
Implement a risk-based approach in global patient safety processes to improve efficiency.	2023	We formed a workstream for our risk-based approach, which will operate alongside the workstream for portfolio prioritization. It will be supported by an end-to-end vendor management framework to allow the team to efficiently work with vendors.	
Develop real-time pharmacovigilance intelligence on global, regional and local levels to enable strategic decision-making.	2023	We formed a work package under the workstream for our risk-based approach, in order to develop a pharmacovigilance intelligence governance structure and tools. This governance system will help to ensure that the risk-based approach is applied when centralizing our position for pharmacovigilance strategy and negotiations with health authorities.	

Goal: Provide up-to-date safety information to our customers worldwide, based on the benefit-risk profiles of our products




Action(s):	By:	Progress by end of 2019:	Status:
Practice predictive safety by developing a robust, cross-functional benefit-risk strategy that helps us deliver therapies that are truly differentiated and provide transformational value to patients.	2023	We formed a workstream for our benefit-risk blueprint strategy in close collaboration with multiple stakeholder functions. We aim to redesign and strengthen the benefit-risk strategy, and to establish effective communication of benefit-risk assessment to internal and external stakeholders.	
Optimize and automate the processing of individual case safety reports (ICSRs) from collection to reporting, in order to significantly reduce manual efforts and further improve quality, while maintaining a high level of timely compliance in reporting.	2023	We formed a workstream to leverage automation to avoid duplicating resources and generating unsustainable operating costs.	

Product-related crime

Goal: Strengthening cross-functional collaboration within the global security network and raising awareness among other target audiences of the strategic relevance of counterfeit medicines.


Action(s):	By:	Progress by end of 2019:	Status:
Expand organizational structures and certify employees who deal with product-related crime.	Ongoing	Continued holding product crime officer training programs as well as fortnightly conference calls.	
Host conferences and seminars; share best practices and lessons learned through international networks	Ongoing	Conducted workshops and training seminars in Africa, China and Latin America. Best-practice sharing via international networks: Participated in five Pharmaceutical Security Institute conferences.	
Establish the Security Academy learning and communication platform with the aim of better imparting the relevant expertise to all Security functions and key stakeholders.	Ongoing	Kick-off held in mid-February 2020, thereafter quarterly calls.	

Goal: Develop and implement security technologies and solutions for the authentication, identification, integrity, and security of the product supply chain


Action(s):	By:	Progress by end of 2019:	Status:
Support regional activities to counter product-related crime.	Ongoing	Started a project in China to monitor online marketplaces more purposefully and pinpoint suspected cases. Implemented projects and technical/organizational measures in Mexico and Italy to better monitor the external supply chain (road transport) and minimize the risk of pharmaceutical transport robbery and product theft.	
Step up internet searches to detect counterfeit products, illegal parallel imports as well as trademark infringements	Ongoing	Start a project in China to monitor online marketplaces in a more focused manner and investigate suspected cases.	
Monitor counterfeit pharmaceuticals in conventional distribution channels as well as online sales	Ongoing	Continued monitoring through external service providers to more rapidly identify counterfeit versions of our products and take countermeasures. In 2019, we focused on transparently tracking cybercrime in China.	

Transport and warehouse safety

Goal: Ensure warehouse and transport safety for our company and our suppliers.

Action(s):	By:	Progress by end of 2019:	Status:
Harmonize transport and warehouse safety master data through Group-wide ERP systems.	End of 2020	The harmonization process was completed Group-wide.	



Goal: Ensure warehouse and transport safety for our company and third-party warehouses and avoid incidents with risks for people and the environment.

Action(s):	By:	Progress by end of 2019:	Status:
Regularly evaluate audit results, incident reports and safety-related complaints and implement the resulting corrective actions.	Ongoing	The criteria for reusing shipping cartons was revised in order to reduce waste while also continuing to comply with all required safety standards.	



Employees

Career with us



Goal: Consistently fill at least two-thirds of leadership positions (Role 6+) with internal candidates.

Action(s):	By:	Progress by end of 2019:	Status:
Use the Talent Management Process to identify suitable employees with leadership potential and optimize the process to systematically advance them.	Ongoing	In 2019, 87% of vacant positions (Role 6+) were filled internally.	
Build a high-potential talent pool that reflects our demographic structure.	Ongoing	We are continuously developing our high-potential talent pool, which is a reflection of the diversity within our company.	

Goal: Position our Group as an attractive employer for university graduates


Action(s):	By:	Progress by end of 2019:	Status:
Participate in university fairs and organize in-house recruiting events for graduates; position our company via employer branding channels; partner with target universities, student initiatives and organizations/associations.	Ongoing	We are continuously positioning ourselves as an attractive employer for university graduates. Our employer branding and talent sourcing measures enabled us to fill all trainee positions and other direct entry jobs by the end of 2019.	
Approach select target universities.	Ongoing	We leveraged existing measures, for instance intensive collaboration with selected university departments and career services, to bolster our position as an attractive employer for university graduates.	

Goal: Increase the share of employees (Group-wide) with development plans to 70% by 2020

Action(s):	By:	Progress by end of 2019:	Status:
Conduct extensive internal communications and people development campaigns and optimize existing tools	End of 2020	The percentage of employees with development plans increased from 70% (2018) to 75% (2019).	
Create awareness and share knowledge	End of 2020	We are taking steps to raise awareness of development plans and help employees to create a solid one.	


Fairness and dialogue

Goal: Measure and improve employee engagement

Action(s):	By:	Progress by end of 2019:	Status:
Implement a regularly occurring process to measure employee engagement and take actions to improve it.	Ongoing	In 2019, we once again conducted a Group-wide employee survey.	

Diversity

Goal: Our target is to maintain a 30% representation of women in leadership roles (Role 4+) until 2021.

Action(s):	By:	Progress by end of 2019:	Status:
Deploy teams at business sector level to develop goals and measures to move women into positions in various hierarchies	End of 2021	All business sectors have set up their own teams that are dedicated to pursuing the objectives and measures and network with one another. For example, all business sectors have started to introduce our inclusion training. Moreover, we offer specific sponsoring or mentoring programs for women.	

Health and safety

Goal: Reduce the lost time injury rate Group-wide (to 1.5 or less)

Action(s):	By:	Progress by end of 2019:	Status:
Reinforce our safety culture to prevent behavior-related accidents. Roll out our BeSafe! program at all legacy Sigma-Aldrich sites and monitor ongoing implementation via appropriate performance indicators.	End of 2020	In 2019 we achieved a Group-wide LTIR of 1.5. Manager training and safety walkabouts helped us maintain a high level of safety awareness. We took these steps at numerous sites – including 12 legacy Sigma-Aldrich facilities.	

Environment





Environmental stewardship

Goal: Incorporate all production sites into our Group ISO 14001 certificate for environmental management systems.

Action(s):	By:	Progress by end of 2019:	Status:
At newly acquired production sites, introduce environmental management systems in line with our Group ISO 14001 certificate and certify them accordingly.	Ongoing	In 2019, no new sites were added to our Group certificate. All sites relevant to the Group certificate had already achieved ISO 14001:2015 certification.	


Climate action

Goal: 20% reduction in our direct and indirect greenhouse gas emissions (Scope 1 and 2) by 2020 relative to the 2006 baseline

Action(s):	By:	Progress by end of 2019:	Status:
Systematically examine the energy consumption at our individual production sites	End of 2020	In line with the EU Energy Efficiency Directive, we performed renewed energy audits pursuant to EN 16247 at various European sites. Our Energy Management & Technology unit (from the Darmstadt/Gernsheim sites (both Germany)) supported our sites in this endeavor and performed audits in Calais, Meyzieu and Semoy (all in France) as well as in Ivrea (Italy). Furthermore, our Life Science business sector conducted energy management surveys at its sites in 2019. We use the data points collected to create a roadmap so as to streamline our energy management approach. Moreover, in July, Healthcare launched the EHS dashboard, a tool that aims to increase knowledge and transparency of environmental emissions to top leaders and the EHS community.	
Identify and implement potential energy savings.	End of 2020	In developing a new climate action target, we are revising our approach to promoting energy efficiency projects and hosted an energy efficiency conference to discuss the matter. In addition, we set up an Energy Management intranet site to provide a platform for sharing best practices and lessons learned and to evolve energy efficiency strategies; we furthermore formed international work groups to address interdisciplinary topics relating to energy efficiency.	
Reduce process-related emissions	End of 2022	In early 2019, we transferred a production line to a new site and can now manufacture these products in an emission-free plant. This led to an additional 10,000 metric tons of CO ₂ eq savings. Throughout 2018 and 2019, we initiated two additional process emission reduction projects that will continue through the year 2022. Using 2018 production volumes as our baseline, these projects are expected to save an additional 55,000 metric tons of CO ₂ eq. Further projects are being evaluated for feasibility.	
Renewable energies	End of 2020	In 2019, we started integrating the purchase of electricity from renewable sources into the scope of our climate action goal. In line with the Greenhouse Gas Protocol (GHG Protocol), we are now capturing our emissions using both the market-based and the location-based approach. Moreover, in the United States, we have additionally purchased renewable energy credits (REC) in order to achieve our 20% target.	


Waste and recycling

Goal: Reduce the environmental impact of our waste disposal (Waste Score of Merck KGaA, Darmstadt, Germany) by 5% by 2025 (baseline 2016)


Action(s):	By:	Progress by end of 2019:	Status:
Continuously look for ways to improve our production processes and disposal methods.	Ongoing	Through a pilot of our ProMec initiative, we are recycling approximately 1,300 metric tons of liquid production waste per year.	

Water management

Goal: Introduce a sustainable water management system at 24 of our manufacturing facilities with high water use by 2020

Action(s):	By:	Progress by end of 2019:	Status:
Meet the "advanced" requirements set out in the CEFIC flagship self-assessment tool (stage 3). This will assess our sites' impact on the water situation in the vicinity of each individual site.	May 2020	During stage 3 of the self-assessment, we will assess the environmental impacts caused by our discharged water. This process will continue until May 2020 without an interim audit.	

Goal: Reduce our water use at sites in water-stressed areas by 10% relative to the 2014 baseline.

Action(s):	By:	Progress by end of 2019:	Status:
Processes optimized to curb water consumption at seven production sites in Mexico, Spain, Taiwan, and the United States.	2020	Water use was reduced by 21% at the respective sites.	

Recognition and rankings

The following overview presents a selection of major awards and recognition that we have received or achieved. Information on additional recognition and accolades received by individual businesses or sites can be found in the respective chapter of our 2019 Corporate Responsibility Report, or on our website.

CR performance

Access to Medicine Index

In 2018, our company ranked fourth in the Access to Medicine Index, a position we have held since 2016 and one that has consistently put us among the top five firms in the Index. Published every two years by the international non-profit Access to Medicine Foundation, this index ranks the top 20 largest pharmaceutical companies based on their efforts to address access to medicine in low- and middle-income countries.

www.accesstomedicineindex.org

CDP climate and water

We've been reporting our climate actions to the CDP (formerly the Carbon Disclosure Project) since 2008. In 2019, our climate impact mitigation activities scored a C in the CDP, the same as in 2018. This initiative measures the strategies companies use to reduce emissions along with their successes, as well as how they manage their risks and opportunities on climate change.

In addition to reporting on our climate action, since 2016 we have been reporting our water-related performance and processes to the CDP. In 2019, we received a B for our water management practices, up from a B- in 2018.

The CDP evaluates companies' performance in the areas of climate and water on a scale from A to D-, with A being the top score.

www.cdp.net

EcoVadis rating

The independent rating agency EcoVadis evaluates suppliers from 150 countries across the categories of Environment, Labor and Human Rights, Ethics, and Sustainable Procurement. As a member of the Together for Sustainability initiative, we also undergo this assessment; in 2019 we were again assessed and awarded platinum status in 2020, putting us among the top 1% of all participating companies.

www.ecovadis.com

ESG Rating from MSCI

MSCI is one of the world's largest providers of financial services for institutional investors as well as environment, social and governance ratings (ESG). This independent organization assesses companies according to their exposure to industry-significant ESG risks and their ability to manage those risks relative to industry peers. In May 2019, MSCI gave us an "AAA", their highest ESG rating and one that puts us among the top 2% of all companies evaluated. They particularly praised our Group-wide ISO 9001 certification, our compliance activities and our robust quality management system.

www.msci.com/esg-ratings

ESG Rating from Sustainalytics

Sustainalytics is a firm that rates the sustainability of listed companies based on their environmental, social and corporate governance (ESG) performance. In 2018, this organization awarded us 79 out of 100 points, putting us among the leading pharmaceutical companies. We received particularly high marks in the categories of corporate governance and community outreach, and our environmental performance likewise earned a high score that far exceeded the average.

www.sustainalytics.com

Good Company Ranking

In 2018, the management consultancy Kirchhoff Consult released its sixth Good Company Ranking, an index that is published every two years. Among the German blue-chip companies in the DAX 30, we took fourth place in this latest round, having moved up six positions from our 2016 rating. The ranking is published every two years.

www.kirchhoff-consult.com

Institute for Ecological Economy Research ranking

In 2018, the Institute for Ecological Economy Research (IÖW) and "future e. V. – Verantwortung unternehmen" issued its tenth ranking of sustainability reporting by major German companies. Published every two years, this index assesses factors such as the environmental impacts of production processes, transparent communication and efforts to enhance supply chain sustainability. Our 2017 CR Report achieved a score of 426 in the latest ranking, putting us in sixth place. The ranking is published every two years.

www.ranking-nachhaltigkeitsberichte.de/en

ESG company rating

In 2019, the Institutional Shareholder Services (ISS) group of companies again gave our Group a B- on a scale of A+ (top mark) to D-, once more granting us Prime Status ("good" to "very good") as in 2018.

www.issgovernance.com/esg

Children's rights and business

The Boston Consulting Group and the "Global Child Forum", a Stockholm-based non-profit foundation to promote children's rights conducted a global benchmark study in 2019 entitled "The State of Children's Rights and Business 2019: From Promise to Practice". We achieved an average score of 9.5 out of 10 and have been classified as a "Leader" regarding our action for children's rights. Our performance in the "Workplace" and "Community & Environment" categories received particularly high marks that were far above average.

www.globalchildforum.org

sustainability indices

Ethibel Sustainability Index (ESI) Excellence Europe and Ethibel EXCELLENCE Investment Register

Since 2015 we have been a constituent of the ESI Excellence Europe, a sustainability index that comprises the 200 top-rated European companies based on their corporate responsibility performance. We are also included in the Ethibel EXCELLENCE Investment Register.

www.forumethibel.org

Euronext Vigeo Eiris Index

Since 2015, we have been a constituent of the Euronext-Vigeo Eurozone 120, an index that features the 120 most successful European companies in terms of their environmental, social and governance practices. Since June 2019, we have also been constituents of the Euronext Vigeo Europe 120 index.

www.vigeo-eiris.com

FTSE4Good Index

Since 2008, we have been included in the FTSE4GOOD Index, a leading international ethical investment stock market rating that annually measures the performance of companies in demonstrating strong environmental, social and governance practices.

www.ftse.com

STOXX® Global ESG Leaders Index

In 2019, our company was once again included in the STOXX Global ESG Leaders sustainability index, which assesses companies based on key environmental, social and governance criteria.

www.stoxx.com

CR awards

Prize for research and development

The R&D 100 Awards are among the most prestigious innovation awards in the world, honoring research and development pioneers. In November 2019, one of these awards recognized our first-to-market innovation **Eshmuno[®] CP-FT Resin**, which can be used to efficiently remove aggregates from antibodies, thus lowering the risk to patients. Moreover, this product yields higher capacities than traditional methods and results in a smaller ecological footprint from manufacturing.

www.rdworldonline.com

Top Employers Institute recognition

The annual international evaluation conducted by the Top Employers Institute recognizes leading employers around the world through a stringent evaluation process. Including more than 1,500 companies across 118 countries, this evaluation is based on a detailed assessment of HR processes and structures. In February 2019, we were named one of only 14 global employers of choice by the Top Employers Institute, which recognized our achievements in talent development, performance management, and career and succession planning.

In addition to the Global Top Employer 2019 certification, our Group was also named as a Top Employer Europe 2019 as well as a Top Employer Germany 2019.

www.top-employers.com/en

Most Attractive Employers ranking

The success of our efforts is also confirmed by our ranking among the 100 **most attractive employers for students and professional scientists** in Germany. This index is published annually by employer branding specialist **Universum** and involves a survey of more than 5,000 people. In the category of Natural Sciences, we again ranked fifth in the student survey and even moved up one place to be ranked sixth by experienced professionals in 2019.

www.universumglobal.com

Award from Science Magazine

Science, a leading peer-reviewed academic journal, once more named us a **top employer**. Almost 8,000 employees and managers from biotech and pharmaceutical companies took part in the magazine's online survey, ranking our company fourth. We were praised especially for prioritizing thinking ahead, adapting, and communicating.

www.sciencemag.org

subsidiary awards

CSR Award for "Happy Workplace"

In April 2019, our subsidiary in Taiwan received the 2019 CSR Award for "Happy Workplace" from Global View Magazine, a prestigious business magazine in Taiwan. We are honored to be recognized alongside other multinational and Taiwan-based global companies.

Best places to work

In 2019, the Boston Business Journal added us to their list of Best Places to Work, which honors leading employers in the Boston area (Massachusetts, USA) that have built outstanding work environments for their employees. The final rankings were determined through online surveys conducted among employees of each company.

www.bizjournals.com

One of the most sustainable pharmaceutical companies

In 2019, the business magazine "Exame" listed us as one of the most sustainable pharmaceutical companies in Brazil. The magazine highlighted our promotion of diversity and inclusion specifically in terms of gender equality.

Non-financial report

Part of the non-financial report

Index for the combined separate integrated non-financial report

Through our combined separate integrated non-financial report, we fulfill the legal requirements. The separate non-financial report of the Group has been combined with the separate non-financial report of the parent undertaking, Merck KGaA, Darmstadt, Germany, in accordance with Section 289b (3) sentence 2 in conjunction with Section 298 (2) of the German Commercial Code, and integrated into our Corporate Responsibility Report. The following index provides an overview of the contents of the non-financial report and contains links to the relevant passages in the CR report. External references within our CR Report are not part of the non-financial report.

To provide the type of framework stipulated in Section 289d in conjunction with Section 315c (3) of the German Commercial Code, we have applied the standards of the Global Reporting Initiative (Option: Comprehensive) for this report.

Description of business model

We describe our business model, corporate structure, governance and Group strategy under [Company profile](#).

Strategic and organizational approach to sustainability

Under [Governance](#), we present external guidelines and initiatives to which we've committed ourselves, along with Group-wide guidelines that are the cornerstone of our responsible governance. Our [CR strategy](#) sets out how we practice corporate responsibility, both in terms of strategy and at the organizational level.

Material aspects and issues

To determine the aspects and matters of relevance to the non-financial report, we conducted a [materiality analysis](#) that identified several matters that could not be assigned to any of the five aspects defined as minimum contents under Section 289c (2) of the German Commercial Code. Along with these five aspects, we have therefore decided to report on the following additional relevant matters:

Aspect	Matter
Environmental matters	<ul style="list-style-type: none"> ■ Environmental stewardship ■ Pharmaceutical and chemical residues in the environment (incl. abandoned hazardous waste) ■ Plant and process safety
Employee-related matters	<ul style="list-style-type: none"> ■ Health and safety ■ Good leadership ■ Employee engagement ■ Employee development ■ Recruiting and retaining employees ■ Diversity and equal opportunities ■ Work 4.0
Social matters	<ul style="list-style-type: none"> ■ Patient safety ■ Product-related crime ■ Responsible marketing ■ Data protection
Respect for human rights	<ul style="list-style-type: none"> ■ Bioethics (incl. genome editing) ■ Clinical studies

Anti-corruption and anti-bribery

- Compliance
- Interactions with health systems

- Chemical product safety (incl. labeling of chemicals)
- Transport and warehouse safety
- Prices of medicines
- Innovation and R&D
- Digitalization

Within our approach to comprehensive risk and opportunity management, we also identify current and potential risks and opportunities in the areas of environment, community and governance. This includes information on the gross risks in terms of potential damage and probability, as well as the residual net risks remaining after mitigation measures have been effected. We did not identify any net risks that fulfill the materiality criteria as set forth by Section 289c (3) no. 3 and 4 of the German Commercial Code. Additional risks are described in the [Report on Risks and Opportunities](#) in the combined management report.

Aspect: Environmental matters

Within our Group, environmental matters fall under environmental stewardship. In the following section, we report on the measures implemented to further environmental stewardship, enhance plant and process safety, and address pharmaceutical and chemical residues in the environment (incl. abandoned hazardous waste).

Matter	Concepts incl. due diligence processes and outcome of activities
Environmental stewardship	<ul style="list-style-type: none"> ■ Our approach to environmental stewardship ■ How we structure our environmental stewardship practices ■ Material investments in environmental impact mitigation ■ Projects and measures regarding environmental stewardship ■ Goals and progress: Environment
Pharmaceutical and chemical residues in the environment (incl. abandoned hazardous waste)	<ul style="list-style-type: none"> ■ Provisions for environmental impact mitigation
Plant and process safety	<ul style="list-style-type: none"> ■ Our approach to plant and process safety ■ How we organize our plant and process safety ■ Our commitment: Standards and legislation ■ Projects and measures regarding plant and process safety

Aspect: Employee-related matters

Within our Group, employee-related matters fall under the purview of Human Resources (HR). Under this aspect, we report on concepts pertaining to being an attractive employer. These include the matters of health and safety, good leadership, employee engagement, employee development, recruiting and retaining employees, diversity and equal opportunities and work 4.0.

Matter	Concepts incl. due diligence processes and outcome of activities
Health and safety	<ul style="list-style-type: none"> ■ Our approach to preventing accidents and promoting health ■ How we manage occupational health and safety ■ Policies and work agreements regarding health and safety ■ Projects and measures regarding health and safety ■ Goals and progress: Employees
Good leadership	<ul style="list-style-type: none"> ■ Our approach to good leadership ■ How we facilitate good leadership ■ Leadership behaviors ■ Projects and measures regarding good leadership
Employee engagement	<ul style="list-style-type: none"> ■ Our approach to employee engagement ■ How we engage our employees ■ Our commitment: Group-wide Social and Labor Standards Policy ■ Projects and measures regarding employee engagement ■ Goals and progress: Employees
Employee development	<ul style="list-style-type: none"> ■ How we organize recruiting, vocational training and advanced training ■ Employee development guideline ■ Projects and measures regarding employee development ■ Goals and progress: Employees
Recruiting and retaining employees (incl. work-life balance)	<ul style="list-style-type: none"> ■ Our approach to attracting and retaining talent ■ How we organize recruiting, vocational training and advanced training ■ Projects and measures ■ Goals and progress: Employees ■ Our approach to ensuring a good work-life balance ■ How we strengthen work-life balance ■ Group guidelines and local regulations regarding work-life balance ■ Projects and measures regarding work-life balance
Diversity and equal opportunities	<ul style="list-style-type: none"> ■ Our approach to diversity and equal opportunity ■ How we are making diversity a pillar of the company ■ Our commitment regarding diversity and equal opportunities: industry-wide initiatives and regulations ■ Projects and measures regarding diversity and equal opportunities ■ Goals and progress: Employees
Work 4.0	<ul style="list-style-type: none"> ■ Projects and measures ■ Leveraging the opportunities of digitalization

Aspect: Social matters

“Social matters” encompasses our relationship with consumers. Under this heading, we report on concepts relating to patient safety, product-related crime, responsible marketing, and data protection.

Matter	Concepts incl. due diligence processes and outcome of activities
Patient safety	<ul style="list-style-type: none"> ■ Our approach to ensuring patient safety ■ How we monitor patient safety ■ Guidelines and statutory requirements regarding patient safety ■ Projects and measures regarding patient safety ■ Goals and progress: Patient safety
Product-related crime	<ul style="list-style-type: none"> ■ Our approach to product-related crime ■ How we are tackling product-related crime ■ Our commitment: Group-wide guidelines and standards regarding product-related crime ■ Projects and measures regarding product-related crime ■ Goals and progress: Product-related crime
Responsible marketing	<ul style="list-style-type: none"> ■ Our approach to responsible marketing ■ How we conduct ethical marketing ■ Code of Conduct and industry-wide regulations regarding responsible marketing ■ Projects and measures regarding responsible marketing
Data protection	<ul style="list-style-type: none"> ■ Data Privacy integrated into Group Compliance ■ Harmonizing data privacy Group-wide ■ Ensuring data privacy and information security ■ Internal reporting

Aspect: Respect for human rights

Under “Respect for human rights”, we report on concepts related to bioethics (including genome editing) and clinical studies.

Matter	Concepts incl. due diligence processes and outcome of activities
Bioethics (incl. genome editing)	<ul style="list-style-type: none"> ■ Our approach to ethical business conduct ■ How we assess bioethical topics and issues ■ Identifying topics and issues early on ■ Bioethics Advisory Panel discussions ■ Projects and measures regarding bioethics
Clinical studies	<ul style="list-style-type: none"> ■ Our approach to safe and transparent clinical studies ■ How we govern clinical studies ■ International guidelines and agreements regarding clinical studies ■ Projects and measures regarding clinical studies

Aspect: Anti-corruption and anti-bribery

Within our corporate structure, anti-corruption efforts fall under Compliance Management, so we report here on compliance and interactions with health systems.

Matter	Concepts incl. due diligence processes and outcome of activities
Compliance	<ul style="list-style-type: none"> ■ Our approach to compliance ■ How we ensure compliance ■ Guidelines and standards regarding compliance ■ Projects and measures regarding compliance ■ Goals and progress: Compliance
Interactions with health systems	<ul style="list-style-type: none"> ■ Our approach to interacting with health systems ■ How we ensure transparency and compliance at an organizational level ■ Group-wide guidelines and industry standards regarding interactions with health systems ■ Projects and measures regarding interactions with health systems

Other matters

In the following section, we report on significant issues that are not covered in any of the five minimum aspects stipulated in section 289c (2) of the German Commercial Code:

Matter	Concepts incl. due diligence processes and outcome of activities
Chemical product safety (incl. labeling of chemicals)	<ul style="list-style-type: none"> ■ Our approach to safe chemical products ■ How we ensure chemical product safety ■ Legal requirements and Group-wide guidelines regarding chemical product safety ■ Projects and measures regarding chemical product safety ■ Goals and progress: Chemical product safety
Transport and warehouse safety	<ul style="list-style-type: none"> ■ Our approach to safe transport and storage ■ How we achieve transport and warehouse safety ■ Internal standards and international rules regarding transport and warehouse safety ■ Projects and measures regarding transport and warehouse safety ■ Goals and progress: Transport and warehouse safety
Prices of medicines	<ul style="list-style-type: none"> ■ Our approach to pricing medicines ■ Setting medicine prices ■ Medicine price guidelines and principles ■ Projects and measures regarding prices of medicines
Innovation and R&D	<ul style="list-style-type: none"> ■ Our approach to innovation ■ How we drive innovation ■ Our commitment: Protecting innovative ideas ■ Projects and measures regarding Innovation and R&D
Digitalization	<ul style="list-style-type: none"> ■ Our approach to driving digital innovation

GRI content index

General disclosures

The CR Report 2019 has been prepared in accordance with the GRI Standards: 'Comprehensive' option. The following GRI content index provides an overview of general disclosures, the GRI Standards and management approaches that were identified to be relevant. It also indicates where the corresponding information can be found. The GRI content index, as a part of the [CR report 2019](#), has received an independent audit certificate after undergoing a [limited assurance audit](#).

GRI Content Index: General disclosures

GRI Standards and Disclosure Number	Comment	Reference
Organizational profile		
102-1	Name of the organization	Company profile
102-2	Activities, brands, products, and services	Company profile Products & Industries
102-3	Location of headquarters	Company profile
102-4	Location of operations	Company profile List of shareholdings
102-5	Ownership and legal form	Company profile
102-6	Markets served	Company profile Macroeconomic and Sector-Specific Environment
102-7	Scale of the organization	Company profile Indicators: employees Indicators: environment Net sales Capitalization Consolidated Balance Sheet
102-8	Information on employees and other workers	Supervised workers such as temps are not logged in our employee data system. Indicators: employees Career with us
102-9	Supply chain	Supply chain standards Mica supply chain Pharmaceutical supply chain
102-10	Significant changes to the organization and its supply chain	Company profile Supply chain standards Fundamental Information about the Group
102-11	Precautionary Principle or approach	CR strategy Environmental stewardship Transport and warehouse safety Health and safety Climate action Plant and process safety Chemical product safety Patient safety

102-12	External initiatives	<ul style="list-style-type: none"> CR strategy Governance Compliance Human rights Sustainable Development Goals Diversity Fairness and dialogue
102-13	Membership of associations	<ul style="list-style-type: none"> Stakeholder dialogue Environmental stewardship Compliance Human Rights Supply chain standards Global strategy
Strategy		
102-14	Statement from senior decision-maker	Letter from the CEO
102-15	Key impacts, risks, and opportunities	<ul style="list-style-type: none"> Letter from the CEO CR strategy Materiality analysis Goals Report on Risks and Opportunities
Ethics and integrity		
102-16	Values, principles, standards, and norms of behavior	<ul style="list-style-type: none"> CR strategy Governance Compliance Human rights Health for all Diversity Good leadership Bioethics Clinical studies Animal welfare Sustainable products Environmental stewardship
102-17	Mechanisms for advice and concerns about ethics	<ul style="list-style-type: none"> Compliance Diversity Mica supply chain Human rights Bioethics Clinical studies Animal welfare Indicators: business ethics
Governance		
102-18	Governance structure	<ul style="list-style-type: none"> CR strategy Management Statement on Corporate Governance
102-19	Delegating authority	<ul style="list-style-type: none"> CR strategy Procedures of the corporate bodies
102-20	Executive-level responsibility for economic, environmental, and social topics	CR strategy
102-21	Consulting stakeholders on economic, environmental, and social topics	<ul style="list-style-type: none"> CR strategy Stakeholder dialogue Materiality analysis Environmental stewardship Fairness and dialogue Interactions with health systems Global strategy

102-22	Composition of the highest governance body and its committees	Management Statement on Corporate Governance The Executive Board The Supervisory Board Objectives of the Supervisory Board with respect to its composition
102-23	Chair of the highest governance body	Management Statement on Corporate Governance
102-24	Nominating and selecting the highest governance body	Diversity The Executive Board Statement on Corporate Governance Gender quota Diversity policy Objectives of the Supervisory Board with respect to its composition
102-25	Conflicts of interest	Compliance Information on corporate governance practices
102-26	Role of highest governance body in setting purpose, values, and strategy	CR strategy Values and compliance Report of the Supervisory Board
102-27	Collective knowledge of highest governance body	CR strategy The Executive Board Statement on Corporate Governance
102-28	Evaluating the highest governance body's performance	Company profile Board of Partners The Supervisory Board Articles of Association Statement on Corporate Governance
102-29	Identifying and managing economic, environmental, and social impacts	CR strategy Materiality analysis Stakeholder dialogue Compliance Report profile Report on Risks and Opportunities Statement on Corporate Governance
102-30	Effectiveness of risk management processes	CR strategy Report profile Report on Risks and Opportunities Report of the Supervisory Boards
102-31	Review of economic, environmental, and social topics	CR strategy Report profile Report on Risks and Opportunities Report of the Supervisory Boards
102-32	Highest governance body's role in sustainability reporting	Report profile
102-33	Communicating critical concerns	Compliance Values and compliance
102-34	Nature and total number of critical concerns	Compliance Values and compliance

102-35	Remuneration policies		Compensation report
102-36	Process for determining remuneration		Compensation report
102-37	Stakeholders' involvement in remuneration		Career with us Compensation report Voting results Annual General Meeting 2019
102-38	Annual total compensation ratio	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 and the value of the respective position, as well as the employee's skill set and performance. Our Global Rewards Policy defines the framework for compensation and benefits across the entire Group. As far as possible, we strive to offer all our employees comparable compensation structures. Furthermore, we monitor Compliance with minimum standards. We do not consider the information required under GRI 102-38 and GRI 102-39 to be relevant to assessing the fairness of our compensation structures.	
102-39	Percentage increase in annual total compensation ratio	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 and the value of the respective position, as well as the employee's skill set and performance. Our Global Rewards Policy defines the framework for compensation and benefits across the entire Group. As far as possible, we strive to offer all our employees comparable compensation structures. Furthermore, we monitor Compliance with minimum standards. We do not consider the information required under GRI 102-38 and GRI 102-39 to be relevant to assessing the fairness of our compensation structures.	
Stakeholder engagement			
102-40	List of stakeholder groups		Stakeholder dialogue
102-41	Collective bargaining agreements		Fairness and dialogue
102-42	Identifying and selecting stakeholders		Stakeholder dialogue Materiality analysis
102-43	Approach to stakeholder engagement		Stakeholder dialogue Materiality analysis
102-44	Key topics and concerns raised		Stakeholder dialogue Materiality analysis

Reporting practice

102-45	Entities included in the consolidated financial statements	Report profile Company profile
102-46	Defining report content and topic Boundaries	Report profile Materiality analysis
102-47	List of material topics	Materiality analysis
102-48	Restatements of information	Report profile
102-49	Changes in reporting	Report profile Materiality analysis
102-50	Reporting period	Report profile
102-51	Date of most recent report	Report profile
102-52	Reporting cycle	Report profile
102-53	Contact point for questions regarding the report	Report profile
102-54	Claims of reporting in accordance with the GRI Standards	GRI content index
102-55	GRI content index	GRI content index
102-56	External assurance	Report profile Assurance report GRI content index

Economic standards

GRI Content Index: Economic Standards

GRI Standards and Disclosure Number	Comment	Reference
GRI 201: ECONOMIC PERFORMANCE 2016		
103-1	Explanation of the material topic and its Boundary	Materiality analysis Climate action
103-2	The management approach and its components	Water management Statement on Corporate Governance
103-3	Evaluation of the management approach	Governance Economic performance Pension schemes Report on Risks and Opportunities
201-1	Direct economic value generated and distributed	Indicators: community Indicators: employees Indicators: economics Consolidated Income Statement Consolidated Cash Flow Statement Information by business sector /country and region Personnel expenses
201-2	Financial implications and other risks and opportunities due to climate change	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).
		Climate action Water management Global Compact CoP CDP Report on Risks and Opportunities
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 Property, plant and equipment Research and development costs

GRI 202: MARKET PRESENCE 2016

103-1	Explanation of the material topic and its Boundary		Career with us Materiality analysis
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	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 local minimum wage. Our Global Rewards Policy applies to all our subsidiaries worldwide and guarantees a systematic compensation structure. Both base pay and short-term variable compensation are oriented to the median base pay of the relevant reference market. Our pay brackets are reviewed on an annual basis and reflect market conditions. It goes without saying that we always adhere to local minimum wage levels.	Career with us
202-2	Proportion of senior management hired from the local community	We encourage both local hiring and international appointments across all levels of the company. The percentage of local managers is not recorded as it is not relevant to our strategic personnel planning.	Good leadership

GRI 204: PROCUREMENT PRACTICES 2016

103-1	Explanation of the material topic and its Boundary		Supply chain standards Mica supply chain Materiality analysis
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
204-1	Proportion of spending on local suppliers		Supply chain standards

GRI 205: ANTI-CORRUPTION 2016

103-1	Explanation of the material topic and its Boundary		Compliance Interactions with health systems Materiality analysis
103-2	The management approach and its components		Values and compliance Responsible marketing
103-3	Evaluation of the management approach		
205-1	Operations assessed for risks related to corruption		Compliance Indicators: business ethics Values and compliance Report on Risks and Opportunities
205-2	Communication and training about anti-corruption policies and procedures		Compliance Indicators: business ethics
205-3	Confirmed incidents of corruption and actions taken	As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.	Compliance Indicators: business ethics Report on Risks and Opportunities

GRI 206: ANTI-COMPETITIVE BEHAVIOR 2016

103-1	Explanation of the material topic and its Boundary	Compliance Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Indicators: business ethics

Additional material topics

TECHNOLOGY (Innovation and R&D, Digitalization)

103-1	Explanation of the material topic and its Boundary	Innovation and digitalization Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	

DATA PROTECTION

103-1	Explanation of the material topic and its Boundary	Compliance Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	

Environmental standards

GRI Content Index: Environmental Standards

GRI Standards and Disclosure Number	Comment	Reference	
GRI 301: MATERIALS 2016			
103-1	Explanation of the material topic and its Boundary	Sustainable product design Packaging and recycling Environmental stewardship Waste and recycling Materiality analysis	
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
301-1	Materials used by weight or volume	Siehe GRI 103: 301	Waste and recycling Sustainable product design Packaging and recycling
301-2	Recycled input materials used	Siehe GRI 103: 301	Waste and recycling Packaging and recycling
301-3	Reclaimed products and their packaging materials	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.	Waste and recycling Packaging and recycling
GRI 302: ENERGY 2016			
103-1	Explanation of the material topic and its Boundary	Environmental stewardship Climate action Sustainable product design Materiality analysis	
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
302-1	Energy consumption within the organization		Climate action Indicators: environment
302-2	Energy consumption outside of the organization		Climate action
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		Sustainable product design

GRI 303: WATER AND EFFLUENTS 2018

103-1	Explanation of the material topic and its Boundary		Environmental stewardship Water management Materiality analysis
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
303-1	Interactions with water as a shared resource		Water management Indicators: environment
303-2	Management of water discharge-related impacts		Water management
303-3	Water withdrawal	The amount of seawater, produced water and other water withdrawn and discharged is not significant and is therefore not reported separately.	Water management Indicators: environment Climate action
303-4	Water discharge	The amount of seawater, produced water and other water withdrawn and discharged is not significant and is therefore not reported separately.	Water management Indicators: environment
303-5	Water consumption	Most of the water we use in our production is discharged directly or indirectly. Evaporation processes are not a material part of our production. At individual production sites, we bind small amounts of water in our products. We are working to implement collection systems for this consumption. As we have no water storage capacity, this information is not relevant for our company.	Water management Indicators: environment

GRI 304: BIODIVERSITY 2016

103-1	Explanation of the material topic and its Boundary		Environmental stewardship Materiality analysis
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Land use planning takes impacts on biodiversity into account, with appropriate measures being taken on a case-by-case basis.	Environmental stewardship
304-2	Significant impacts of activities, products, and services on biodiversity		Environmental stewardship
304-3	Habitats protected or restored		Environmental stewardship
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Land use planning takes impacts on biodiversity into account, with appropriate measures being taken on a case-by-case basis.	Environmental stewardship

GRI 305: EMISSIONS 2016

103-1	Explanation of the material topic and its Boundary		Environmental stewardship Climate action
103-2	The management approach and its components		Materiality analysis Sustainable product design Packaging and recycling
103-3	Evaluation of the management approach		
305-1	Direct (Scope 1) GHG emissions		Climate action Indicators: environment
305-2	Energy indirect (Scope 2) GHG		Climate action Indicators: environment
305-3	Other indirect (Scope 3) GHG emissions		Climate action Indicators: environment CDP
305-4	GHG emissions intensity		Climate action Indicators: environment
305-5	Reduction of GHG emissions		Climate action Indicators: environment Sustainable product design Packaging and recycling CDP
305-6	Emissions of ozone-depleting substances (ODS)	This disclosure is not material to Merck KGaA, Darmstadt, Germany.	Indicators: environment
305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	This disclosure is not material to Merck KGaA, Darmstadt, Germany.	Indicators: environment

GRI 306: EFFLUENTS AND WASTE 2016

103-1	Explanation of the material topic and its Boundary		Environmental stewardship Waste and recycling
103-2	The management approach and its components		Packaging and recycling Materiality analysis Plant and process safety
103-3	Evaluation of the management approach		
306-1	Water discharge by quality and destination	Please note that the effluents-related content in the current GRI 306: Effluents and Waste 2016 Standard has been updated and can be found in GRI 303: Water and Effluents 2018	
306-2	Waste by type and disposal method		Waste and recycling Packaging and recycling Indicators: environment
306-3	Significant spills		Plant and process safety Indicators: environment
306-4	Transport of hazardous waste		Indicators: environment
306-5	Water bodies affected by water discharges and/or runoff	Please note that the effluents-related content in the current GRI 306: Effluents and Waste 2016 Standard has been updated and can be found in GRI 303: Water and Effluents 2018	

GRI 307: ENVIRONMENTAL Compliance 2016

103-1	Explanation of the material topic and its Boundary	Environmental stewardship Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
307-1	Non-Compliance with environmental laws and regulations	Environmental stewardship

GRI 308: SUPPLIER ENVIRONMENTAL ASSESSMENT 2016

103-1	Explanation of the material topic and its Boundary	Supply chain standards Materiality analysis Mica supply chain
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
308-1	New suppliers that were screened using environmental criteria	Supply chain standards Mica supply chain
308-2	Negative environmental impacts in the supply chain and actions taken	Supply chain standards Mica supply chain

social standards

GRI Content Index: Social Standards

GRI Standards and Disclosure Number	Comment	Reference	
GRI 401: EMPLOYMENT 2016			
103-1	Explanation of the material topic and its Boundary	Career with us Human rights Materiality analysis Work-life balance	
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
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	At Merck KGaA, Darmstadt, Germany (15% of the company's total workforce), part-time employees receive the same job benefits as full-time workers. Employees with temporary contracts, however, are not entitled to all company benefits, such as a company pension.	Indicators: employees Career with us
401-3	Parental leave	Indicators: employees Work-life balance	
GRI 402: LABOR/MANAGEMENT RELATIONS 2016			
103-1	Explanation of the material topic and its Boundary	Materiality analysis Fairness and dialogue	
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
402-1	Minimum notice periods regarding operational changes	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

103-1	Explanation of the material topic and its Boundary	The disclosures under GRI 403 relate to our employees and other supervised staff, both internal and external. The employees of third-party contractors are not included.	Health and safety Materiality analysis
103-2	The management approach and its components		
103-3	Evaluation of the management approach		
403-1	Occupational health and safety management system		Health and safety
403-2	Hazard identification, risk assessment, and incident investigation		Health and safety
403-3	Occupational health services		Health and safety
403-4	Worker participation, consultation, and communication on occupational health and safety	Occupational health and safety committees are required by law in Germany. All employees of Merck KGaA, Darmstadt, Germany are therefore represented by such committees, which operate at the site level. These employees account for around 15% of our total workforce. The majority of sites outside Germany also have health and safety committees to represent their employees. Each individual site is responsible for arranging and maintaining such committees. Health and safety issues are governed Group-wide by our EHS Policy. The organizational implementation of the policy is the responsibility of our individual sites and is subject to local laws and regulations. Merck KGaA, Darmstadt, Germany, which accounts for approximately 15% of our total workforce, has works agreements in place on occupational health and safety.	Health and safety
403-5	Worker training on occupational health and safety		Health and safety
403-6	Promotion of worker health		Health and safety
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships		Health and safety Supply chain standards
403-8	Workers covered by an occupational health and safety management system		Health and safety
403-9	Work-related injuries	We have identified the lost time injury rate (LTIR) as a key performance indicator for our company.	Health and safety Indicators: employees
403-10	Work-related ill health		Indicators: employees Health and safety Plant and process safety

GRI 404: TRAINING AND EDUCATION 2016

103-1	Explanation of the material topic and its Boundary		Career with us Good leadership
103-2	The management approach and its components		Materiality analysis Plant and process safety Work-life balance
103-3	Evaluation of the management approach		Diversity Environmental stewardship
404-1	Average hours of training per year per employee	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.	Career with us Plant and process safety Environmental stewardship Good leadership
404-2	Programs for upgrading employee skills and transition assistance programs		Career with us Diversity Good leadership Work-life balance
404-3	Percentage of employees receiving regular performance and career development reviews		Career with us Indicators: employees

GRI 405: DIVERSITY AND EQUAL OPPORTUNITY 2016

103-1	Explanation of the material topic and its Boundary		Diversity Career with us
103-2	The management approach and its components		Materiality analysis Objectives of the Supervisory Board with respect to its composition
103-3	Evaluation of the management approach		
405-1	Diversity of governance bodies and employees	Since there is no globally uniform definition of the term "minority", we do not record this sort of data. Moreover, many countries in which we operate have strict data privacy regulations governing the recording of personal employee data.	Diversity Indicators: employees The Executive Board The Supervisory Board Objectives of the Supervisory Board with respect to its composition
405-2	Ratio of basic salary and remuneration of women to 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 on the basis of whether mutually agreed targets have been achieved. A performance management system governs this process.	Career with us

GRI 406: NON-DISCRIMINATION 2016

103-1	Explanation of the material topic and its Boundary	Diversity Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
406-1	Incidents of discrimination and corrective actions taken	Diversity Compliance

GRI 407: FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING 2016

103-1	Explanation of the material topic and its Boundary	Supply chain standards Mica supply chain Human rights Compliance Materiality analysis Fairness and dialogue
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Supply chain standards Mica supply chain Human rights Fairness and dialogue

GRI 408: CHILD LABOR 2016

103-1	Explanation of the material topic and its Boundary	Supply chain standards Mica supply chain Human rights Compliance Materiality analysis Fairness and dialogue
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
408-1	Operations and suppliers at significant risk for incidents of child labor	Supply chain standards Mica supply chain Indicators: employees Fairness and dialogue

GRI 409: FORCED OR COMPULSORY LABOR 2016

103-1	Explanation of the material topic and its Boundary	Supply chain standards Mica supply chain Human rights Compliance Materiality analysis Fairness and dialogue
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Supply chain standards Mica supply chain Human rights Fairness and dialogue

GRI 412: HUMAN RIGHTS ASSESSMENT 2016

103-1	Explanation of the material topic and its Boundary	Human rights Compliance Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
412-1	Operations that have been subject to human rights reviews or impact assessments	Human rights
412-2	Employee training on human rights policies or procedures	Human rights
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	Human rights

GRI 414: SUPPLIER SOCIAL ASSESSMENT 2016

103-1	Explanation of the material topic and its Boundary	Supply chain standards Mica supply chain Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
414-1	New suppliers that were screened using social criteria	Supply chain standards Mica supply chain
414-2	Negative social impacts in the supply chain and actions taken	Supply chain standards Mica supply chain

GRI 415: PUBLIC POLICY 2016

103-1	Explanation of the material topic and its Boundary	Stakeholder dialogue Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
415-1	Political contributions	Stakeholder dialogue

GRI 416: CUSTOMER HEALTH AND SAFETY 2016

103-1	Explanation of the material topic and its Boundary	Patient safety Responsible marketing Interactions with health systems Clinical studies Chemical product safety Sustainable product design Materiality analysis Report on Risks and Opportunities
103-2	The management approach and its components	
103-3	Evaluation of the management approach	
416-1	Assessment of the health and safety impacts of product and service categories	Patient safety Clinical studies Chemical product safety Sustainable product design
416-2	Incidents of non-Compliance concerning the health and safety impacts of products and services	As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities. Report on Risks and Opportunities

GRI 417: MARKETING AND LABELING 2016

103-1	Explanation of the material topic and its Boundary		Patient safety Chemical product safety
103-2	The management approach and its components		Responsible marketing Interactions with health systems Materiality analysis
103-3	Evaluation of the management approach		
417-1	Requirements for product and service information and labeling	Within our businesses, product labels are both important and mandatory. All pharmaceuticals and chemicals are subject to reporting and notification requirements, which we completely fulfill. The individual requirements are reported in the respective chapters	Chemical product safety Patient safety Responsible marketing
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	As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.	Responsible marketing Report on Risks and Opportunities

GRI 418: CUSTOMER PRIVACY 2016

103-1	Explanation of the material topic and its Boundary		Clinical studies Compliance
103-2	The management approach and its components		Materiality analysis
103-3	Evaluation of the management approach		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data		Indicators: business ethics Clinical studies Compliance

GRI 419: SOCIOECONOMIC Compliance 2016

103-1	Explanation of the material topic and its Boundary		Compliance Materiality analysis
103-2	The management approach and its components		Report on Risks and Opportunities Responsible marketing
103-3	Evaluation of the management approach		
419-1	Non-Compliance with laws and regulations in the social and economic area	As applicable, we report on risks from litigation and legal proceedings in our Report on Risks and Opportunities.	Indicators: business ethics Report on Risks and Opportunities Responsible marketing

Additional material topics

ETHICAL CONDUCT (bioethics, clinical studies, animal welfare)

103-1	Explanation of the material topic and its Boundary	Bioethics Clinical studies
103-2	The management approach and its components	Animal welfare Materiality analysis
103-3	Evaluation of the management approach	

HEALTH FOR ALL (access to health, prices of medicines, health awareness)

103-1	Explanation of the material topic and its Boundary	Global strategy Focus programs
103-2	The management approach and its components	Open innovation sharing Prices of medicines Health awareness
103-3	Evaluation of the management approach	Materiality analysis

PRODUCT-RELATED CRIME

103-1	Explanation of the material topic and its Boundary	Product-related crime Materiality analysis
103-2	The management approach and its components	
103-3	Evaluation of the management approach	

COMMUNITY INVOLVEMENT

103-1	Explanation of the material topic and its Boundary	Community involvement Global Health
103-2	The management approach and its components	Broad Minds Materiality analysis
103-3	Evaluation of the management approach	

WORK 4.0

103-1	Explanation of the material topic and its Boundary	Career with us Good leadership
103-2	The management approach and its components	Materiality analysis
103-3	Evaluation of the management approach	

Global Compact COP

Communication on Progress in 2019 in implementing the principles of the UN Global Compact
We have been a participant in the United Nations Global Compact since 2005. As a signatory to the initiative, we have committed ourselves to ten principles based on key UN conventions regarding human rights, labor standards, environmental protection, and anti-corruption. At the same time, the UN Global Compact calls on all its signatories to actively support the implementation of the principles within their own sphere of influence.

The following table summarizes the key actions we took in 2019 to implement the principles of the Global Compact.

COMMUNICATION
ON PROGRESS



This is our **Communication on Progress** in implementing the Ten Principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

Link: www.unglobalcompact.org

Human rights

Principle 1:	Key actions in 2019:	Relevant GRI disclosures:	Reference:
Businesses should support and respect the protection of internationally proclaimed human rights.	<ul style="list-style-type: none"> ■ Broadened human rights and modern slavery risk assessment within our Compliance Risk Reporting and Self-Monitoring process ■ Reported human rights topics as part of our Compliance Risk Reporting ■ Addressed the topics of human rights and modern slavery in the "EHS StartUp!" onboarding course for new EHS managers ■ Opened our SpeakUp Line, previously only available to employees, to external stakeholders ■ Updated the Human Rights Charter of Merck KGaA, Darmstadt, Germany with the involvement of external stakeholders ■ Adopted the Group-wide Social and Labor Standards Policy ■ Introduced an annual e-learning course on our Human Rights Charter and Social and Labor Standards Policy, targeted to all managing directors and senior leaders reporting directly to the Executive Board 	103-2: 412, 412-2	Compliance Human rights

<p>Principle 2: Businesses should make sure that they are not complicit in human rights abuses.</p>	<p>Key actions in 2019:</p> <ul style="list-style-type: none"> ■ Trained Procurement employees on the topic of sustainability and human rights ■ Invited suppliers to a Together for Sustainability (Initiative for sustainable supply chains in the chemical industry) training course in Shanghai (China) ■ Conducted CR-relevant internal and external audits and inspections of suppliers and collected self-reported information ■ Held the presidency of the Responsible Mica Initiative and participated in working groups 	<p>Relevant GRI disclosures:</p> <p>412-3, 414-1, 414-2</p>	<p>Reference:</p> <p>Human rights Compliance Supply chain standards</p>
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Labor standards

<p>Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.</p>	<p>Key actions in 2019:</p> <ul style="list-style-type: none"> ■ Conducted internal audits on workplace aspects of our Human Rights Charter that are specified in our Social and Labor Standards Policy ■ Conducted internal and external audits and inspections of suppliers regarding corporate responsibility and collected self-reported information ■ Regularly and extensively included local employee representatives in company's decision-making ■ Reviewed human rights aspects within the scope of our Site Security Risk Assessments 	<p>Relevant GRI disclosures:</p> <p>102-41, 402-1, 407-1</p>	<p>Reference:</p> <p>Human rights Compliance Fairness and dialogue Supply chain standards</p>
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<p>Principle 4: Businesses should support the elimination of all forms of forced and compulsory labor.</p>	<p>Key measures in 2018</p> <ul style="list-style-type: none"> ■ Conducted internal audits on workplace aspects of our Human Rights Charter that are specified in our Social and Labor Standards Policy ■ Published on our website the UK Modern Slavery Statement endorsed by our Executive Board ■ Conducted CR-relevant internal and external audits and inspections of suppliers and collected self-reported information ■ Addressed the topics of human rights and modern slavery in the "EHS StartUp!" onboarding course for new EHS managers 	<p>Relevant GRI disclosures:</p> <p>409-1</p>	<p>Reference:</p> <p>Human rights Compliance Fairness and dialogue Supply chain standards</p>
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<p>Principle 5: Businesses should support the effective abolition of child labor.</p>	<p>Key measures in 2018</p> <ul style="list-style-type: none"> ■ Conducted internal audits on workplace aspects of our Human Rights Charter that are specified in our Social and Labor Standards Policy ■ Held the presidency of the Responsible Mica Initiative and participated in working groups ■ Regular, unannounced inspections of mica mines and processing plants by the Indian organization IGEP ■ Conducted CR-relevant internal and external audits and inspections of suppliers and collected self-reported information 	<p>Relevant GRI disclosures: 408-1</p>	<p>Reference: Human rights Compliance Fairness and dialogue Supply chain standards Mica supply chain</p>
<p>Principle 6: Businesses should support the elimination of discrimination in respect of employment and occupation.</p>	<p>Key actions in 2019:</p> <ul style="list-style-type: none"> ■ Revised the mandate of our Diversity Council ■ Developed goals and measures to achieve a more balanced gender structure in different hierarchical levels of our business sectors and functions; exceeded our 2021 target of maintaining a 30% representation of women (2019: 33%) in leadership roles ("Role 4+") ■ Expanded internal diversity programs ■ Rolled out and integrated throughout the Group a training program on unconscious bias ■ Set up the Job Analyzer, a digital tool for gender-neutral communication with applicants 	<p>Relevant GRI disclosures: 102-8, 202-1, 202-2, 401-1, 401-3, 404-1, 404-3, 405-1, 405-2, 406-1</p>	<p>Reference: Compliance Diversity</p>

Environmental stewardship

<p>Principle 7: Businesses should support a precautionary approach to environmental challenges.</p>	<p>Key actions in 2019:</p> <ul style="list-style-type: none"> ■ Passed external audits pertaining to the ISO 14001:2015 Group certificate at ten sites ■ Performed 41 internal EHS audits, whereby 93% of the audited sites were assessed as "good" or "satisfactory" ■ Reduced CO₂ emissions by 15% (2018: 11%) relative to the 2006 baseline amid operating business growth (2020 reduction target: 20% compared with the 2006 baseline) ■ Implemented measures to ensure product safety (e.g. REACH, GHS, Global Product Strategy) as well as plant and process safety (e.g. Risk Management Process) ■ Used our Waste Scoring System with the aim of shrinking the environmental footprint of our waste by 5% by 2025: We achieved a 1.6% reduction in 2019 (2018: 0.9%) ■ Rolled out the ProMec initiative at the Darmstadt site so as to promote the circular economy by expanding solvent recycling to reduce negative environmental impacts when disposing of product waste ■ Reduced our water use at sites in water-stressed areas by 21% relative to the 2016 baseline (2018: 10.8%) 	<p>Relevant GRI disclosures:</p> <p>201-2, 301-1, 302-1, 303-1, 305-1, 305-2, 305-3, 305-6, 305-7</p>	<p>Reference:</p> <p>Environmental stewardship Climate action Water management Waste and recycling Plant and process safety Chemical product safety Transport and warehouse safety</p>
<p>Principle 8: Businesses should undertake initiatives to promote greater environmental responsibility.</p>	<p>Key actions in 2019:</p> <ul style="list-style-type: none"> ■ Systematically examined potential energy savings at our production sites ■ Rolled out 70 standardized signs created by our Life Science business sector for waste, recycling and composting at all sites ■ Commercialized greener products such as Cyrene™, which was named "Environmental Product of the Year" at the Environmental Leader Awards 2019 ■ Offered sustainable mobility options for employees (for instance "job tickets", i.e. public transit passes, and the possibility to lease or borrow bicycles) ■ Installed at our global headquarters an extensive electric vehicle charging infrastructure, part of which is available to our employees for their own personal use 	<p>Relevant GRI disclosures:</p> <p>301 - 308</p>	<p>Reference:</p> <p>Climate action Waste and recycling Sustainable product design</p>

Principle 9:

Businesses should encourage the development and diffusion of environmentally friendly technologies.

Key measures in 2018

- Launched a new version of our digital tool DOZN™ for use by our customers to assess more sustainable alternatives to various chemicals
- Developed sustainable products such as liquid crystal technologies, raw materials for natural cosmetics and “greener” alternatives to chemicals; expanded our range of “green” solvents
- Reduced the amount of packaging material and used more sustainable packaging materials as part of “SMASH Packaging”, our sustainable packaging strategy
- Continuously expanded the recycling program for our Life Science customers

Relevant GRI disclosures:

302-4, 302-5, 305-5

Reference:

Sustainable product design
Packaging and recycling

Anti-corruption

Principle 10:

Businesses should work against corruption in all its forms, including extortion and bribery.

Key measures in 2018

- Performed 50 internal audits on corruption-related risks
- 35,000 employees and external workers completed an e-learning course on our Anti-Corruption Policy
- More than 50,000 employees and contractors completed our business sector-specific e-learning course on our Code of Conduct; expanded the course to 20 further languages
- Conducted a Group-wide communications campaign to raise awareness of our **SpeakUp Line** to report corruption anonymously
- Published annual EFPIA transparency reports.

Relevant GRI disclosures:

102-16, 102-17, 205-1, 205-2, 205-3, 415-1

Reference:

Compliance
Interactions with health systems

glossary

3R principle

The international guiding principle for all animal testing. The number of laboratory animals used as well as the stress placed on them before, during and after testing are to be kept to an absolute minimum by using methods to replace animal experiments (replacement), reduce the required number of tests and animals (reduction), and improve the test methods (refinement).

African sleeping sickness

Human African trypanosomiasis (HAT), also known as sleeping sickness, is a parasitic disease transmitted by the bite of the tsetse fly. The disease mostly affects poor populations living in remote rural areas of Africa. Untreated, it is usually fatal.

Big Data

Extremely large data sets that may be analyzed computationally to reveal patterns, trends and associations, especially relating to human behavior and interactions.

Biodiversity

The diversity of ecosystems, habitats and landscapes on earth, the diversity of the species, and the genetic diversity within a biological species or population.

Buruli ulcer

An infectious disease caused by bacteria that occurs most commonly in rural sub-Saharan Africa and Australia.

Chagas disease

A potentially life-threatening illness caused by the protozoan parasite. An estimated eight million people are infected worldwide, mostly in Latin America.

Chatbot

A computer program or an artificial intelligence that conducts a conversation via auditory or textual methods.

CLP

Short for "Classification, Labelling and Packaging of Substances and Mixtures", this is a European regulation based on the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals.

CMP

Chemical Mechanical Planarization is a process of smoothing surfaces through chemical and mechanical forces.

Co-infection

Also known as a double infection, this involves the simultaneous infection of a host by multiple pathogen species that can negatively influence the disease process

and lead to higher mortality.

CO₂ equivalents

CO₂ equivalents (CO₂eq) indicate how much a specified quantity of a specific greenhouse gas contributed to the greenhouse effect, using the global warming potential of carbon dioxide as a reference.

Compliance

Adherence to laws and regulations as well as to voluntary codices that are internal to a company. Compliance is a component of diligent corporate governance.

CRISPR/Cas

A biomolecular method for targeting, cutting and editing the DNA of an organism (gene editing). Experts think this technique has great potential for curing diseases or generating plants and animals with new traits.

Design thinking

An approach to developing new ideas. Design thinking uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.

DMF

Dimethylformamide is a clear, colorless, hygroscopic liquid with a high dielectric constant. It is employed as a solvent in the production of textiles, pharmaceuticals, pesticides, and adhesives. The ECHA (European Chemicals Agency) has designated DMF as a substance of very high concern (SVHC) and included it in the candidate list for authorization.

Dual-use products

Goods that are normally used for civilian purposes, but that may also have military applications.

Due diligence

A risk analysis exercised with particular care.

EHS

Short for "Environment, Health and Safety", this refers to environmental management, health protection and occupational safety throughout a company.

End-user declaration

A binding customer statement regarding the intended use of a product.

Endemic countries

Countries in which a certain disease, in many cases an infectious disease, occurs.

EQ

Our Group Environment, Health, Safety, Security, Quality function.

Equality Act

A pending U.S. law with a special focus on LGBTQ people (lesbian, gay, bisexual, transgender, queer). It prohibits discrimination on the basis of the sex, sexual orientation and gender identity.

ESG ratings

These are used to assess a company's financial performance through factors that include aspects of environmental management, social issues and good governance.

Essential medicines

Defined by the World Health Organization as "those drugs that satisfy the health care needs of the majority of the population".

Exposure assessment

The U.S. Environmental Protection Agency defines exposure assessment as the determination or estimation (qualitative or quantitative) of the magnitude, frequency, duration, and route of exposure between an agent and an organism. This analysis forms part of the chemical safety assessment process.

FDA

The U.S. Food and Drug Administration is the U.S. government agency responsible for protecting and advancing public health, especially as concerns food and drugs.

First-line treatment

A therapy regimen that is generally accepted by the medical establishment for the initial treatment of a given disease. If the first-line treatment is not adequately successful, a second-line treatment may be administered.

Freshwater

Water containing 1,000 mg or less of dissolved solids per liter.

Global Product Strategy

An initiative of the International Council of Chemical Associations (ICCA) through which participating companies of the chemical industry make a commitment to comprehensive product responsibility.

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

An international standard system to classify chemicals that covers labeling as well as safety data sheets.

Good clinical practice (GCP)

An international quality standard that enforces tight guidelines on ethical aspects of clinical studies.

Good distribution practice (GDP)

An EU guideline that regulates the proper distribution of medicinal products for human use.

Good manufacturing practice (GMP)

A system for ensuring that products are consistently manufactured and controlled according to quality standards. These guidelines are used in the production of medicines, active pharmaceutical ingredients and cosmetics, as well as foodstuffs and feed.

Greenhouse gases

Gases in the atmosphere that contribute to global warming. They can be either naturally occurring or caused by humans (such as CO₂ emissions generated by burning fossil fuels).

GxP

The general term for good practice quality guidelines and regulations that are used in many fields, especially the medical, pharmaceutical and pharmaceutical chemistry industries.

HazCom 2012

A U.S. OSHA (Occupational Safety and Health Administration) standard pertaining to the safe handling of chemicals in the workplace, with an emphasis on occupational safety and environmental protection. This standard requires manufacturers and distributors to provide information on the hazards posed by a product as well as ways to minimize risks.

Humanoid

A term that means human-like.

ICH

The International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) aims to promote uniform assessment criteria for product registration in Europe, the United States and Japan. The ICH develops guidelines for the evaluation of the quality, effectiveness and safety of medicinal products.

In vitro

Procedures involving components of an organism that were isolated from their usual biological surroundings (such as test tube experiments).

In vivo

Latin for "within the living", this term describes processes that take place within a living organism.

Investigational drug

A pharmaceutical form of an active ingredient or placebo being tested or used as a reference in a clinical trial, including approved as well as unapproved products when used or assembled (formulated or packaged) in a way different from the approved form, when used for an unapproved indication, or when used to gain further information about an approved use.

ISO 14001

This international environmental management standard sets globally recognized requirements for an environmental management system.

ISO 50001

This international standard defines globally recognized requirements for energy management systems.

ISO 9001

This international standard defines globally recognized requirements for a quality management system.

Lead substances

Manufacturers/importers of a certain substance must submit a joint registration according to REACH. In this context, the company responsible for collecting the substance data and preparing the registration dossier uses the term "lead substance".

Leishmaniasis

A group of diseases caused by protozoan parasites. These parasites are transmitted to humans by the bites of the infected female phlebotomine sand fly. There are three main forms of leishmaniasis: cutaneous, visceral or kala-azar, and mucocutaneous.

LGBT+, LGBTQ, LGBTQI

These acronyms stand for lesbian, gay, bisexual, transgender, queer or questioning, and intersex.

Liquid biopsy

Sampling and analysis of non-solid biological tissue such as blood.

Liquid crystals (LC)

A hybrid of a crystalline and liquid state. In general, molecules are perfectly arranged only when in a solid crystal state, in contrast to the liquid state, when they move around chaotically. However, liquid crystals are a hybrid of the two states: Although they are liquid, they exhibit a certain crystalline arrangement. Their rod-shaped molecules align themselves like a shoal of fish. In addition, they respond to the electromagnetic waves of light like tiny antennae. Therefore, such swarms of molecules can either allow specially prepared "polarized" light to pass through, or they can block it. This takes place in the pixels of liquid crystal displays – as it does similarly in liquid crystal windows, which can provide shade against sunlight.

Liver-stage malaria

Certain forms of the malaria parasite (*P. vivax* and *P. ovale*) can remain dormant after infecting liver cells. In this stage, they persist for many weeks and even years until they relapse into a new disease cycle. Currently, it is not possible to treat this dormant form.

Location-based approach

The location-based method quantifies the Scope 2 emissions that are emitted on average in the area where

the electricity consumption takes place. As a rule, the average at country level is used.

LTIR

The lost time injury rate measures the number of accidents resulting in missed days of work (one or more days) per one million man-hours.

Managing director

At our company this individual is ultimately responsible for ensuring that their subsidiary, including R&D and manufacturing centers, complies with all laws and regulations applicable to its business, including guidelines.

Market-based approach

This method quantifies the GHG emissions emitted by an electricity supplier or an individual electricity product.

Memorandum of understanding (MoU)

A type of agreement between two or more parties. It expresses a convergence of will between the parties, indicating an intended common line of action.

Monoclonal antibodies

Monoclonal antibodies are proteins that specifically recognize and bind to other unique proteins called antigens.

Neglected tropical disease (NTD)

Diseases that occur primarily in developing countries. NTDs include schistosomiasis, intestinal worms, trachoma, lymphatic filariasis, and onchocerciasis. This group of diseases is called neglected because, despite the large number of people affected, they have historically received less attention and research funding than other diseases.

NMP

N-Methyl-2-Pyrrolidone a polar aprotic compound that is miscible with water and has good solvency properties. NMP is used in the manufacture of polymers, semiconductors, batteries and pharmaceuticals. The ECHA (European Chemicals Agency) has designated NMP as a substance of very high concern (SVHC) and included it in the candidate list for authorization.

Nucleases

A group of enzymes whose primary function is to partially or fully degrade nucleic acids.

OHSAS

The Occupational Health and Safety Assessment Series (OHSAS) is an international occupational health and safety management system.

Onchocerciasis

A chronic parasitic infection caused by nematodes that occurs in the tropical regions of Africa and South America. In approximately 10% of those infected, the disease leads to blindness, which is why onchocerciasis is also referred to as river blindness.

Organoid

An organoid is a miniaturized and simplified version of an organ produced in vitro in three dimensions by means of a cell culture. It shows realistic micro-anatomy similar to an organ. Organoids are derived from one or a few tissue cells, embryonic stem cells or induced pluripotent stem cells, which can self-organize in a three-dimensional culture, owing to their self-renewal and differentiation capacities. Organoids are, among others, used as model systems in the investigation of diseases and the development of drugs.

Orodispersible tablet

A tablet that dissolves in the mouth within 30 seconds and does not have to be taken with water. The active ingredient is absorbed through the mucous membrane in the mouth and also partly through the lining of the stomach.

Other water

Water containing more than 1,000 mg of dissolved solids per liter.

Patent pool

A consortium of at least two competing companies that allows partners to share the use of patents relating to a particular technology.

Patient access programs

Self-sustaining commercial programs with a revenue-driven purpose which provide medicines for underserved populations, either through free products or a reduced treatment fee.

Patient support programs

Any organized system providing services and direct patient or patient-caregiver interactions that are intended and designed to educate patients about certain diseases, and help patients with access to and/or the management of prescribed medicines and/or disease outcomes and/or offer doctors support for their patients.

Pharmacovigilance

The science and activities related to the detection, evaluation, understanding, and prevention of adverse reactions or other drug-related problems.

Phase I study

Phase I clinical trials test a new biomedical intervention in a small group of people (for example, 20-80) for the first time to evaluate safety (for instance, to determine a safe dosage range and to identify side effects).

Source: <http://www.who.int/ictrp/glossary/en/>

Phase II study

Phase II clinical trials study the biomedical or behavioral intervention in a larger group of people (several hundred) to determine efficacy and to further evaluate its safety.

Source: <http://www.who.int/ictrp/glossary/en/>

Phase III study

Phase III studies investigate the efficacy of the biomedical or behavioral intervention in large groups of human subjects (from several hundred to several thousand) by comparing the intervention to other standard or experimental interventions as well as to monitor adverse effects, and to collect information that will allow the intervention to be used safely.

Source: <http://www.who.int/ictrp/glossary/en/>

Prediabetes

A condition regarded as indicative that a person is at risk of progressing to Type 2 diabetes.

Process-related emissions

Greenhouse gases released into the atmosphere during manufacturing operations.

Product safety summary

Intended to provide a general overview of the chemical substance and its use. It cannot take the place of a safety data sheet.

Public-private partnership (PPP)

A collaboration between public sector (government) organizations, private companies and/or not-for-profit organizations.

REACH

A European Union chemical regulation (EC No. 1907/2006) that took effect on June 1, 2007. REACH stands for Registration, Evaluation, Authorization, and Restriction of Chemicals.

Registration dossiers

One part of the complex and time-consuming REACH registration process is the preparation of a technical dossier and its submission to the European Chemicals Agency (ECHA). The information that a registration dossier should contain includes the physical-chemical, toxicological and ecotoxicological characteristics of the substances, human and environmental exposure, intended uses, classification and labelling, and recommended risk management measures.

Risk-sharing agreement

An agreement between the producer or manufacturer and the payer or provider that allows access to a health technology through coverage or reimbursement under certain conditions.

Role

Merck KGaA, Darmstadt, Germany uses a market-oriented system to rate positions within the company. To facilitate consistency across the organization, each position is assigned a specific role, with an overarching job architecture classifying each role as one of 11 levels, 15 functions and an array of career types (Core Operations, Services & Support Groups; Experts; Managers; Project Managers).

Schistosomiasis

A parasitic disease spread in warm lakes and ponds by snails that serve as intermediate hosts.

Scope 3

Scope 3 includes indirect greenhouse gas emissions, such as the extraction and production of purchased materials, transport-related activities, waste disposal, and employee travel.

Scorecard

An evaluation tool for measuring, documenting and controlling activities using metrics.

Scrum

A framework for agile project management. It is a method that is simple, flexible and quick to deliver results.

Security

This term stands for all necessary measures and governance activities to detect, analyze, handle, and mitigate security- and crime-based threats to the company. This helps to protect employees as well as the tangible and intangible assets of the company.

Signal management

A set of activities performed to determine whether, based on an examination of individual case safety reports, aggregated data from active surveillance systems or studies, scientific literature information, or other data sources, there are new risks associated with an active substance or a medicinal product or whether known risks have changed, as well as any related recommendations, decisions, communications, and tracking.

Spontaneous reports on adverse effects

If a side effect occurs while using a medicine and is reported, this is called a spontaneous report because the adverse reaction is reported spontaneously (for example by doctors or patients) and not in a trial or an observational study.

Stakeholder

People or organizations that have a legitimate interest in a company, entitling them to make justified demands. Stakeholders include people such as employees, business partners, neighbors in the vicinity of our sites, and shareholders.

STEM

Science, technology, engineering, and mathematics.

Stem cell lines

Groups of stem cells derived from animal or human tissue. They can be cultivated in vitro and multiply indefinitely.

Stem cells

Undifferentiated cells with the potential to develop into many different cell types that carry out different functions.

Sunshine Act

The Sunshine Provisions of the U.S. Patient Protection and Affordable Care Act aim to create more transparent relationships between manufacturers of drugs, medical devices and medical aids on the one hand, and doctors and teaching hospitals on the other.

Traces

Substances dissolved in water that are present only in minute amounts. Also referred to as micropollutants, these are synthetic substances present in concentrations ranging from one nanogram to one microgram per liter of water.

Transfer of value

Direct and indirect transfers of value, whether in cash, in kind or otherwise (for instance promotional purposes).

TRIPS

The Agreement on Trade-Related Aspects of Intellectual Property Rights is an international legal agreement between all the member nations of the World Trade Organization. TRIPS seeks to ensure that the measures and procedures for enforcing intellectual property rights do not become a barrier to lawful trade.

WASH

This stands for "water, sanitation and hygiene".

WLTP

Lawmakers require standardized test procedures to measure how much fuel a car consumes and whether it complies with the emissions limits. The new Worldwide Harmonised Light Vehicle Test Procedure (WLTP) took effect in the EU on September 1, 2017 and is now the official type approval testing procedure for new passenger cars across the EU. It succeeded the NEDC (New European Driving Cycle), which took effect in 1992.

Working out loud

This technique is about deliberately sharing and providing knowledge as well as forming relevant working relationships. The goal is to discover new topics and ideas.

publication contributors

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