

indicators

ECONOMICS

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

€ million	Healthcare	Life Science	Performance Materials	Group
2018 ²				
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 Merck 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 Merck Group ²	2019 thereof Merck KGaA 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 Merck Group ¹	2019 thereof Merck KGaA
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 Merck Human Rights Charter	2	0	0	0	0
Bribery and corruption	2	1	1	0	0
Violation of the Merck 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 Merck	1	1	5	8	0
Other violations of the Merck Compliance Principles for the relations with business partners	1	2	1	4	1
Other violations of Merck 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 Merck Group ^{2,3}	2019 thereof Merck KGaA 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 Merck Group	2019 thereof Merck KGaA
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 Merck Group	2019 thereof Merck KGaA 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 as of April 1, 2019, effective 2019 the figures only include Merck KGaA.

Number of employees by hierarchical level

As of Dec. 31	2016 ¹	2017 ¹	2018 ¹	2019 Merck Group ²	2019 thereof Merck KGaA
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 Merck Group	2019 thereof Merck KGaA
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 Merck Group ¹	2019 thereof Merck KGaA
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 Merck 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 Merck Group	2019 thereof Merck KGaA
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 employees.

Work-related accidents¹

	2016	2017	2018	2019 Merck Group ²	2019 thereof Merck KGaA
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 Merck 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 Merck Group as a whole. Therefore, we do not publish any other indicators such as workplace accidents, lost days or days of absence. The LTIR is not broken down by gender as this differentiation is not relevant to our strategic planning.

For Merck KGaA (about 15% of the employees of the Merck Group), we only report work-related illnesses if these have been certified as an occupational illness by the employers' liability insurance association. In 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 Merck Group ^{1, 2}	2019 Merck Group ³	2019 thereof Merck KGaA
% 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 Merck. 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 Merck Group ²	2019 thereof Merck KGaA
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	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 Merck Group ¹	2019 thereof Merck KGaA
% 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 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 Merck Group. Generally, these systems are based on the years of service and salaries of the employees. Pension obligations of the Merck 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 Merck 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@Merck" working model	36	40	42	43

In coordination with their teams and supervisors, employees taking advantage of "mywork@merck" 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 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

1 Figures only pertain to the Darmstadt and Gernsheim sites in Germany (which accounted for around 21% of Merck 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.

2 Figures pertain only to Merck KGaA (which accounted for around 20% of Merck Group employees 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.

3 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.

4 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 (which accounted for around 15% of Merck 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 Merck 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 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 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 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'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 and Merck-owned wastewater treatment plants, 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 Merck Foundation 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 Merck Foundation 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 Merck Foundation 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 Merck Foundation 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.