Notes to the consolidated financial statements

General Disclosures

(1) Company information

These consolidated financial statements for the year ended December 31, 2024, were prepared for MERCK Kommanditgesellschaft auf Aktien (Merck KGaA), Frankfurter Strasse 250, 64293 Darmstadt, Germany, entered in the commercial register of the Darmstadt Local Court under HRB 6164. The ultimate parent company of the Group is the parent company of Merck KGaA, E. Merck Kommanditgesellschaft (E. Merck KG), Darmstadt. The consolidated financial statements of E. Merck KG can be accessed at **https://www.unternehmensregister.de**. Shares in Merck KGaA are traded on the regulated market of the Frankfurt Stock Exchange and on other exchanges.

The German Corporate Governance Code declaration (declaration of conformity) in accordance with section 161 of the German Stock Corporation Act (AktG) was issued and can be viewed at **https://www.merckgroup.com/en/investors/corporate-governance/reports.html**.

(2) Reporting principles

These consolidated financial statements have been prepared in accordance with the international accounting rules based on the IFRS® Accounting Standards (IFRS) effective at the end of the reporting period and adopted by the European Union and the additional provisions of section 315e (1) of the German Commercial Code (HGB). The fiscal year is the calendar year. These consolidated financial statements have been prepared in euro, the reporting currency. The values presented in the consolidated financial statements have been rounded. This may lead to individual values not adding up to the totals presented.

The Executive Board of Merck KGaA prepared these consolidated financial statements on February 17, 2025, and approved them to be forwarded to the Supervisory Board. The Supervisory Board is responsible for examining the consolidated financial statements and declaring whether it approves them.

The accounting and measurement policies used in the consolidated financial statements are presented in the respective Notes and are indicated there.

Amendments to standards effective for the first time in fiscal 2024

Standard/Interpretation	Title	Date of publication	Date of endorsement by EU law	Impact on the consolidated financial statements
Amendments to IAS 1	Classification of Liabilities as Current or Non-current; Classification of Liabilities as Current or Non-Current — Deferral of Effective Date	January 23, 2020 July 15, 2020	December 19, 2023	No material impact
Amendments to IAS 1	Non-current Liabilities with Covenants	October 31, 2022	December 19, 2023	No material impact
Amendments to IAS 7	Supplier Finance Arrangements	May 25, 2023	May 15, 2024	No material impact
Amendments to IFRS 7	Supplier Finance Arrangements	May 25, 2023	May 15, 2024	No material impact
Amendments to IFRS 16	Lease Liability in a Sale and Leaseback	September 22, 2022	November 20, 2023	No material impact

Amendments to standards effective for the first time from fiscal 2025

Standard/Interpretation	Title	Date of publication	Date of endorsement by EU law	Required date of first-time application[1]	Expected impact on the consolidated financial statements
Amendments to IAS 21	Lack of Exchangeability	August 15, 2023	November 12, 2024	January 1, 2025	No material impact

[1] The regulation was not applied early.

Standards and amendments to standards published but not yet endorsed by the European Union

Standard/Interpretation	Title	Date of publication	Expected to be effective for the first time for financial years beginning on or after	Expected impact on the consolidated financial statements
Amendments to IFRS 7	Amendments to the Classification and Measurement of Financial Instruments	May 30, 2024	January 1, 2026	Currently under review
Amendments to IFRS 7	Contracts Referencing Nature-dependent Electricity	December 18, 2024	January 1, 2026	Currently under review
Amendments to IFRS 9	Amendments to the Classification and Measurement of Financial Instruments	May 30, 2024	January 1, 2026	Currently under review
Amendments to IFRS 9	Contracts Referencing Nature-dependent Electricity	December 18, 2024	January 1, 2026	Currently under review
IFRS 18	Presentation and Disclosure in Financial Statements	April 9, 2024	January 1, 2027	Currently under review
IFRS 19	Subsidiaries without Public Accountability: Disclosures	May 9, 2024	January 1, 2027	No impact
Amendments to various Standards	Annual Improvements to IFRS – Volume 11	July 18, 2024	January 1, 2026	Currently under review

Change in presentation within the cash flow statement

To improve the clarity and ease of understanding of the cash flow statement, the items “Payments for investments in financial assets” (2023: € 537 million) and “Payments for the acquisition of non-financial assets” (2023: € 2,494 million), which were presented separately in the previous year, have been combined under cash flow from investing activities to form the item “Payments for investments in other assets”. In addition, the items “Proceeds from the disposal of other financial assets” (2023: € 510 million) and “Proceeds from the disposal of non-financial assets” (2023: € 2,511 million) have been combined under cash flow from investing activities to form the item “Proceeds from the disposal of other assets”.

Accounting and measurement policies

Currency translation

Functional currency

The subsidiaries of Merck KGaA conduct their business largely in the respective local currency, which they use as their functional currency.

Some subsidiaries, particularly in the Healthcare and Electronics business sectors, use the euro or the U.S. dollar as their functional currency rather than the local currency.

Transactions in non-functional currency

When the financial statements of consolidated companies are prepared, business transactions that are conducted in currencies other than the functional currency are translated using the exchange rate on the date of the transaction.

Translation of financial statements into the reporting currency (euro)

The financial statements of consolidated companies not using the euro as their functional currency are translated into the reporting currency, the euro. Assets and liabilities are measured at the closing rate while income and expenses are translated at average monthly rates. Any currency translation differences arising during consolidation of Group companies are recognized in equity.

Hyperinflation

Argentina (since 2018) and Türkiye (since 2022) are classified as hyperinflationary economies in accordance with the guidelines of IAS 29 "Financial Reporting in Hyperinflationary Economies". Accordingly, non-monetary assets and liabilities and the corresponding expenses and income in these countries are not reported at historical cost but are presented adjusted for inflation. In Argentina, Merck uses a combination of the wholesale index IPIM (Índice de precios internos al por mayor) and the consumer price index IPC (Índice de precios al consumidor). The index applied stood at 98,664.2 as of the balance sheet date (December 31, 2023: 37,078.3/January 1, 2023: 14,227.3). In Turkey, the Consumer Price Index (CPI) published by the Turkish Statistical Institute is applied. The index applied stood at 2,684.55 as of the balance sheet date (December 31, 2023: 1,859.4/January 1, 2023: 1,128.5). In accordance with the provisions of IAS 21 "The Effects of Changes in Foreign Exchange Rates" for financial statements in non-hyperinflationary reporting currencies, the prior-year amounts have not been restated.

The respective loss from the net position of the monetary items is recognized within other operating expenses and reported separately as a loss from hyperinflation accounting (see Note (14) "**Other operating expenses**").

After adjusting the amounts for inflation, the balance sheet items and income and expenses are translated into the reporting currency, the euro, at the closing rate in accordance with IAS 21.42.

Exchange rates of most significant currencies

The exchange rates of the most significant currencies in these consolidated financial statements were as follows:

	Average rate		Closing rate	
€ 1 =	**2024**	2023	**Dec. 31, 2024**	Dec. 31, 2023
Chinese renminbi (CNY)	7.798	7.667	7.622	7.854
Japanese yen (JPY)	163.746	151.913	162.599	156.462
Swiss franc (CHF)	0.952	0.972	0.941	0.931
South Korean won (KRW)	1,474.959	1,412.674	1,533.769	1,428.798
Taiwan dollar (TWD)	34.740	33.695	34.141	33.845
U.S. dollar (USD)	1.082	1.082	1.041	1.107

(3) Discretionary decisions and sources of estimation uncertainty

Dealing with discretionary decisions and sources of estimation uncertainty

The preparation of the consolidated financial statements requires Merck to make discretionary decisions on the applicable accounting and measurement policies as well as estimates to a certain extent. Discretion describes the need to make assumptions concerning recognition or measurement when applying accounting policies. Sources of estimation uncertainty affecting the selection of the valuation techniques to be applied relate in particular to the parameters used therein. The discretionary scope and estimation uncertainty are assessed on a company-specific basis. In particular, the uncertainties described below are taken into account accordingly in the respective case. The degree of estimation uncertainty may vary considerably depending on the availability and reliability of the input factors.

Increased uncertainty due to the current macroeconomic and political environment

The weak macroeconomic development in many nations of Europe and in China, as well as political changes and the resulting potential macroeconomic and trade policy decisions, mean the degree of uncertainty in the preparation of the consolidated financial statements is high. Uncertainties included the impact of the significant rise in prices and interest rates on consumer behavior, changing political conditions in key economies, and the ongoing war in Ukraine as well as the conflict in the Middle East. Existing and potential trade restrictions and conflicts also played a significant role in this assessment.

This could have an impact on the recoverability of non-financial assets in particular. Based on the information currently available, however, no significant impairment losses have been identified to date. Above and beyond this, as in previous years, there are no material effects on the Merck Group’s net assets, financial position or results of operations and no grounds to suggest that the going concern assumption should not have been applied in preparing the consolidated financial statements. The potential impact of changing conditions is continuously analyzed.

Impact of prices and interest rates

Inflation continued to slow in fiscal 2024 but remained at a high level. Additionally, wage and salary demands and settlements were higher in spite of the weak macroeconomic performance. Combined with weak economic development, this also impacted the financial scope available to key countries.

Interest rates remained higher in fiscal 2024 than they had been in previous years. This again affected our customers’ refinancing costs, especially in the Life Science business sector, resulting in lower customer demand.

Current interest rates also meant the discount rates applied in performing impairment testing and determining the fair values of financial and non-financial assets remained higher than in previous years (see Note (18) “**Goodwill**”, and Note (43) “**Information on fair value measurement**”, in particular).

Direct impact of armed conflicts

The war in Ukraine has not had any material effects on the Merck Group’s net assets, financial position or results of operations owing to its limited business volume in Russia, Ukraine, Belarus, and the Republic of Moldova. In fiscal 2024 and 2023 alike, the total share of Group net sales generated in the aforementioned countries amounted to less than 1.5%. Furthermore, the conflict in the Middle East did not have a material impact on the Merck Group’s net assets, financial position, and results of operations in the reporting period. In fiscal 2024 and 2023 alike, the share of Group net sales generated with customers in Israel and Lebanon was less than 1%.

Impact of trade restrictions, conflicts and sanctions

In the past, inventories were increased in order to limit the impact of supply chain disruption. This fundamentally entails a heightened risk of subsequent write-downs if it is not possible to process or sell these inventories. There remains considerable uncertainty with regard to future developments, including potential conflict-related sanctions and the future trade policy of countries such as the United States in particular.

Trade policy developments could impact goods movements and competitiveness in the short term and affect investment decisions in the medium term. The tension between the United States and China remains a significant risk, particularly for specific technologies such as semiconductors and biotech. The impact of the trade restrictions between the United States and China – in the area of semiconductor materials, in particular – has been examined since fiscal 2022. Although no impairment losses have been recognized to date, there is considerable uncertainty with regard to future developments.

Increased uncertainty due to climate risks

As a globally active science and technology group, Merck is subject to transition-related and physical climate risks that could have a potentially negative impact on its net assets, financial position, and results of operations and lead to increased estimation uncertainty in its accounting. To determine the potential impact of climate risks, a structured climate risk analysis was conducted as part of a project aimed at implementing the recommendations of the “Task Force on Climate-Related Financial Disclosures” (TCFD) with the support of an external consulting firm and an insurance company.

Reduction targets for greenhouse gas emissions

Merck has set itself the goal of reducing both its direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions by 50% in the period from the 2020 base year to 2030. By 2030, 80% of its purchased electricity will come from renewable sources. Merck also plans to reduce the indirect emissions along the entire value chain (Scope 3) in terms of metric kilotons of CO_2 equivalents per euro of gross profit by 52% by 2030 and to achieve climate-neutral business operations along the entire value chain (Scope 1–3) by 2040. These goals are aimed at ensuring that Merck’s activities are aligned with the global efforts to limit global warming to 1.5°C as set out in the Paris Agreement.

The goals described above are to be achieved through measures including:

- reduction in process emissions,
- increased purchase of electricity from renewable sources,
- energy and material efficiency measures,
- reduced emissions in the supply chain, and
- recognition of a shadow price for the CO_2 emissions of major projects.

Transition-related climate risks

Transition-related climate risks describe the consequences for companies as a result of the transition to a sustainable economic system.

The most significant transition-related climate risks to the net assets, financial position, and results of operations are in the Electronics business sector, which is responsible for well in excess of half of the Group’s direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions. The majority of these greenhouse gas emissions take the form of process-related emissions resulting from the production of specialty gases for the semiconductor and electronics industries. In order to achieve the climate goals it has adopted, the Group intends to reduce the emissions in its business with these specialty gases by making technological improvements to the production process in particular. The recoverability of the assets recognized in connection with these products depends on the successful implementation of the technological improvements in production, as they could largely prevent the risk of long-term price increases due to the increased pricing of greenhouse gas emissions. Based on the information currently available, the implementation of Merck’s sustainability strategy is not expected to result in a significant decline in net sales in this business. There have been no indications of impairment of the assets concerned to date, nor has it been necessary to adjust their remaining useful lives. There is significant estimation uncertainty due to the long-term nature of the underlying analyses and the high degree of uncertainty concerning future development.

Merck has concluded several virtual purchase agreements for the purchase of electricity from renewable energy sources as an additional measure to reduce climate risks, and it also intends to increasingly purchase such electricity physically. Thanks to the signature of two virtual power purchase agreements for the United States and three virtual power purchase agreements in Spain, significant contributions were made to the achievement of the climate targets (see the disclosures in Note (42) “**Management of financial risks**” on the existing virtual power purchase agreements with wind and solar farm project developers in the United States and Spain).

Merck participates in EU emissions trading and purchases emission certificates where the certificates allocated free of charge by the public authorities are not sufficient to cover Merck’s greenhouse gas emissions. The impact of this EU emissions trading is currently immaterial to Merck’s net assets, financial position and results of operations.

Physical climate risks

Physical climate risks describe the risks that could result from longer-term changes in the general climatic conditions. For example, physical climate risks can have an accounting impact in the form of the necessary shortening of the economic life of items of property, plant and equipment (“stranded assets”), the risk of operational disruption or increased future expenses due to necessary adaptations to safeguard sites. In determining physical climate risks, the long-term impact of climate change on the Merck Group was simulated using global warming scenarios that took account of risks due to flood, fire, wind, extreme heat, precipitation, drought, extreme cold, thunderstorms, and hail. All in all, the identified physical climate risks have not led to any material direct accounting impact to date. However, there is significant estimation uncertainty due to the long-term nature of the underlying analyses and the high degree of uncertainty concerning future development.

Overview of significant discretionary decisions and sources of estimation uncertainty

The accounting matters involving the most significant discretionary decisions as well as the most comprehensive assumptions relating to the future and sources of estimation uncertainty in accordance with IAS 1.125 are described below:

Accounting matter	Carrying amount as of Dec. 31, 2024 in € million	IFRS	Discretionary scope/ estimation uncertainty	Sensitivity analysis	Note
Goodwill	19,152			yes	18
Determination of recoverable amount		IAS 36	high		
Other intangible assets	6,282			yes	6, 19
Identification and measurement of intangible assets within the scope of business combinations		IFRS 3	high		
In-licensing of intangible assets		IAS 38	medium		
Determination of amortization		IAS 38	medium		
Identification of impairments or reversal of impairments		IAS 36	high		
Property, plant, and equipment	10,025			no	20
Determination of depreciation		IAS 16	medium		
Identification of impairments or reversal of impairments		IAS 36	medium		
Leases	686			yes	21
Recognition and measurement of lease arrangements		IFRS 16	medium		
Inventories	4,484			no	24
Identification of impairments or reversal of impairments		IAS 2	medium		
Trade and other receivables	3,974			no	25, 42
Determination of loss allowance		IFRS 9	medium		
Other financial assets				yes	36, 43
Determination of fair values of contingent consideration	151	IFRS 13	high		
Determination of fair values of equity instruments	798	IFRS 9, IFRS 13	medium		
Provisions for employee benefits				yes	33
Determination of present value of defined-benefit obligations	4,626	IAS 19	medium		
Other provisions and contingent liabilities	761			no	27, 28
Recognition and measurement of other provisions and contingent liabilities		IAS 37	high		
Revenue recognition				yes	9
Measurement of sales deductions and refund liabilities	869	IFRS 15	high		
Income tax				no	15
Recognition and measurement of income tax liabilities	1,564	IAS 12	high		
Recognition and measurement of deferred taxes from temporary differences		IAS 12	medium		
Recognition of deferred tax assets from tax loss carryforwards	80	IAS 12	high		

(4) Subsequent events

On February 10, 2025, Merck confirmed advanced discussions about a potential acquisition of Springworks Therapeutics, Inc., USA. At the time of the preparation of the Consolidated Financial Statements, there existed no certainty that a merger agreement would be signed.

Subsequent to the balance sheet date, no other events of special importance occurred that are expected to have a material impact on the net assets, financial position, or results of operations.

Group Structure

(5) Scope of Consolidation

Accounting and measurement policies

Scope of Consolidation

Subsidiaries that are immaterial to the assessment of the net assets, financial position and results of operations of the Group are not included in consolidation but are instead reported in non-current financial assets (see Note (36) "**Other financial assets**").

The scope of consolidation changed as follows in the reporting period:

Fully consolidated companies as of Dec. 31, 2023		**306**
	Companies established	–
Additions	Acquisitions	10
	Materiality	5
	Liquidations/mergers	-7
Retirements	Divestments	-1
	Immateriality	-1
Fully consolidated companies as of Dec. 31, 2024		**312**
Companies rated at-equity as of Dec. 31, 2023		2
Companies rated at-equity as of Dec. 31, 2024		2
Non-consolidated subsidiaries as of Dec. 31, 2023		34
Non-consolidated subsidiaries as of Dec. 31, 2024		40

The list of non-consolidated subsidiaries mainly comprises non-operating shelf companies as well as entities subject to liquidation procedures, which were subsequently measured at fair value through other comprehensive income.

Overall, the impact of subsidiaries not consolidated due to immateriality on net sales, profit after tax, assets and equity was less than 1% relative to the entire Merck Group. The two companies accounted for using the equity method are Syntropy Technologies LLC, United States, and MM Domain Holdco Limited, United Kingdom. As in 2023, there is also one joint operation within the meaning of IFRS 11 (Resonac Versum Materials Co. LTD, Japan). This joint operation is immaterial to the presentation of the net assets, financial position and results of operations. The effects of the existing contractual arrangements also have no potentially significant effect in these contexts.

The list of shareholdings presents all of the companies included in the consolidated financial statements as well as all of the shareholdings of Merck KGaA (see Note (48) "**List of shareholdings**").

(6) Acquisitions and divestments

Accounting and measurement policies

Business combinations

The balance sheet items goodwill, other intangible assets and deferred tax liabilities are significantly influenced by purchase price allocations conducted within the scope of business combinations. As observable market prices are mostly not available for the acquired other intangible assets, Merck regularly relies on the expertise of external professionals when it comes to business combinations. The following overview shows the methods typically used to measure intangible assets within the scope of purchase price allocations:

	Measurement method for determining fair value
Customer relationships	Multi-period excess earnings method
Technology	Relief from royalty method
Trademark	Relief from royalty method

With the exception of the tax effect, results from foreign currency hedging of expected business combinations that meet the requirements for hedge accounting are offset against the carrying value of the net assets acquired.

Where management considers it to be appropriate, the optional concentration test set out in IFRS 3.B7B is applied in individual transactions in order to determine the accounting presentation of the transaction in the consolidated financial statements.

Significant discretionary decisions and sources of estimation uncertainty

Business combinations

In particular, estimation uncertainty and discretionary decisions in conjunction with purchase price allocation relate to:

- the planning of future cash flows,
- the customer churn rate, which indicates how existing customer relationships will change in the future,
- the license rate for technologies, which estimates royalty savings on the basis of comparable transactions of similar technologies,
- the discount factor, which is applied for maturity and risk-based discounting of expected cash inflows,
- the useful life and the degree of technical obsolescence, which depend on assumptions about technological developments, among other things.

Divestments

The assessment as to when a non-current asset, disposal group or discontinued operation meets the prerequisites of IFRS 5 for classification as “held for sale” is subject to discretionary judgment. Even in the case of an existing management decision to review a disposal, an uncertain assessment has to be made as to the probability of whether and at what time a corresponding disposal will occur.

Acquisitions in the fiscal year

Acquisition of Mirus Bio LLC, USA

On July 31, 2024, Merck successfully completed the acquisition of the life science company Mirus Bio LLC, United States (Mirus Bio), after obtaining the necessary regulatory clearances; the agreement had been announced on May 22, 2024. The purchase price in accordance with IFRS 3 for 100% of the voting rights amounted to US$ 617 million (€ 570 million) in cash. No contingent consideration was agreed. In the consolidated cash flow statement, € 554 million was recognized in net cash outflows from acquisitions less acquired cash and cash equivalents.

Mirus Bio specializes in the development and commercialization of transfection reagents. Transfection reagents, such as TransIT-VirusGEN® from Mirus Bio, are used to introduce genetic material into cells. They play a key role in the production of viral vectors for cell and gene therapies. With the acquisition of Mirus Bio, Merck is pursuing the goal of offering solutions for every step of viral vector manufacturing in its Life Science business sector.

Preliminary purchase price allocation for the intangible assets and deferred tax liabilities was applied at the time the consolidated financial statements were prepared, as information on the extent and value of the acquired assets and other allocation parameters could still change. Material contingent liabilities were not identified as part of purchase price allocation. The preliminary difference of € 365 million was recognized as goodwill. It includes expected synergies resulting from the integration of Mirus Bio into the Merck Group, expected revenues from technical innovations and developments that go beyond the current product, development and customer portfolios, and unrecognized intangible assets such as the expertise of the workforce.

The goodwill is denominated in U.S. dollars and was allocated to the Life Science business sector in full. As a result of foreign exchange developments, it increased from € 365 million on first-time recognition to € 379 million as of December 31, 2024. As expected, it is not tax deductible.

For the period between the acquisition and December 31, 2024, the legacy Mirus Bio business contributed € 7 million to Group net sales as well as € -6 million to net income after taxes. This result also includes higher cost of sales due to the step-up of the acquired inventories to fair values as well as the amortization of assets identified and remeasured during purchase price allocation.

Assuming the first-time consolidation of Mirus Bio as of January 1, 2024, net sales of the Merck Group for the period would have been € 21,164 million (compared with reported net sales of € 21,156 million) and net income after taxes would have been € 2,774 million (compared with reported net income after taxes of € 2,786 million). When calculating these figures, it was assumed that the adjustments to carrying amounts resulting from purchase price allocation had been identical and would have been taken into account in accordance with their useful life in terms of their effects on the consolidated income statement.

Acquisition of Unity-SC SAS, France

Merck acquired Unity-SC SAS, France (Unity-SC), effective October 31, 2024. Unity-SC is a provider of metrology and inspection instrumentation for the semiconductor industry. Its acquisition complements and rounds off the expertise and the portfolio of the Display Solutions business unit (named Optronics since January 1, 2025) in the Electronics business sector. The purchase price in accordance with IFRS 3 for 100% of the voting rights amounted to € 144 million in cash plus potential payments of contingent consideration amounting to a maximum of € 45 million depending on the achievement of certain sales milestones. In the consolidated cash flow statement, € 138 million was recognized in net cash outflows from acquisitions less acquired cash and cash equivalents.

No purchase price allocation and no valuation of the contingent purchase price payments had taken place by the reporting date on account of its proximity to the completion date. The preliminary difference between the purchase price paid and the net assets acquired, amounting to € 122 million, was allocated to the Electronics business sector in full.

For the period between the acquisition and December 31, 2024, the legacy Unity-SC business contributed € 15 million to Group net sales as well as € 3 million to net income after taxes. Assuming the first-time consolidation of Unity-SC as of January 1, 2024, net sales of the Merck Group for the period would have been € 21,182 million (compared with reported net sales of € 21,156 million) and net income after taxes would have been € 2,775 million (compared with reported net income after taxes of € 2,786 million).

Acquisition of Hub Organoids Holding B.V, Netherlands

Merck acquired all of the shares in Hub Organoids Holding B.V., Netherlands (HUB), effective December 23, 2024. HUB possesses a foundational patent portfolio for organoids. Organoids are cell culture models that functionally resemble an organ. HUB's technology and service range closes the gap between the laboratory and clinical trials by enabling potential clinical candidates to be identified and validated in an in vitro system.

The purchase price for 100% of the voting rights amounted to € 83 million in cash. Furthermore, potential payments of contingent consideration amounting to a maximum of € 40 million were agreed and were recognized with a value of € 18 million at the acquisition date. The contingent consideration depends on the achievement of the agreed product development and sales milestones.

In the consolidated cash flow statement, € 81 million was recognized in net cash outflows from acquisitions less acquired cash and cash equivalents.

No purchase price allocation had been performed by the reporting date due to its proximity to the completion date. The preliminary difference between the purchase price and the net assets acquired amounted to € 103 million and was allocated to the Life Science business sector in full.

For the period between the acquisition and December 31, 2024, the legacy HUB business did not contribute to Group net sales or net income after taxes. Assuming the first-time consolidation of HUB as of January 1, 2024, net sales of the Merck Group for the period would have been € 21,168 million (compared with reported net sales of € 21,156 million) and net income after taxes would have been € 2,785 million (compared with reported net income after taxes of € 2,786 million).

Preliminary fair values and carrying amounts acquired in the acquisitions

€ million	Mirus Bio	Other acquisitions
Non-current assets		
Intangible assets (excluding goodwill)	249	1
Property, plant and equipment	3	7
Other non-current assets	1	2
	253	**9**
Current assets		
Inventories	5	28
Trade and other current receivables	2	13
Cash and cash equivalents	16	6
Other current assets	2	8
	25	**56**
Total assets	**277**	**65**
Non-current liabilities		
Other non-current provisions and liabilities	1	3
Deferred tax liabilities	68	–
	69	**3**
Current liabilities		
Trade payables and other liabilities	3	27
Other current liabilities and provisions	–	15
	3	**42**
Total liabilities	**72**	**45**
Net assets acquired	**205**	**20**
Purchase price for the acquisition of shares in accordance with IFRS 3	**570**	**245**
Positive difference (goodwill)	**365**	**225**

Divestments

Agreement on the divestment of the Surface Solutions business unit

On July 25, 2024, Merck announced that it had signed an agreement to divest the Surface Solutions business unit of the Electronics business sector to Global New Material International Holdings Ltd., Cayman Islands. The agreed purchase price before purchase price adjustments for cash and cash equivalents and financial liabilities was € 665 million. The agreement comprises the majority of the global production, sales and development activities of the Surface Solutions business. The transaction is subject to regulatory approvals in all key markets as well as the establishment of independent Surface Solutions companies in certain jurisdictions. The transaction is expected to close in the second half of 2025. The net sales of the Surface Solutions business and the assets of the Electronics business sector to be disposed of, including goodwill to be disposed of on a pro rata basis, comprised less than 2.5% of the corresponding value of the Merck Group both in the year under review and at the reporting date.

The cumulative income in connection with the disposal group recognized directly in equity amounted to € 112 million.

At the reporting date, the following assets and liabilities of the disposal group were reclassified to assets held for sale and liabilities directly related to assets held for sale, respectively:

€ million	
Goodwill	162
Property, plant and equipment	106
Inventories	237
Trade receivables	13
Other current assets	35
Assets held for sale	**553**
Provisions for employee benefits	118
Trade payables	10
Other non-financial liabilities	23
Other liabilities	6
Liabilities directly related to assets held for sale	**157**

Additional assets held for sale

Assets held for sale also included the fixed assets of a Life Science and Healthcare site in France. An agreement on the divestment of the site was concluded in the fourth quarter of 2024. The transaction is expected to close in the third quarter of 2025 subject to the satisfaction of contractually agreed conditions and regulatory clearances.

Sale of shares in Calypso Biotech B.V., Netherlands

Assets held for sale as of December 31, 2023, included an equity investment and a convertible bond in connection with the M Ventures portfolio company Calypso Biotech B.V., Netherlands (Calypso). Calypso is a biotech company that develops drug candidates for the treatment of autoimmune diseases. It was allocated to Corporate and Other. The company was acquired in full by Novartis AG, Switzerland, on January 8, 2024. The disposal group included non-current equity instruments in a mid-double-digit million-euro amount that were measured at fair value through other comprehensive income subsequent to initial recognition and a convertible bond issued by Calypso in a mid-single-digit million-euro amount that was measured at fair value through profit or loss subsequent to initial recognition. The cumulative income recognized in other comprehensive income amounted to € 48 million.

(7) Collaboration and licensing agreements

Accounting and measurement policies

Out-licensing agreements

Merck primarily enters into material out-licensing agreements for intellectual property in the Healthcare business sector. The granting of a license typically constitutes a distinct performance obligation that must usually be recognized at a point in time. Due to the uncertainty of development results and regulatory events, contingent consideration is typically recognized when the event in question has occurred. Sales-based and usage-based royalties are recognized when the contract partner makes the corresponding sales or uses the intellectual property. As out-licensing transactions in the Healthcare business sector do not form part of ordinary activities and the licensees do not constitute customers within the meaning of IFRS 15, the corresponding income from upfront payments, milestone payments and royalties is reported in other operating income (see Note (13) "**Other operating income**").

In-licensing agreements

The accounting and measurement policies for the in-licensing of intellectual property are presented in Note (19) "**Other intangible assets**".

Collaboration agreements

In addition to in-licensing and out-licensing agreements for the use of intellectual property, Merck enters into collaboration agreements in the Healthcare business sector in which the Group works with partners to develop pharmaceutical drug candidates and, if regulatory approval is granted, to commercialize them.

As the partner companies do not have customer characteristics, these collaboration agreements do not fall directly within the scope of IFRS 15, and any income from upfront payments, milestone payments and royalties is reported under other operating income. Reimbursements of research and development costs made between the collaboration partners are recognized on a net basis in research and development costs. Merck recognizes the consideration received in the course of collaboration agreements for bundled obligations arising from granting rights to intellectual property as well as other goods and services promised as income over the performance period in line with industry practice. Income is caught up cumulatively upon receipt of uncertain future milestone payments attributable to contractual obligations that have already been fulfilled. This refers in particular to milestone payments subsequent to regulatory approval. Furthermore, collaboration agreements in the Healthcare business sector typically allocate the net sales generated in specific markets, or with specific products, to the respective collaboration partners in the event of successful approval; in turn, defined income and expense items are carried by the collaboration partners according to fixed allocation ratios. Under these circumstances, Merck recognizes the net sales from the commercialization of products to third-party customers if Merck takes on the role of a principal within the meaning of IFRS 15. Expenses resulting from payments made to collaboration partners in connection with profit share agreements are reported under "**Other operating expenses**."

Significant discretionary decisions and sources of estimation uncertainty

Collaboration and licensing agreements

As part of the accounting treatment of collaboration and licensing agreements, significant discretionary decisions have to be made in the following areas:

- Identification of an appropriate income recognition method and
- Determination of the appropriate timing of income recognition.

Estimates are to be made when it comes to determining the transaction price and progress on the performance obligation in particular.

Strategic alliance with Pfizer Inc., United States, to co-develop and co-commercialize active ingredients in immuno-oncology and its termination effective June 30, 2023

The global strategic alliance agreement with Pfizer Inc., United States (Pfizer), to co-develop and co-commercialize the anti-PD-L1 antibody avelumab (approved in 2017 under the trade name Bavencio®), which was concluded on November 17, 2014, was terminated effective June 30, 2023. Since the termination agreement came into force, Merck has held the exclusive global rights for development, manufacturing and commercialization and has full control over Bavencio®. Under the termination agreement, Merck will control all future research and development activities. Merck will also have sole responsibility for manufacturing the product and serving the supply chain.

The execution of the collaboration agreement was not structured through a separate vehicle. In the commercialization phase, the vast majority of the sales of Bavencio® was recorded as net sales where prior to the termination of the agreement, net sales were mathematically split evenly and the defined expense components were split evenly and the resulting net balance was recorded as expenses from profit share agreements (2023: € 143 million). In place of the aforementioned calculation, a 15% royalty on defined net sales of Bavencio® is included in cost of sales (see Note (10) "**Cost of sales**").

The net sales recognized by Merck in connection with Bavencio® amounted to € 735 million in fiscal 2024 (2023: € 713 million). As in the previous year, Merck recognized a high double-digit million-euro amount in research and development expenses in fiscal 2024.

In-licensing agreement with Debiopharm International SA, Switzerland, on drug candidates for the treatment of head and neck cancer

On June 24, 2024, Merck announced the discontinuation of the clinical trials of the drug candidate xevinapant, which had been in-licensed from Debiopharm International SA, Switzerland, in fiscal 2021. The pivotal Phase III trial (TrilynX™) investigated xevinapant combined with chemoradiotherapy in patients with unresected locally advanced squamous cell carcinoma of the head and neck (LA SCCHN). Further Phase III and Phase Ib trials investigated various combinations with radiotherapy or chemoradiotherapy in related patient populations with LA SCCHN. The decision was based on a scheduled interim analysis of the TrilynX™ study, which found that it was unlikely to meet its primary endpoint.

The termination of the program led to an impairment loss of € 140 million on an intangible asset, which was reported in other operating expenses, as well as the recognition of a provision in a high double-digit million-euro amount for follow-on obligations, the addition of which was reported in research and development costs.

In-licensing agreement with Jiangsu Hengrui Pharmaceuticals Co. Ltd., China, on drug candidates for the treatment of metastatic colorectal cancer

On October 30, 2023, Merck announced the conclusion of an in-licensing agreement with Jiangsu Hengrui Pharmaceuticals Co. Ltd., China (Hengrui), including an exclusive worldwide license (excluding China) to develop, manufacture and commercialize the PARP1 inhibitor HRS-1167 and a corresponding option for SHR-A1904, an antibody-drug conjugate.

Merck agreed to make an upfront payment of € 160 million for acquired rights and future development activities to be performed by the seller. Additional milestone payments will be due on the achievement of certain development, approval and commercialization milestones. The agreement also includes tiered royalties on potential net sales. The acquisition of the rights initially resulted in the recognition of an intangible asset not yet available for use in the amount of € 147 million.

In-licensing agreement with Abbisko Therapeutics Co. Ltd., China, on drug candidates for the treatment of tenosynovial giant cell tumor

On December 4, 2023, Merck announced the conclusion of an in-licensing agreement with Abbisko Therapeutics Co. Ltd., China (Abbisko), including an exclusive license to commercialize pimicotinib in China, Hong Kong, Macau and Taiwan as well as an exclusive commercialization option for the rest of the world. Pimicotinib is an investigational, orally administered, highly selective and potent small-molecule antagonist of colony-stimulating factor-1 receptors. On November 12, 2024, Merck announced that the pivotal Phase III MANEUVER study had met its primary endpoint. The study demonstrated a significant improvement in the objective response rate in patients with tenosynovial giant cell tumor. It also provided statistically significant and clinically meaningful improvements in secondary endpoints, including stiffness and pain.

Merck agreed to make an upfront cash payment of US$ 70 million (€ 64 million) for acquired rights and future development activities to be performed by the seller. An option fee will also be payable to Abbisko if the option is exercised. Abbisko will receive additional payments for the achievement of certain regulatory and commercial milestones as well as tiered royalties on net sales by Merck. The acquisition of the rights resulted in the recognition of an intangible asset not yet available for use in the amount of € 45 million.

Operating Activities

(8) Segment Reporting

Accounting and measurement policies

Segment reporting

The Merck Group's business activities are broken down into the three operational business sectors of Life Science, Healthcare and Electronics, as well as the central Group functions. This segment structure reflects the internal organizational and reporting structure. The Life Science business sector encompasses business with tools, chemicals and equipment for academic labs, biotech and pharmaceutical manufacturers, as well as the industrial sector. The Healthcare business sector discovers, develops, manufactures and markets prescription drugs and biopharmaceuticals. The Electronics business sector supplies materials for the semiconductor and display industries and surface design. The three business sectors differ in terms of their products and services, their customers, their sales structures and processes, and the regulatory environment in which they operate. However, the activities that are bundled in each individual business sector are extremely similar in terms of these criteria. The central Group functions also encompass service activities that are the same for all business sectors, such as procurement and human resources, as well as other central Group functions that are not allocated to any of the business sectors. Resource allocation and the assessment of business development are performed at the level of the business sectors by the Executive Board of Merck KGaA as the chief operating decision-maker.

In addition to the direct activities of the central Group functions, “Corporate and Other” includes income and expenses, assets and liabilities, as well as cash flows that cannot be allocated to the reportable segments as they are managed at Group level in central Group functions. This relates in particular to expenses and income for the foreign currency hedging of transactions in operating business, financial expenses and financial income, which include interest expenses and interest income as well as income tax expenses and income. Financial liabilities, pension provisions as well as income tax assets and liabilities are also allocated to “Corporate and Other”. Moreover, the column serves as the reconciliation to the Group figures.

Apart from net sales, the success of a segment is mainly determined by EBITDA pre (segment result). EBITDA pre is a key figure that is not defined by International Financial Reporting Standards (IFRS). However, it represents the most important variable used to steer the Merck Group. To permit a better understanding of operational performance, EBITDA pre excludes depreciation and amortization, impairment losses and reversals of impairment losses in addition to specific adjustments presented below.

The segment data is derived from the financial information, which is based on the IFRSs applied in the consolidated financial statements. Transfer prices for intragroup net sales were determined on an arm's-length basis for all of the business sectors. Fixed assets are allocated to the segments based on the degree of utilization. Depreciation expenses are allocated on the same basis. Fixed assets are always recognized by the buyer at the amortized Group cost following intragroup transactions. Services performed by the Group functions are allocated on the basis of planning data. Any deviations in the actual costs incurred are not allocated to the reportable operating segments but continue to be recognized in the “Corporate and Other” column.

Information by business sector – 2024

€ million	Life Science	Healthcare	Electronics	**Total of reportable operating segments**	Corporate and Other	**Group**
Net sales[1]	**8,916**	**8,455**	**3,785**	**21,156**	**–**	**21,156**
Intersegment sales	91	–	–	91	-91	–
Cost of sales	-4,150	-2,201	-2,319	-8,670	-1	-8,671
Marketing and selling expenses	-2,238	-1,713	-568	-4,519	-18	-4,536
Administration expenses	-441	-313	-166	-919	-450	-1,370
Research and development costs	-388	-1,503	-297	-2,187	-92	-2,279
Operating result (EBIT)[2]	**1,507**	**2,481**	**360**	**4,347**	**-702**	**3,645**
Depreciation	862	331	498	1,690	116	1,806
Impairment losses[3]	87	209	29	325	3	328
Reversals of impairment losses	–	–	–	–	–	–
EBITDA[4]	**2,455**	**3,021**	**887**	**6,362**	**-584**	**5,779**
Adjustments[2]	134	-26	83	191	102	293
EBITDA pre (segment result)[2]	**2,589**	**2,995**	**970**	**6,553**	**-482**	**6,072**
EBITDA pre margin (in % of net sales)[2]	29.0%	35.4%	25.6%	–	–	28.7%
Assets by business sector	25,206	8,620	10,748	44,575	6,992	51,567
Liabilities by business sector	-1,901	-2,858	-653	-5,412	-16,168	-21,579
Investments in property, plant and equipment[5]	858	302	396	1,556	146	1,702
Investments in intangible assets[5]	44	348	43	435	47	482
Non-cash changes in provisions[5,6]	95	150	95	339	42	381

[1] Excluding intersegment sales.

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

[3] Without impairments on financial assets and inventories.

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

[5] According to the consolidated cash flow statement.

[6] Excluding provisions for pensions and other post-employment benefits.

Information by business sector – 2023

€ million	Life Science	Healthcare	Electronics	Total of reportable operating segments	Corporate and Other	Group
Net sales[1]	**9,281**	**8,053**	**3,659**	**20,993**	**–**	**20,993**
Intersegment sales	77	–	–	77	-77	–
Cost of sales	-4,236	-2,029	-2,332	-8,597	-3	-8,600
Marketing and selling expenses	-2,245	-1,668	-591	-4,503	-7	-4,510
Administration expenses	-425	-314	-147	-886	-506	-1,392
Research and development costs	-396	-1,657	-297	-2,351	-94	-2,445
Operating result (EBIT)[2]	**1,850**	**2,225**	**248**	**4,322**	**-713**	**3,609**
Depreciation	848	299	526	1,673	109	1,782
Impairment losses[3]	34	27	42	103	1	104
Reversals of impairment losses	–	-6	–	-6	–	-6
EBITDA[4]	**2,731**	**2,545**	**816**	**6,092**	**-603**	**5,489**
Adjustments[2]	88	-1	97	184	206	390
EBITDA pre (segment result)[2]	**2,820**	**2,543**	**913**	**6,276**	**-397**	**5,879**
EBITDA pre margin (in % of net sales)[2]	30.4%	31.6%	25.0%	–	–	28.0%
Assets by business sector	23,476	8,522	10,275	42,273	6,222	48,495
Liabilities by business sector	-1,843	-3,146	-636	-5,626	-16,115	-21,741
Investments in property, plant and equipment[5]	953	316	394	1,663	145	1,807
Investments in intangible assets[5]	54	69	58	181	35	216
Non-cash changes in provisions[5,6]	33	94	100	227	154	381

1 Excluding intersegment sales.

2 Not defined by International Financial Reporting Standards (IFRS).

3 Without impairments on financial assets and inventories.

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

5 According to the consolidated cash flow statement.

6 Excluding provisions for pensions and other post-employment benefits.

Information by country and region – 2024

€ million	Europe	thereof: Germany	thereof: Switzerland	North America	thereof: USA	Asia-Pacific	thereof: China	Latin America	Middle East and Africa	Group
Net sales by customer location[1]	6,171	1,002	389	5,710	5,426	7,017	2,864	1,477	781	21,156
Net sales by company location[1]	6,506	1,411	594	5,915	5,652	6,719	2,580	1,427	590	21,156
Goodwill and other intangible assets[2]	5,056	1,539	1,772	19,997	19,987	380	42	1	–	25,434
Property, plant and equipment	5,182	2,439	1,070	3,083	3,078	1,489	478	201	71	10,025
Research and development costs	-1,835	-1,062	-619	-355	-353	-58	-25	-21	-10	-2,279
Number of employees[3]	28,138	13,236	2,632	14,187	13,976	15,593	4,369	3,502	1,137	62,557

[1] Excluding intersegment sales.

[2] Goodwill and other intangible assets are allocated by currency area.

[3] The number of employees includes all employees employed in fully consolidated subsidiaries with the exception of the employees of HUB Organoids Holding B.V., Netherlands, whose acquisition was completed on December 23, 2024 (see note (6) "**Acquisitions und Divestments**")

Information by country and region – 2023

€ million	Europe	thereof: Germany	thereof: Switzerland	North America	thereof: USA	Asia-Pacific	thereof: China	Latin America	Middle East and Africa	Group
Net sales by customer location[1]	6,037	1,000	369	5,952	5,632	6,936	2,708	1,331	737	20,993
Net sales by company location[1]	6,334	1,420	512	6,198	5,911	6,658	2,477	1,267	535	20,993
Goodwill and other intangible assets[2]	5,121	1,783	1,780	18,794	18,783	480	47	2	–	24,396
Property, plant and equipment	4,878	2,215	1,097	2,576	2,571	1,315	444	225	62	9,056
Research and development costs	-2,004	-1,042	-827	-349	-348	-63	-25	-18	-11	-2,445
Number of employees	28,304	13,531	2,648	14,718	14,496	15,259	4,433	3,458	1,169	62,908

[1] Excluding intersegment sales.

[2] Goodwill and other intangible assets are allocated by currency area.

No single customer accounted for more than 10% of the Group's total net sales in fiscal 2024 or 2023.

The following table presents the reconciliation of segment results of all operating businesses to the profit before income tax of the Merck Group:

€ million	2024	2023
EBITDA pre of the operating businesses[1]	**6,553**	**6,276**
Corporate and Other	-482	-397
EBITDA pre of the Merck Group[1]	**6,072**	**5,879**
Depreciation/amortization/impairment losses/reversals of impairment losses	-2,134	-1,880
Adjustments[1]	-293	-390
Operating result (EBIT)[1]	**3,645**	**3,609**
Financial result	-108	-125
Profit before income tax	**3,536**	**3,484**

[1] Not defined by International Financial Reporting Standards (IFRS). Please refer to the following table for the components of the adjustments.

The adjustments comprised the following:

€ million	2024	2023
Restructuring expenses	-144	-249
Integration expenses/IT expenses	-103	-118
Gains (+)/losses (-) on the divestment of businesses	46	51
Acquisition-related adjustments	-26	-18
Other adjustments	-68	-56
Adjustments before impairment losses/reversals of impairment losses[1]	**-293**	**-390**
Impairment losses[2]	-277	-88
Reversals of impairment losses	–	1
Adjustments (total)[1]	**-570**	**-477**

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

[2] Without impairments on financial assets and inventories.

Restructuring expenses in fiscal 2024 primarily related to a program to improve efficiency in the Life Science business sector (€ 46 million; 2023: € 19 million) and a program to further improve processes and align the Group functions more closely with the businesses (€ 41 million; 2023: € 126 million; see Note (27) "**Other provisions**").

As in the previous year, integration and IT expenses in fiscal 2024 related to expenses for the enhancement of ERP systems.

As in the previous year, gains on the divestment of businesses were due in particular to a revaluation following the achievement of milestones in connection with the biosimilars business that was sold to a subsidiary of Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, in 2017; see Note (43) "**Information on fair value measurement**".

Other adjustments include the losses on the net position of monetary assets and liabilities resulting from hyperinflationary accounting in Argentina and Türkiye, which are reported in other operating expenses (see Note (2) "**Reporting principles**" and Note (14) "**Other operating expenses**").

Impairment losses considered as adjustments related to intangible assets in the amount of € 194 million (2023: € 65 million), particularly in the Healthcare and Life Science business sectors, see Note (14) "**Other operating expenses**" and Note (19) "**Other intangible assets**", as well as to property, plant and equipment in the amount of € 83 million (2023: € 23 million; see Note (20) "**Property, plant and equipment**").

The adjustments are reported in the consolidated income statement as part of the respective functional costs and allocated to them as follows:

2024

€ million	thereof: cost of sales	thereof: marketing and selling expenses	thereof: administration expenses	thereof: research and development expenses	thereof: others	**Total**
Restructuring expenses	-39	-27	-58	-10	-10	-144
Integration expenses/IT expenses	-2	–	-90	-1	-10	-103
Gains (+)/losses (–) on the divestment of businesses	–	-3	-6	–	55	46
Acquisition-related adjustments	–	–	–	–	-25	-26
Other adjustments	–	–	–	–	-68	-68
Adjustments before impairment losses/reversals of impairment losses[1,2]	**-41**	**-30**	**-154**	**-11**	**-57**	**-293**
Impairment losses[2]	–	–	–	–	-277	-277
Reversals of impairment losses	–	–	–	–	–	–
Adjustments in the operating result (total)[1]	**-41**	**-30**	**-154**	**-11**	**-335**	**-570**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Without impairments on financial assets and inventories.

2023

€ million	thereof: cost of sales	thereof: marketing and selling expenses	thereof: administration expenses	thereof: research and development expenses	thereof: others	Total
Restructuring expenses	-42	-44	-135	-6	-21	-249
Integration expenses/IT expenses	-1	–	-110	-1	-6	-118
Gains (+)/losses (–) on the divestment of businesses	–	–	–	–	51	51
Acquisition-related adjustments	–	–	–	–	-18	-18
Other adjustments	–	–	–	–	-56	-56
Adjustments before impairment losses/reversals of impairment losses[1]	**-43**	**-44**	**-246**	**-7**	**-50**	**-390**
Impairment losses[2]	–	–	–	–	-88	-88
Reversals of impairment losses	–	–	–	–	1	1
Adjustments in the operating result (total)[1]	**-43**	**-44**	**-246**	**-7**	**-138**	**-477**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Without impairments on financial assets.

(9) Net sales

Accounting and measurement policies

Nature and timing of revenue recognition

Net sales are recognized when (or as) the customer obtains control of the asset. For sales of goods, the customer typically obtains control as soon as delivery is made, given that the customer is generally not able to obtain any benefits from the asset before that point in time. In the case of equipment sales, the criteria for revenue recognition are only met after installation has been successfully completed – to the extent that the installation requires specialized knowledge, is not a clear ancillary service and the relevant equipment can only be used by the customer once successfully set up.

For service contracts and customer-specific contract manufacturing of goods and equipment, Merck recognizes revenue over time, based on the progress towards complete satisfaction of the performance obligation, if there is a contractual claim for payment against the customer for the services already performed and there is no alternative use. Input- and output-oriented methods are used to determine progress on a contract-specific basis. Although progress is ideally measured using input-oriented methods, output-oriented methods are always applied when the input cannot be reliably determined, for example. Specifically, the degree of progress is mainly calculated on the basis of milestones reached, time elapsed, units delivered, or costs incurred in proportion to the anticipated total costs.

Licenses for intellectual property are granted to a limited extent. Unlike in the Life Science and Electronics business sectors, these transactions do not usually form part of ordinary activities in the Healthcare business sector, meaning that the corresponding income is reported in other operating income (see Note (7) “**Collaboration and licensing agreements**”, and Note (13) “**Other operating income**”).

Net sales from contracts comprising several separate performance obligations are recognized on a pro rata basis when the respective performance obligation has been fulfilled. Multiple-element arrangements of this nature only exist to a very limited extent in the Life Science business sector.

Determining the transaction price

Merck grants customers various kinds of rebates and discounts. These, as well as anticipated customer refund claims, state compulsory charges and rebates from health plans and programs, are deducted from sales. The most significant portion of these deductions from sales is attributable to the Healthcare business sector and, in particular, sales in the United States.

Sales deductions provided on the invoice as price-reducing items, which will likely be applied by customers when making the respective payments, are recognized as reductions of trade accounts receivable. Expected refunds, such as bonus payments, reimbursements for rights of return or rebates from health plans and programs, are reported in the consolidated balance sheet under refund liabilities.

The measurement of sales deductions and refund liabilities arising from expected rebates and discounts takes account of past experience, knowledge of specific contractual conditions, pricing information, expected sales volume growth rates and external information from distributors and industry services.

The measurement of sales deductions and refund liabilities resulting from rights of return takes into account historical rates of return for individual product groups and information from distributors on inventory levels, as well as information on product sales (in the Healthcare business sector).

Contractual payment terms

Given that the Merck Group generates the large majority of its net sales through transactions with simple structures, the company usually has an enforceable right to payment after the performance obligation has been fulfilled. The payment targets contractually agreed with customers usually range from 30 to 60 days.

Practical expedients

Merck uses the practical expedient of IFRS 15 in which the promised amount of consideration is not adjusted for the effects of a significant financing component if the period between the fulfillment of a performance obligation and the payment by the customer only amounts to up to one year.

Significant discretionary decisions and sources of estimation uncertainty

Sales deductions

The measurement of sales deductions and the corresponding refund liabilities require extensive estimates. Uncertainties exist in particular concerning the extent to which past experience serves as a reliable basis for estimating the future development of expected refunds, such as bonus payments, reimbursements for rights of return or rebates from health plans and programs. External information from distributors and industry services outside of Merck’s control, which are also subject to uncertainty, are used to determine sales deductions.

Due to a lack of past experience, the estimation uncertainty referenced above is particularly relevant for product launches in the Healthcare business sector.

Any changes in estimates of the parameters listed above have a cumulative impact on the net sales for the respective adjustment period.

If the carrying amount of refund liabilities had been 10% higher as of the reporting date, this would have resulted in an € 87 million (2023: € 88 million) reduction in profit before tax.

The following tables present a breakdown of net sales by key business units/products:

Life Science

€ million	2024		2023	
Science & Lab Solutions	4,671	52%	4,706	51%
Process Solutions	3,523	40%	3,782	41%
Life Science Services	722	8%	792	8%
Total	**8,916**	**100%**	**9,281**	**100%**

Healthcare

€ million	2024		2023	
Oncology	**2,009**	**24%**	**1,819**	**22%**
thereof: Erbitux®	1,162	14%	1,025	13%
thereof: Bavencio®	735	9%	713	9%
Neurology & Immunology	**1,688**	**20%**	**1,665**	**21%**
thereof: Mavenclad®	1,062	13%	956	12%
thereof: Rebif®	626	7%	709	9%
Fertility	**1,528**	**18%**	**1,547**	**19%**
thereof: Gonal-f®	833	10%	847	11%
Cardiovascular, Metabolism & Endocrinology	**2,949**	**35%**	**2,786**	**35%**
thereof: Glucophage®	954	11%	882	11%
thereof: Euthyrox®	619	7%	565	7%
thereof: Concor®	611	7%	571	7%
thereof: Saizen®	366	4%	332	4%
Other	**280**	**3%**	**235**	**3%**
Total	**8,455**	**100%**	**8,053**	**100%**

Electronics

€ million	2024		2023	
Semiconductor Solutions	2,631	69%	2,479	68%
Display Solutions	748	20%	770	21%
Surface Solutions	406	11%	411	11%
Total	**3,785**	**100%**	**3,659**	**100%**

The following tables present a more detailed breakdown of net sales from contracts with customers in the individual business sectors by product type and region:

2024

€ million

Net sales by nature of the products	Life Science		Healthcare		Electronics		Group	
Goods	7,732	87%	8,431	100%	3,106	82%	19,270	91%
Equipment	390	4%	–	–	554	15%	944	5%
Services	770	9%	15	–	121	3%	906	4%
License income	22	–	–	–	5	–	27	–
Commission income	1	–	8	–	–	–	9	–
Total	**8,916**	**100%**	**8,455**	**100%**	**3,785**	**100%**	**21,156**	**100%**

Net sales by region (customer location)								
Europe	3,136	35%	2,720	32%	316	8%	6,171	29%
North America	3,146	35%	1,778	21%	785	21%	5,710	27%
Asia-Pacific	2,143	24%	2,305	27%	2,569	68%	7,017	33%
Latin America	382	5%	1,056	13%	38	1%	1,477	7%
Middle East and Africa	109	1%	595	7%	77	2%	781	4%
Total	**8,916**	**100%**	**8,455**	**100%**	**3,785**	**100%**	**21,156**	**100%**

2023

€ million

Net sales by nature of the products	Life Science		Healthcare		Electronics		Group	
Goods	8,074	87%	8,004	99%	2,952	81%	19,030	91%
Equipment	411	5%	–	–	593	16%	1,004	5%
Services	778	8%	33	1%	111	3%	922	4%
License income	17	–	–	–	3	–	19	–
Commission income	1	–	15	–	–	–	17	–
Total	**9,281**	**100%**	**8,053**	**100%**	**3,659**	**100%**	**20,993**	**100%**

Net sales by region (customer location)								
Europe	3,178	34%	2,541	31%	318	9%	6,037	29%
North America	3,372	36%	1,793	22%	787	21%	5,952	28%
Asia-Pacific	2,263	25%	2,232	28%	2,440	67%	6,936	33%
Latin America	352	4%	941	12%	39	1%	1,331	6%
Middle East and Africa	116	1%	546	7%	75	2%	737	4%
Total	**9,281**	**100%**	**8,053**	**100%**	**3,659**	**100%**	**20,993**	**100%**

Group net sales amounted to € 21,156 million in fiscal 2024 (2023: € 20,993 million). Around 5% of this figure was recognized over time (2024: € 1,086 million; 2023: € 1,119 million). This mainly related to net sales from services in the Life Science business sector and net sales from the project business of the Semiconductor Solutions business unit in the Electronics business sector.

Orders already received by the reporting date to result in net sales in future periods amounted to around € 4 billion as of December 31, 2024 (December 31, 2023: around € 4 billion), of which around € 3 billion related to the Life Science business sector (December 31, 2023: around € 3 billion). Based on past experience, around 9% of orders received are expected to result in net sales in fiscal 2026 or later (December 31, 2023: around 13% in fiscal 2025 or later).

The following table shows the change in refund liabilities:

2023

€ million	Rebates/Bonus payments Total	Rebates/Bonus payments thereof: United States	Rights of return Total	Rights of return thereof: United States	Total
Jan. 1, 2023	**850**	**492**	**62**	**43**	**912**
Additions due to business combinations	–	–	–	–	–
Other additions	2,596	1,945	52	31	**2,648**
Disposals due to divestments/Reclassification to assets held for sale	–	–	–	–	–
Utilizations	-2,485	-1,855	-60	-37	**-2,545**
Cumulative increase (-)/decrease (+) in net sales	-121	-120	8	10	**-113**
thereof: attributable to performance obligations satisfied in prior periods	-118	-116	9	10	**-109**
Currency translation	-26	-18	-2	-2	**-28**
Other	2	–	–	–	**2**
Dec. 31, 2023	**816**	**443**	**60**	**44**	**877**

2024

€ million	Rebates/Bonus payments Total	Rebates/Bonus payments thereof: United States	Rights of return Total	Rights of return thereof: United States	**Total**
Jan. 1, 2024	**816**	**443**	**60**	**44**	**877**
Additions due to business combinations	–	–	–	–	–
Other additions	2,384	1,706	40	28	**2,423**
Disposals due to divestments/Reclassification to assets held for sale	–	–	–	–	–
Utilizations	-2,284	-1,668	-39	-27	**-2,323**
Cumulative increase (-)/decrease (+) in net sales	-125	-121	-11	-6	**-136**
thereof: attributable to performance obligations satisfied in prior periods	-90	-89	-10	-5	**-100**
Currency translation	25	24	2	2	**27**
Other	–	–	–	–	–
Dec. 31, 2024	**817**	**385**	**52**	**41**	**869**

The development in contract assets and contract liabilities is shown in Note (26) “**Contract assets**” and in Note (29) “**Other non-financial liabilities**”.

(10) Cost of sales

Accounting and measurement policies

Cost of sales

The cost of sales primarily includes the cost of manufactured products sold and the merchandise sold.

Cost comprises the following items: directly attributable costs, such as cost of materials, personnel and energy costs, depreciation and amortization, overheads attributable to the production process, and inventory impairment losses and their reversals.

The cost of sales included amortization of intangible assets (excluding amortization of internally generated or separately acquired software) in the amount of € 131 million (2023: € 173 million). Material costs amounted to € 3,753 million in fiscal 2024 (2023: € 3,709 million) and were reported under cost of sales. The cost of sales also included royalties of € 111 million (2023: € 55 million) for Bavencio® as a result of the agreement terminating the strategic alliance with Pfizer Inc., United States, effective June 30, 2023 (see Note (7) “**Collaboration and licensing agreements**”).

Impairment losses on inventories amounted to € 329 million in the reporting period (2023: € 424 million), while reversals of impairment losses amounted to € 278 million (2023: € 237 million).

(11) Marketing and selling expenses

Accounting and measurement policies

Marketing and selling expenses

Marketing and selling expenses within logistics costs also include expenses for transportation services performed on behalf of customers. The corresponding income from these services is reported under net sales.

Amortization of the intangible assets under marketing and selling expenses is mainly attributable to customer relationships, licenses and similar rights, brands and trademarks.

Marketing and selling expenses comprised the following items:

€ million	**2024**	2023
Logistics	-1,047	-1,061
Internal sales services	-989	-923
Sales force	-963	-950
Amortization of intangible assets[1]	-568	-596
Sales promotion	-526	-515
Other marketing and selling expenses	-341	-339
Royalty and license expenses	-102	-126
Marketing and selling expenses	**-4,536**	**-4,510**

[1] Excluding amortization of internally generated or separately acquired software.

Among other things, higher expenses for the internal sales services and sales force resulted from the establishment of an in-house distribution structure following the termination of the strategic alliance with Pfizer Inc., United States, for Bavencio® in the field of immuno-oncology with effect from June 30, 2023.

Of the royalty and license expenses, € 52 million (2023: € 51 million) related to the commercialization of Erbitux®.

(12) Research and development costs

Accounting and measurement policies

Research and development costs

The item comprises the costs of the Group's own research and development departments, the expenses incurred as a result of research and development collaborations as well as the costs of clinical trials in the Healthcare business sector (both before and after approval is granted).

For information on the capitalization of development costs and their separation from research and development services agreed in conjunction with in-licensing, see Note (19) "**Other intangible assets**".

Cost reimbursements for research and development are offset against research and development costs.

The net income from repayments of subsidies received and reimbursements recognized within research and development costs amounted to € 12 million in fiscal 2024 (2023: € 21 million).

The discontinuation of the xevinapant program led to the recognition of a provision in a high-double-digit million-euro amount for follow-on obligations, the addition of which was reported in research and development costs in the Healthcare business sector (see Note (7) "**Collaboration and licensing agreements**").

(13) Other operating income

Accounting and measurement policies

Other operating income

Other operating income comprises all income that cannot be allocated to net sales or finance income on account of its character.

Income from upfront payments, milestone payments and royalties

Income from upfront payments, milestone payments and royalties comprises consideration received by Merck from contract partners that are not customers. This relates in particular to collaboration and out-licensing agreements in the Healthcare business sector (see Note (7) "**Collaboration and licensing agreements**").

Income from the revaluation of contingent considerations

The accounting treatment of contingent consideration agreed at the sale of a business as defined in IFRS 3 is shown in Note (36) "**Other financial assets**".

Other operating income was broken down as follows:

€ million	**2024**	2023
Income from upfront payments, milestone payments and royalties	56	53
Income from the revaluation of contingent considerations	48	66
Income from the reversal of risk provisions for tax audits	25	–
Income from fair value measurement of assets	23	27
Realized gains from currency translation	19	15
Income from miscellaneous services	12	13
Income from the disposal of businesses and assets	11	137
Income from the reversal of provisions for litigation	8	25
Currency effects from operating activities	5	37
Rental income	5	4
Reversal of impairment losses on non-financial asset	–	6
Remaining other operating income	57	62
Other operating income	**269**	**445**

Income from upfront payments, milestone payments and royalties primarily comprises license income for interferon beta products (Biogen Inc., United States).

As in the previous year, income from the revaluation of contingent considerations mainly relates to a revaluation following the achievement of milestones in connection with the biosimilars business that was sold to a subsidiary of Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, in 2017.

In the previous year, income from disposals of businesses and assets primarily related to income from the disposal of a non-strategic brand in the Healthcare business sector and a portfolio of licenses and patents in the Electronics business sector.

For information on income from the reversal of provisions for litigation, see Note (27) "**Other provisions**".

(14) Other operating expenses

Accounting and measurement policies

Other operating expenses

Other operating expenses comprise all expenses that cannot be reasonably allocated to a functional cost type or to finance costs.

The breakdown of other operating expenses was as follows:

€ million	**2024**	2023
Impairment losses on non-financial assets	-328	-104
Project expenses	-75	-46
Non-income related taxes and expenses from tax audits	-68	-102
Loss from hyperinflation accounting	-59	-56
Non-allocable personnel expenses	-57	-39
Expenses from Litigation	-56	-26
Premiums, fees and contributions	-48	-47
Infrastructure expenses	-44	-26
Expenses for claims and reinsurances	-22	-23
Expenses from a donation to the World Health Organization	-19	-23
Expenses from fair value measurement of assets and liabilities at fair value	-18	-19
Expenses from disposal of businesses and assets	-14	-5
Profit share agreements	-13	-171
Expenses for miscellaneous services	-8	-4
Restructuring expenses	-6	-20
Realized loss from currency translation	-4	–
Remaining other operating expenses	-78	-120
Other operating expenses	**-915**	**-830**

Impairments of non-financial assets related to intangible assets in the amount of € 243 million (2023: € 81 million; see Note (19) “**Other intangible assets**”), including € 140 million in connection with the discontinuation of the xevinapant program (see Note (7) “**Collaboration and licensing agreements**”). A further € 85 million was related to impairments of property, plant and equipment (2023: € 23 million; see Note (20) “**Property,plant and equipment**”).

Project expenses arose in connection with IT and integration projects as well as acquisitions and divestments.

The reduction in profit transfer expenses was due in particular to the termination of the strategic alliance with Pfizer Inc., United States, for Bavencio® in the field of immuno-oncology with effect from June 30, 2023 (see Note (7) “**Collaboration and licensing agreements**”).

(15) Income tax

Accounting and measurement policies

Current income taxes

Current income taxes for the reporting period and, where applicable, for prior periods are calculated in the amounts that the tax authorities are expected to demand or reimburse. The calculation is based on the company-specific tax rate applicable in the relevant tax year.

Uncertain income tax assets and liabilities

Factual assessments are made to calculate uncertain income tax assets and liabilities. Uncertain income tax matters are recognized depending on the likelihood that the responsible tax authorities will accept the respective income tax treatment. If there is uncertainty about recognition by the tax authorities, the respective uncertain tax asset or uncertain tax liability is measured at the most likely amount. Uncertain income tax liabilities are reported within income tax liabilities. Expected income tax-related penalties and interest that do not fall within the scope of IAS 12 are treated as provisions in line with IAS 37 (see Note (27) “**Other provisions**”).

Deferred taxes

Deferred tax assets resulting from deductible temporary differences that exceed deferred tax liabilities relating to the same taxation authority and the same taxable entity are recognized if it is considered probable that taxable profit will be available against which they can be utilized. This corresponds to the procedure for recognizing deferred tax assets on unused tax credits and tax loss and interest carryforwards.

The recognition of deferred tax assets requires an estimate of the probability of future use. The influencing factors considered as part of this assessment include the following:

- Temporary differences relating to the same taxation authority and the same taxable entity that will be subject to taxation in the future
- Results history
- Results planning
- Existing tax planning of the respective Group company.

Deferred tax liabilities are recognized for planned dividend payments of profits already generated by subsidiaries within the next 12 months.

Significant discretionary decisions and sources of estimation uncertainty

Income tax

The calculation of the reported assets and liabilities from current and deferred income taxes requires extensive discretionary judgments, assumptions and estimates.

When assessing income tax assets and liabilities, the interpretation of tax provisions may be subject to particular uncertainty. The possibility that the relevant tax authorities will take a differing view concerning the application and interpretation of tax standards cannot be ruled out. Changes to the assumptions underlying the interpretation of tax standards, for example as a result of changes in legislation, are recognized in the balance sheet when the change comes into force.

With regard to deferred tax items, there is uncertainty as to when an asset will be realized or a liability settled. This applies in particular to deferred taxes recognized in the course of company acquisitions. Assessing the recoverability, particularly of tax credits and tax loss and interest carryforwards, requires assumptions and estimates concerning the future taxable income of the respective Group company. Furthermore, the amount and timing of planned dividend distributions by subsidiaries are discretionary.

Income taxes in the consolidated income statement were broken down as follows:

€ million	2024	2023
Current income taxes in the period	-1,146	-1,140
Income taxes for previous periods	138	167
Deferred taxes in the period	257	323
thereof: from temporary differences	229	290
thereof: from changes in tax rates	17	-7
thereof: from tax loss carryforwards	11	40
Income taxes	**-751**	**-650**

Tax reconciliation

The following table presents the reconciliation from the theoretical income tax expense to the income tax expense according to the consolidated income statement. The theoretical income tax expense is determined by applying the statutory tax rate of a corporation headquartered in Darmstadt of 31.9% (2023: 31.7%).

€ million	2024	2023
Profit before income tax	3,536	3,484
Tax rate	31.9%	31.7%
Theoretical income tax expense	-1,128	-1,105
Tax rate differences	454	495
Tax effect of global minimum taxation (Pillar II)	-28	–
Tax effect of companies with a negative contribution to consolidated profit	-36	-7
Income tax for previous periods	138	167
Tax credits	69	-103
Tax effect on tax loss carryforwards	10	32
Tax effect for expected unrecoverable temporary differences and other interest carryforwards	-209	-82
Tax effect of non-deductible expenses/Tax-free income/Other tax effects	-20	-47
Income tax expense according to consolidated income statement	**-751**	**-650**
Tax ratio according to consolidated income statement	**21.2%**	**18.7%**

Income taxes consisted of corporation and trade taxes for the German companies and comparable income taxes for non-German companies. Income taxes relating to previous periods recognized in fiscal 2024 resulted in particular from completed tax audits, changes in income tax liabilities for risks from tax audits, and tax assessments for previous years.

In the previous year, a non-recurring deferred tax income in other tax effects had a reducing effect on the tax rate.

Global minimum taxation (Pillar II)

The legislation on global minimum tax was published in the German Federal Law Gazette on December 27, 2023, and came into force on January 1, 2024. Although the tax rules apply to the ultimate parent company of the Group, E. Merck Kommanditgesellschaft, supplementary taxes could be payable in a number of jurisdictions, and this could have an impact on the Merck Group.

Under the regulations on global minimum taxation, Merck is obliged to determine the effective tax rate for each country in which its business units operate within the meaning of the legislation and, where the effective tax rate is lower than the minimum tax rate of 15%, to pay a supplementary tax in the amount of the difference. In fiscal 2024, Merck took all of the necessary measures to ensure compliance with the reporting obligations and tax compliance requirements arising from the legislation.

As in the previous year, Merck applied the exception provided by IAS 12.88A for the recognition and disclosure of information about deferred tax assets and liabilities in connection with income taxes relating to global minimum taxation. Income taxes of € 28 million were recognized under the global minimum tax rules in fiscal 2024, primarily in connection with operating activities in Ireland and Switzerland.

Deferred taxes

The allocation of deferred tax assets and liabilities to the balance sheet items and the reconciliation of deferred taxes in the consolidated income statement and the consolidated balance sheet are presented in the following table:

	Jan 1, 2023				Dec. 31, 2023		
€ million	Deferred tax assets/liabilities (net)	Deferred taxes (consolidated income statement)	Deferred taxes credited/debited to equity	Changes in scope of consolidation/ Currency translation/ Other changes	Deferred tax assets/liabilities (net)	Assets	Liabilities
Intangible assets	-1,261	235	–	47	-979	111	1,090
Property, plant and equipment	-129	5	–	5	-119	103	222
Current and non-current financial assets	-32	13	-17	–	-36	2	38
Inventories	823	42	–	-44	821	835	15
Current and non-current receivables/Other assets	51	9	–	-1	59	92	33
Current and non-current provisions	475	-10	50	-6	510	633	122
Current and non-current liabilities	122	-6	9	-6	119	181	62
Tax loss carryforwards	30	40	–	-3	67	67	–
Tax refund claims/Other	-55	-5	–	3	-57	117	174
Deferred taxes (before offsetting)	**23**	**323**	**42**	**-3**	**385**	**2,142**	**1,757**
Offset deferred tax assets and liabilities	–				–	-627	-627
Deferred taxes (consolidated balance sheet)	**23**				**385**	**1,514**	**1,130**

	Jan. 1, 2024				**Dec. 31, 2024**		
€ million	Deferred tax assets/liabilities (net)	Deferred taxes (consolidated income statement)	Deferred taxes credited/debited to equity	Changes in scope of consolidation/ Currency translation/ Other changes	Deferred tax assets/liabilities (net)	Assets	Liabilities
Intangible assets	-979	258	–	-114	-835	86	921
Property, plant and equipment	-119	-15	–	-8	-142	64	207
Current and non-current financial assets	-36	10	5	–	-21	3	24
Inventories	821	6	–	-8	819	835	16
Current and non-current receivables/Other assets	59	-20	–	–	38	55	18
Current and non-current provisions	510	-62	-88	-7	353	404	50
Current and non-current liabilities	119	-23	-2	4	98	179	81
Tax loss carryforwards	67	11	–	1	80	80	–
Tax refund claims/Other	-57	92	–	-4	31	133	102
Deferred taxes (before offsetting)	**385**	**257**	**-85**	**-137**	**420**	**1,839**	**1,419**
Offset deferred tax assets and liabilities	–				–	-527	-527
Deferred taxes (consolidated balance sheet)	**385**				**420**	**1,312**	**892**
Thereof: Reclassification to assets held for sale	–	–	–	-25			

The item “Changes in scope of consolidation/Currency translation/Other changes” mainly comprised deferred tax effects resulting from the acquisition of Mirus Bio LLC, United States (see Note (6) “**Acquisitions and divestments**”) and effects from reclassifications to assets held for sale. As in the previous year, there were also exchange rate effects, mainly resulting from items translated from U.S. dollars to the reporting currency (euro).

Deferred taxes for “Tax refund claims/Other” in the consolidated income statement primarily resulted from adjustments for deferred tax liabilities for planned dividend payouts (outside basis differences).

Given the positive earnings forecasts, it was assumed that it will be possible to realize recognized deferred tax assets of € 381 million (December 31, 2023: € 597 million), which exceeded deferred tax liabilities relating to the same taxation authority and the same taxable entity, even though there was a loss in the current or previous period.

No deferred tax assets were recognized in the balance sheet for deductible temporary differences and other interest carryforwards in the amount of € 11,915 million (December 31, 2023: € 13,220 million). The majority of these differences can only be utilized until 2029. Their utilization for tax purposes is not expected during this period.

Deferred tax liabilities from outside basis differences for planned dividend payouts were recognized in the amount of € 88 million (December 31, 2023: € 157 million). Retained earnings of subsidiaries for which no deferred taxes are recognized amounted to € 12,124 million as of December 31, 2024 (December 31, 2023: € 10,627 million). The resulting temporary differences taxable in future periods in the event of dividend payments would amount to € 659 million as of December 31, 2024 (December 31, 2023: € 603 million).

Changes in tax loss carryforwards

Tax loss carryforwards were structured as follows:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	**Germany**	**Outside Germany**	**Total**	Germany	Outside Germany	Total
Tax loss carryforwards	**355**	**499**	**854**	**257**	**536**	**793**
Tax loss carryforwards for which a deferred tax asset is recognized	155	133	288	156	95	251
Tax loss carryforwards for which no deferred tax asset is recognized	200	366	566	101	441	542
Potential deferred tax assets for tax loss carryforwards	**108**	**124**	**232**	**78**	**124**	**202**
Recognized deferred tax assets on tax loss carryforwards	48	32	80	49	18	67
Not recognized deferred tax assets on tax loss carryforwards	60	92	152	29	106	135

The majority of the tax loss carryforwards either had no expiration date or can be utilized for up to 20 years. This also applies to losses for which no deferred taxes were recognized.

Deferred tax assets resulting from tax loss carryforwards that exceed deferred tax liabilities relating to the same taxation authority and the same taxable entity are not recognized if it is not considered probable that taxable profit will be available against which they can be utilized.

Income tax receivables and income tax liabilities

Income tax receivables amounted to € 520 million as of December 31, 2024 (December 31, 2023: € 482 million) and mainly resulted from tax prepayments that exceeded the actual amount of tax payable for the past fiscal year and earlier fiscal years, from refund claims for previous years and from withholding tax claims. As of December 31, 2024, income tax liabilities, including liabilities for uncertain tax obligations, totaled € 1,564 million (December 31, 2023: € 1,473 million).

Allocation of taxing rights (Pillar I)

Based on the information currently available, Merck expects the continued efforts to achieve international convergence on tax rules as part of the OECD’s Inclusive Framework to also have an impact on the Group’s taxation.

The planned allocation of taxing rights between jurisdictions as part of the OECD rules is currently still being negotiated. An analysis of the available drafts found that the rules are likely to apply to Merck. Due to the status of the negotiations and the lack of clarity concerning the participation of key nations, it is not currently possible to make a reliable statement about the expected impact.

(16) Operating cash flow

Accounting and measurement policies

Operating cash flow

The operating cash flow is calculated and presented based on the following principles:

- The operating cash flow is presented using the indirect method based on profit after taxes.
- The option to recognize interest received and interest payments made is exercised to the extent that such transactions are recognized in the operating cash flow.
- Tax payments are reported in the operating cash flow. Only significant transactions where the associated tax payments can be practically calculated are recognized in the relevant item of the consolidated cash flow statement.

Tax payments made totaled € 1,171 million in fiscal 2024 (2023: € 1,053 million). Tax refunds received amounted to € 214 million (2023: € 38 million). The increase was mainly due to tax prepayments for previous years exceeding the assessed taxes.

Interest paid totaled € 240 million (2023: € 224 million). Interest received amounted to € 124 million (2023: € 77 million).

The changes in provisions in fiscal 2024 included a mid-double-digit million-euro amount for the recognition of provisions for follow-on obligations in connection with the discontinuation of the xevinapant program (see Note (7) “**Collaboration and licensing agreements**”). In the previous year, they included a high-double-digit million-euro amount for the recognition of provisions for acceptance and follow-on obligations in connection with the results of the two Phase III clinical trials for evobrutinib. They also included a high double-digit million-euro amount for the utilization of restructuring provisions to align the Group functions more closely with the business that had been recognized in the previous year.

In the previous year, the item “Neutralization of gains/losses on disposal of fixed assets” included the effects recognized in income in connection with the disposal of a non-strategic brand in the Healthcare business sector and a portfolio of licenses and patents in the Electronics business sector. The corresponding cash inflows were recognized in cash flow from investing activities in the previous year.

In the previous year, changes in other non-cash income and expenses contained the neutralization of revaluations of contingent consideration recognized in income. The corresponding cash inflows were also recognized in cash flow from investing activities.

(17) Earnings per share

Accounting and measurement policies

Earnings per share

Basic earnings per share is calculated by dividing the profit after taxes attributable to the shareholders of Merck KGaA (net income) by the weighted average number of theoretical shares outstanding. The calculation of the theoretical number of shares is based on the fact that the general partner’s equity is not represented by shares. Corresponding to the division of the subscribed capital of € 168 million into 129,242,252 shares (see Note (34) “**Equity**”), the general partner’s equity of € 397 million equates to 305,535,626 theoretical shares. Overall, equity capital thus amounted to € 565 million, or to 434,777,878 theoretical shares outstanding.

As in the previous year, equity capital remained unchanged in fiscal 2024. The weighted average (basic) number of shares was 434,777,878 and thus corresponded to the number of theoretical shares outstanding. In fiscal 2024 and 2023, there were no shares with a potential diluting effect; as a result, the diluted earnings per share were equivalent to basic earnings per share.

Operating Assets, Liabilities, and Contingent Liabilities

(18) Goodwill

Accounting and measurement policies

Goodwill

In the course of business combinations, goodwill is recognized on the acquisition date. The option to measure non-controlling interests at fair value on the date of their acquisition (full goodwill method) is not utilized.

The purpose of impairment testing in accordance with IAS 36 is to ensure that the carrying amount of assets in the balance sheet is not higher than their recoverable amount. The recoverable amount is the higher of the fair value less costs of disposal and the value in use.

Method for impairment testing

Impairment testing for goodwill takes place at the level of the Life Science, Healthcare and Electronics business sectors. These groups of cash-generating units (CGUs) are the lowest level at which goodwill at Merck is monitored for internal management purposes.

Impairment testing is performed on a scheduled basis in the third quarter of every year and on an ad hoc basis where there are indications of impairment. The existence of indications of impairment is monitored using various factors such as changes in medium-term planning, analyst forecasts, validation multiples, and Merck’s average market capitalization compared to its balance sheet equity.

As in the previous year, the recoverable amount for all CGUs in the 2024 reporting year was determined on the basis of the fair value less costs of disposal, which was calculated using the discounted cash flow method (Level 3 in the IFRS 13 fair value hierarchy).

In calculating the fair value, the expected post-tax cash flows are derived from the medium-term plans prepared by the business sectors. For increased accuracy, the medium-term planning for all CGUs was extended by two years compared with the previous year and now covers a period of six years starting from the following year (2023: four years). In the Healthcare CGU, the transition to the terminal value takes place after six years starting from the following year (2023: four years). Due to extensive investments in the Life Science and Electronics CGUs, an additional two years (2023: four years) are planned for these CGUs after the medium-term planning period in line with business-specific assumptions before the transition to the terminal value takes place by applying a long-term growth rate.

Sales planning is based on internal past experience and largely non-observable input factors in the market, such as new products from the development pipeline, expected future market shares, selling prices and volumes and expansion investments. The profit margins used in planning are based on past experience adjusted for expected profitability developments.

The discount factor after taxes is derived on the basis of the following input parameters:

Risk-free interest rate	Derived from the returns of long-term government bonds based on the Svensson method
Beta factor	Derived from the respective sector-specific peer group
Market risk premium	Based on a combination of different estimating methods; e.g. historical and implied stock yields
Cost of debt and capital structure	Derived from the market data of the respective peer group companies

The long-term growth rate after the detailed planning period is determined taking into account expected long-term growth and long-term inflation expectations.

Significant measurement assumptions

In the Life Science CGU, the expected average sales growth in the period until the transition to the terminal value was a higher single-digit percentage (2023: higher single-digit percentage). The sales expectation for the Life Science CGU is supported primarily by the anticipated long-term positive development in the Process Solutions and Life Science Services business units, based on ongoing high market growth and the continuing expansion of the portfolio. Taking into account Group costs allocated on a pro rata basis, the EBITDA pre margin applied in the period until the transition to the terminal value was around 30% (2023: around 31%).

The expected average net sales in the Healthcare CGU in connection with the calculation of fair value less costs of disposal were largely stable in the detailed planning period (2023: mid-single-digit percentage growth rate). The sales performance reflected the probability of regulatory approval of drug candidates in the existing research and development programs. Taking into account Group costs allocated on a pro rata basis, the EBITDA pre margin applied in the period until the transition to the terminal value was around 31% (2023: around 30%).

The calculation of the recoverable amount of the Electronics CGU included the expected average sales growth in the period until the transition to the terminal value at a higher single-digit percentage (2023: higher single-digit percentage). The sales expectation for the Electronics CGU is primarily based on the long-term growth trend in the market for semiconductor materials and positive sales contributions as a result of extensive investments. Taking into account Group costs allocated on a pro rata basis, the EBITDA pre margin applied in the period until the transition to the terminal value was around 27% (2023: around 29%).

The additional significant value-relevant assumptions underlying the goodwill impairment tests are quantified below.

	Long-term growth rate		Weighted cost of capital after tax	
in %	**2024**	2023	**2024**	2023
Life Science	2.0%	2.0%	8.3%	8.2%
Healthcare	1.0%	1.0%	6.3%	6.3%
Electronics	2.0%	2.0%	7.6%	8.1%

Net cash flows were discounted using the cost of capital after taxes.

Significant discretionary decisions and sources of estimation uncertainty

Goodwill

The determination of the recoverable amount is subject to discretion and significant estimation uncertainty. Assumptions regarding the amount of net cash flows, long-term growth rates and discount factors are considered a material source of estimation uncertainty due to their inherent uncertainty. Although Merck assumes that the assumptions applied in calculating the recoverable amount are appropriate, changes to these assumptions could result in goodwill impairment with an adverse impact on the net assets, financial position and results of operations. In the Electronics CGU in particular, there is a high degree of dependence on the assumptions concerning the long-term growth trend in the market for semiconductor materials.

As in the previous year, the recoverable amount in impairment testing in fiscal 2024 was well above the carrying amount of the respective CGU at more than 15% higher. Regardless of this, the results of the valuation were checked for plausibility against externally available “sum of the parts” calculations and validated using multiples based on peer group information.

In addition, sensitivity analyses of the key assumptions were performed as part of the scheduled impairment tests. The following table presents the minimum amount by which individual key assumptions could have changed when viewed in isolation before the impairment test triggered the recognition of an impairment loss.

	Decrease in net cash flows		**Decrease in long-term growth rate**		**Increase in cost of capital after tax**	
	%		percentage points		percentage points	
	2024	2023	**2024**	2023	**2024**	2023
Life Science	>10	>10	>2	>2	>2	>2
Healthcare	>10	>10	>2	>2	>2	>2
Electronics	>10	>10	>2	>2	>2	>2

The goodwill shown below mainly resulted from the following acquisitions: Versum Materials Inc., United States; Sigma-Aldrich Corporation, United States; AZ Electronic Materials S.A., Luxembourg; Millipore Corporation, United States; and Serono SA, Switzerland.

	Goodwill			
€ million	Life Science	Healthcare	Electronics	**Total**
Net carrying amounts, Jan. 1, 2023[1]	**12,193**	**1,525**	**4,671**	**18,389**
Other additions	–	–	–	–
Disposals due to divestments/Reclassification to assets held for sale	–	–	–	–
Transfers	–	–	–	–
Impairment losses	–	–	–	–
Currency translation difference	-406	–	-138	-544
Net carrying amounts as of Dec. 31, 2023[1]	**11,787**	**1,525**	**4,532**	**17,845**
Net carrying amounts, Jan. 1, 2024[1]	**11,787**	**1,525**	**4,532**	**17,845**
Additions	468	–	122	590
Disposals due to divestments/Reclassification to assets held for sale	–	–	-162	-162
Transfers	–	–	–	–
Impairment losses	–	–	–	–
Currency translation difference	665	–	215	880
Net carrying amounts as of Dec. 31, 2024[1]	**12,919**	**1,525**	**4,708**	**19,152**

[1] Net carrying amounts equal the gross amount.

The changes in goodwill caused by foreign exchange rates resulted almost exclusively from translating the goodwill from the acquisitions of Versum Materials, Inc., United States, Sigma-Aldrich Corporation, United States, and Millipore Corporation, United States, which were mostly denominated in U.S. dollars.

Goodwill impairment testing did not give rise to the need to recognize any impairment losses in either fiscal 2023 or fiscal 2024.

The additions in fiscal 2024 resulted from the acquisition of Mirus Bio LLC, United States, Unity-SC SAS, France, and Hub Organoids Holding B.V., Netherlands (see Note (6) "**Acquisitions and divestments**").

The reclassification to assets held for sale was due to the planned divestment of the Surface Solutions business (see Note (6) "**Acquisitions and divestments**").

(19) Other intangible assets

Accounting and measurement policies

Recognition and initial measurement of purchased intangible assets

In in-licensing, the portion of the consideration paid by Merck to acquire intellectual property is recognized as an intangible asset. If research and development services to be performed by the seller are also agreed in conjunction with the transaction, the related share of consideration is separated and recognized in research and development expenses in line with the service performance.

Contingent consideration linked to milestone payments in connection with the purchase of intangible assets arising outside a business combination is recognized as an intangible asset and as a financial liability once the milestone is reached. Contingent consideration in the form of sales-based royalties is expensed when incurred.

Intangible assets acquired in business combinations are recognized at fair value on the acquisition date.

Recognition and initial measurement of internally generated intangible assets

Owing to the high level of uncertainty until pharmaceutical products are approved, the criteria for the capitalization of development costs in accordance with IAS 38 are not met in the Healthcare business sector for the development of drug candidates. Costs incurred after regulatory approval are insignificant and are therefore not recognized as intangible assets. In the Life Science and Electronics business sectors, development expenses are capitalized as soon as all the recognition criteria are met and can be verified accordingly. This also includes expenses that are required for REACH registration. Furthermore, development expenses for internal software projects and the enhancement of purchased ERP programs are capitalized providing that the relevant criteria have been fulfilled.

Subsequent measurement

Subsequent measurement is at amortized cost.

Purchased and internally generated intangible assets with finite useful lives are amortized using the straight-line method over their useful lives. The useful lives of customer relationships, brand names and trademarks, as well as marketing authorizations, patents, licenses, and similar rights and software are usually between three and 24 years. In determining these useful lives, Merck considers factors including the typical product life cycles for each asset and publicly available information about the estimated useful lives of similar assets. The amortization expense is allocated to the respective functional costs or, if this is not possible, recognized under other operating expenses.

Indications of impairment are identified with the involvement of the responsible departments, taking external and internal information sources into consideration. Merck examines the existence of indications of impairment using various factors, particularly deviations from sales forecasts and the analysis of changes in medium-term planning. An impairment test is performed if there are indications of impairment. In the event of impairment, an impairment loss is recognized under other operating expenses. Impairment losses are reversed up to amortized cost and reported in other operating income if the original reasons for impairment no longer apply.

Intangible assets with indefinite useful lives and purchased, as well as internally generated intangible assets not yet available for use, are not amortized, but instead are tested for impairment when a triggering event arises or at least once a year.

Significant discretionary decisions and sources of estimation uncertainty

Purchased intangible assets

The identification and measurement of intangible assets acquired in the course of business combinations are subject to significant discretion and estimation uncertainty.

In connection with in-licensing agreements in the Healthcare business sector, a discretionary estimate is made of the extent to which upfront payments and milestone payments are remuneration for development services yet to be performed or whether such payments are acquisition costs of an intangible asset to be capitalized.

Determination of amortization

Significant assumptions and estimates are required to determine the appropriate amount of amortization of other intangible assets. This relates in particular to the determination of the underlying useful life.

If the amortization of intangible assets from customer relationships, brands, trademarks, marketing authorizations, patents, licenses and similar rights, and other had been 10% higher, for example due to shortened useful lives, profit before income tax would have been € 71 million lower in fiscal 2024 (2023: € 78 million).

Identification of a need to recognize impairment loss and reverse impairment loss

Discretionary decisions are required in assessing substantial evidence of impairment as well as in identifying the need to reverse the impairment of other intangible assets. Significant valuation-related assumptions and estimates are also required to calculate the appropriate write-down amount in impairment testing.

€ million	Customer relationships, brands and trademarks	Marketing authorizations, patents, licenses, similar rights, and other items: Finite useful life	Marketing authorizations, patents, licenses, similar rights, and other items: Not yet available for use	Software and software in development	Advance payments	Total
Cost as of Jan. 1, 2023	**10,391**	**11,302**	**1,379**	**1,096**	**–**	**24,169**
Additions due to business combinations	–	–	–	–	–	–
Other additions	–	20	284	92	–	396
Disposals due to divestments/ Reclassification to assets held for sale	–	–	–	–	–	–
Other disposals	3	-25	-9	-13	–	-44
Transfers	–	16	-14	5	–	6
Currency translation	-351	-112	-3	-16	–	-482
Dec. 31, 2023	**10,043**	**11,200**	**1,637**	**1,165**	**–**	**24,045**
Accumulated amortization and impairment losses as of Jan. 1, 2023	**-4,743**	**-10,509**	**-887**	**-695**	**–**	**-16,833**
Depreciation, amortization, and write-downs	-581	-202	–	-104	–	-887
Impairment losses	-26	-24	-31	–	–	-81
Reversals of impairment losses	–	–	5	–	–	5
Disposals due to divestments/ Reclassification to assets held for sale	–	–	–	–	–	–
Other disposals	-3	25	3	12	–	37
Transfers	–	–	–	–	–	–
Currency translation	156	91	2	16	–	265
Dec. 31, 2023	**-5,196**	**-10,619**	**-908**	**-770**	**–**	**-17,493**
Net carrying amounts as of Dec. 31, 2023	**4,847**	**580**	**729**	**395**	**–**	**6,551**
Cost as of Jan. 1, 2024	**10,043**	**11,200**	**1,637**	**1,165**	**–**	**24,044**
Additions due to business combinations	12	199	37	–	–	249
Other additions	–	4	141	103	3	251
Disposals due to divestments/ Reclassification to assets held for sale	-2	-35	–	-5	–	-41
Other disposals	–	-3	-1	-11	–	-16
Transfers	3	38	-37	9	-1	12
Currency translation	506	84	11	28	–	629
Dec. 31, 2024	**10,563**	**11,487**	**1,788**	**1,288**	**2**	**25,129**
Accumulated depreciation and impairment losses as of Jan. 1, 2024	**-5,196**	**-10,619**	**-908**	**-770**	**–**	**-17,493**
Depreciation, amortization, and write-downs	-553	-161	–	-110	–	-824
Impairment losses	-3	-34	-192	-15	–	-243
Reversals of impairment losses	–	–	–	–	–	–
Disposals due to divestments/ Reclassification to assets held for sale	2	33	–	3	–	38
Other disposals	–	1	–	10	–	12
Transfers	-2	1	–	12	–	10
Currency translation	-263	-63	-3	-16	–	-345
Dec. 31, 2024	**-6,015**	**-10,843**	**-1,103**	**-885**	**–**	**-18,846**
Net carrying amounts as of Dec. 31, 2024	**4,548**	**644**	**685**	**404**	**2**	**6,282**

Additions and disposals

The additions from business combinations primarily resulted from the acquisition of Mirus Bio LLC, United States (see Note (6) "**Acquisitions and divestments**").

Additions for intangible assets not yet available for use essentially related to the in-licensing of intellectual property in the Healthcare business sector. In the previous year, these were mainly concerned with the in-licensing of drug candidates from Jiangsu Hengrui Pharmaceuticals Co. Ltd., China, and Abbisko Therapeutics Co. Ltd., China (see Note (7) "**Collaboration and licensing agreements**").

Additions to software and software in development mainly related to the internal development of IT applications. The gross carrying amounts and accumulated amortization for the capitalized software primarily related to purchased software as well as internally generated applications and enhancements of purchased ERP programs that were already available for use. These were mainly included in administrative expenses.

Loss allowances

Impairment losses were attributable to the Healthcare business sector in particular and primarily related to discontinued development programs, including € 140 million in connection with the discontinuation of the xevinapant program (see Note (7) "**Collaboration and licensing agreements**").

Other significant information

As in the previous year, the currency translation effects essentially resulted from the translation of other intangible assets denominated in U.S. dollars.

Marketing authorizations, patents, licenses, similar rights and other items not yet available for use were attributable to ongoing development projects that were not yet in the commercialization phase and thus did not yet have a defined useful life. These primarily related to the Healthcare business sector.

Overview of material other intangible assets

The carrying amounts of customer relationships, brands and trademarks as well as marketing authorizations, patents, licenses, similar rights and other items were attributable to the business sectors as follows:

€ million	Remaining useful life in years	Life Science	Healthcare	Electronics	**Total Dec. 31, 2024**	Total Dec. 31, 2023
Customer relationships, brands and trademarks		**2,988**	**–**	**1,559**	**4,548**	**4,847**
Customer relationships		2,756	–	1,551	4,307	4,542
thereof from the following acquisitions:						
Sigma-Aldrich Corporation	11,8-12,8	2,553	–	116	2,669	2,726
Versum Materials, Inc.	1,8-13,8	–	–	1,434	1,434	1,545
Millipore Corporation	1,5-2,5	109	–	–	109	170
Brands and trademarks		233	–	8	241	305
thereof from the following acquisition:						
Sigma-Aldrich Corporation	2,9	222	–	–	222	281
Marketing authorizations, patents, licenses and similar rights and other						
Finite useful life		**398**	**116**	**130**	**644**	**580**
Patents, licenses and similar rights		395	–	125	520	447
thereof from the following acquisitions:						
AZ Electronic Materials S.A.	0,3-8,3	–	–	35	35	87
Versum Materials, Inc.	0,8-1,8	–	–	67	67	107
Others		3	116	5	124	134
Not yet available for use		**24**	**493**	**169**	**685**	**729**
thereof from the following acquisition:						
Versum Materials, Inc.	–	–	–	106	106	102

(20) Property, plant, and equipment

Accounting and measurement policies

Recognition and initial measurement

Merck receives monetary and non-monetary government grants. It does not exercise the option of recognizing non-monetary grants, such as allocated emission certificates, at fair value. Monetary grants related to assets are deducted from the respective carrying amount.

Advance payments are disclosed together with the assets under construction.

Subsequent measurement

Subsequent measurement is at amortized cost.

Property, plant and equipment is depreciated using the straight-line method over the useful life of the asset concerned, and the corresponding expenses are allocated to the respective functional costs. Depreciation of property, plant and equipment is primarily based on the following useful lives:

	Useful life
Production buildings	No more than 40 years
Administration buildings	No more than 40 years
Plant and machinery	6 to 25 years
Operating and office equipment, other facilities	3 to 10 years

The useful lives of the assets are reviewed regularly and adjusted if necessary.

An impairment test is performed if there are indications of impairment. External and internal information is used in this context. In the event of impairment, an impairment loss is recognized under other operating expenses. Impairment losses are reversed up to amortized cost and reported in other operating income if the original reasons for impairment no longer apply.

Significant discretionary decisions and sources of estimation uncertainty

Determination of depreciation

Assumptions and estimates are required in determining the appropriate useful life and the expected residual value in order to calculate the amount of depreciation on property, plant and equipment. This applies in particular to the determination of the underlying remaining useful life. In making these estimates, Merck considers the useful lives of the property, plant and equipment derived from past experience, among other things.

Identification of a need to recognize impairment loss and reverse impairment loss

Discretionary decisions are required in the identification of objective evidence of impairment as well as in identifying the need to reverse impairment of property, plant and equipment.

€ million	Land, land rights and buildings	Plant and machinery	Other facilities, operating and office equipment	Construction in progress	Total
Cost as of Jan. 1, 2023	**5,976**	**6,228**	**1,879**	**2,429**	**16,513**
Additions due to business combinations	–	–	–	–	–
Other Additions	169	32	56	1,723	1,981
Disposals due to divestments/Reclassification to assets held for sale	–	–	–	–	–
Other Disposals	-85	-93	-82	-18	-278
Transfers	385	542	120	-1,053	-6
Currency translation difference	-119	-84	-27	-37	-266
Dec. 31, 2023	**6,326**	**6,625**	**1,946**	**3,045**	**17,943**
Accumulated depreciation and impairment losses as of Jan. 1, 2023	**-2,588**	**-4,319**	**-1,380**	**-21**	**-8,308**
Depreciation	-332	-389	-173	–	-895
Impairment losses	-1	-8	-2	-12	-23
Reversals of impairment losses	–	1	–	–	1
Disposals due to divestments/Reclassification to assets held for sale	–	–	–	–	–
Disposals	67	88	77	–	233
Transfers	-9	1	5	3	1
Currency translation difference	43	43	19	1	106
Dec. 31, 2023	**-2,820**	**-4,584**	**-1,454**	**-29**	**-8,887**
Net carrying amounts as of Dec. 31, 2023	**3,506**	**2,042**	**492**	**3,016**	**9,056**
Cost as of Jan. 1, 2024	**6,326**	**6,625**	**1,946**	**3,045**	**17,943**
Changes in the scope of consolidation	3	3	2	2	10
Additions	325	36	52	1,677	2,091
Reclassification to assets held for sale	-185	-449	-61	-36	-731
Disposals	-126	-179	-122	-15	-442
Transfers	1,008	958	226	-2,211	-20
Currency translation difference	128	83	12	38	261
Dec. 31, 2024	**7,480**	**7,077**	**2,054**	**2,500**	**19,112**
Accumulated depreciation and impairment losses as of Jan. 1, 2024	**-2,820**	**-4,584**	**-1,454**	**-29**	**-8,887**
Depreciation	-365	-433	-184	–	-982
Impairment losses	-34	-21	-2	-28	-85
Reversals of impairment losses	–	–	–	–	–
Disposals due to divestments/Reclassification to assets held for sale	132	387	49	12	580
Disposals	95	169	119	6	389
Transfers	3	17	-16	-4	–
Currency translation difference	-47	-46	-10	–	-103
Dec. 31, 2024	**-3,036**	**-4,510**	**-1,499**	**-42**	**-9,087**
Net carrying amounts as of Dec. 31, 2024	**4,445**	**2,567**	**556**	**2,457**	**10,025**

The disposals due to divestments/Reclassification to assets held for sale related to the planned divestment of the Surface Solutions business. The additions from business combinations primarily related to the acquisition of Mirus Bio LLC, United States, and Unity SC, France (see Note (6) “**Acquisitions and divestments**”).

The individual additions to construction in progress in fiscal 2024 with an investment volume of more than € 50 million are presented below:

Business sector	Investment project	Country
Life Science	Membrane factory	Ireland
Life Science	Capacity for Drug Safety Testing Capacity (CTS)	USA
Healthcare	Research Center	Germany
Healthcare	Technology Center	Germany
Electronics	Capacity for Semiconductor Solutions	Taiwan

Monetary grants amounted to € 78 million in fiscal 2024 (2023: € 88 million) and related to a number of different items. They comprised grants related to assets as well as grants related to income. Some of the aforementioned grants are tied to the recruitment of an agreed number of employees at the respective sites. Merck expects to satisfy the conditions for receiving the grants.

The impairments of € 85 million in fiscal 2024 (2023: € 23 million) included a mid-double-digit million-euro amount for the impairment of property, plant and equipment in France in the Life Science and Healthcare business sectors.

(21) Leasing

Accounting and measurement policies

Leasing

Scope of IFRS 16

Merck exercises the option provided by IFRS 16 to not recognize leases of intangible and low-value assets as leases. Right-of-use assets under leases are reported in the balance sheet item “Property, plant and equipment” (see Note (20) “**Property, plant, and equipment**”).

Where the provision of company cars to employees qualifies as an employee benefit within the meaning of IAS 19, IFRS 16 is not applied. In this case, its accounting treatment is governed solely by IAS 19.

Separation of lease and non-lease components

Leases for land, land rights and buildings are separated into lease and non-lease components. Merck otherwise elects to exercise the option not to separate non-lease components from lease components.

Depreciation of the right-of-use assets arising from leases

Right-of-use assets are generally depreciated over the lease term. If it is considered sufficiently probable that an existing purchase option will be exercised or ownership will be automatically transferred at the end of the lease term, however, depreciation takes place over the period that applies for comparable assets under property, plant and equipment (see Note (20) “**Property, plant, and equipment**”).

Determining the incremental borrowing rate

If the interest rate for the lease cannot be reliably determined, the incremental borrowing rate is applied in measuring the lease liability. At Merck, the incremental borrowing rate is determined on the basis of the risk-free interest rate of the respective Group company over a similar term and in the same currency. This interest rate is adjusted using a risk surcharge specific to Merck. Merck applies the repayment model to determine the current portion of the lease. The current portion of the lease corresponds to the repayment share of the next 12 months.

Determining the lease term

Where renewal or termination options are available, their exercise is assessed on a case-by-case basis, considering factors such as location strategies, leasehold improvements and the degree of specificity.

Significant discretionary decisions and sources of estimation uncertainty

Leasing

Identification of a lease

Discretionary decisions can arise during the identification of leases in answering the question of whether a lessor’s right of substitution is substantive. Merck classifies rights of substitution as not substantive if the facts and circumstances of the case do not support a different assessment.

Measurement of lease and non-lease components

In the case of leases for land, land rights and buildings, separating the lease into lease and non-lease components is subject to discretion and estimation uncertainty if observable prices are not available from the contract partner or other potential lessors.

Determining the lease term

When determining the lease term, existing renewal and termination options must be evaluated to determine the probability that such options will be exercised. The assessment of the probability of exercise may be discretionary even though it relies on existing and material information on the general economic context, such as location strategies, leasehold improvements or the degree of specificity. If the available information does not allow a reliable assessment, Merck uses historical experience for comparable situations.

The largest ten leases accounted for around 50% of total lease liabilities in fiscal 2024. In 2023, the largest 30 leases accounted for around 50% of total lease liabilities. They mainly relate to right-of-use assets for office, warehouse and laboratory buildings. If options to renew these leases were exercised in the future, which is not yet considered likely, this would result in additional potential undiscounted cash outflows of up to € 183 million (2023: € 235 million).

Where individual contracts include termination options, it was considered unlikely that these would be exercised, meaning that additional lease payments were already included in the corresponding lease liability.

Determining the incremental borrowing rate

Determining the risk-free interest rate and determining the risk surcharge are both discretionary.

Initial measurement of the lease liability and the right-of-use asset

In measuring the lease liability, there is discretionary scope and significant estimation uncertainty regarding assessing the probability that existing purchase, termination and renewal options will be exercised.

In measuring right-of-use assets under leases, Merck is subject to estimation uncertainty regarding any restoration obligations and their resulting payments.

The reconciliation of net carrying amounts of right-of-use assets from leases was as follows:

	Right-of-use assets			
€ million	Land, land rights and buildings	Plant and machinery	Other facilities, operating and office equipment	Total
Net carrying amounts as of Jan. 1, 2023	**415**	**8**	**58**	**481**
Changes in the scope of consolidation	–	–	–	–
Additions	157	4	45	206
Disposals	-23	–	-1	-25
Depreciation	-108	-2	-37	-147
Impairment losses	–	–	–	–
Reversal of impairment losses	–	–	–	–
Other	-13	1	-1	-14
Net carrying amounts as of Dec. 31, 2023	**427**	**10**	**64**	**500**

	Right-of-use assets			
€ million	Land, land rights and buildings	Plant and machinery	Other facilities, operating and office equipment	**Total**
Net carrying amounts as of Jan. 1, 2024	**427**	**10**	**64**	**500**
Changes in the scope of consolidation	3	–	–	3
Additions	314	1	40	356
Disposals	-21	–	-2	-23
Depreciation	-126	-2	-37	-165
Impairment losses	–	–	–	–
Reversal of impairment losses	–	–	–	–
Other	18	1	-3	16
Net carrying amounts as of Dec. 31, 2024	**614**	**9**	**62**	**686**

The net carrying amounts of other facilities, operating and office equipment mainly included right-of-use assets for vehicles.

The additions to land, land rights and buildings primarily related to newly agreed right-of-use assets for laboratories, office buildings and warehouses as well as agreed lease renewals. The largest individual addition related to a rental agreement for a laboratory building in the United States in the Life Science business sector. The building serves to expand Merck's capacities for biosafety testing and analytical development services.

The expenses and income and the payments under the leases in accordance with IFRS 16 were reported in the consolidated income statement and the consolidated statement of cash flows as follows:

€ million	**2024**	2023
Right-of-use assets		
Depreciation	-165	-147
Impairment losses	–	–
Reversals of impairment losses	–	–
Expenses for leasing low-value assets	-8	-11
Expenses for leases with variable lease payments	–	–
Income from subleasing right-of-use assets	–	–
Income from sale-and-lease-back transactions	–	–
Interest expenses for lease liabilities	-25	-14
Total	**-198**	**-173**

€ million	**2024**	2023
Operating Cash Flow	-24	-25
Financing Cash Flow	-139	-149
Total	**-163**	**-174**

At the reporting date, the future lease payments were distributed over the following periods:

December 31, 2024

€ million	Within 1 year	1-5 years	After more than 5 years	**Total**
Future lease payments	147	337	433	917
Interest portion of future payments	-21	-64	-82	-167
Present value of future lease payments	**126**	**274**	**351**	**750**

December 31, 2023

€ million	Within 1 year	1-5 years	After more than 5 years	Total
Future lease payments	130	278	152	560
Interest portion of future payments	-11	-22	-15	-47
Present value of future lease payments	**120**	**256**	**137**	**513**

(22) Other non-financial assets

Accounting and measurement policies

Other non-financial assets

Other non-financial assets are carried at amortized cost. Impairments are recognized for any credit risks.

Other non-financial assets are broken down as follows:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	Current	Non-current	**Total**	Current	Non-current	Total
Receivables from non-income-related taxes	307	2	309	323	2	325
Prepaid expenses	169	42	212	182	37	219
Assets from defined benefit plans	35	–	35	33	–	33
Remaining other assets	109	90	199	95	76	171
Other non-financial assets	**621**	**134**	**755**	**633**	**115**	**748**

(23) Cash flow from investing activities

Accounting and measurement policies

Cash flow from investing activities

Treatment of payments for investments from government grants

Merck reports payments from investments in connection with government grants in cash flow from investing activities.

Payments for investments in intangible assets included a low-triple-digit million-euro upfront payment in connection with the in-licensing agreement with Jiangsu Hengrui Pharmaceuticals Co. Ltd., China, and a mid-double-digit million-euro upfront payment in connection with the in-licensing agreement with Abbisko Therapeutics Co. Ltd., China (see Note (7) “**Collaboration and licensing agreements**”), both of which were concluded in fiscal 2023.

Payments from the disposal of intangible assets in the previous year primarily resulted from the disposal of the rights to a non-strategic brand in the Healthcare business sector and a portfolio of licenses and patents in the Electronics business sector.

Payments for acquisitions less acquired cash and cash equivalents were primarily attributable to the acquisition of Mirus Bio LLC, United States, Unity-SC SAS, France, and Hub Organoids Holding B.V., Netherlands (see Note (6) “**Acquisitions and divestments**”).

Net cash outflows for investments in other assets mainly resulted from short-term investments in term deposits that did not meet the requirements for classification as cash and cash equivalents and from the short-term investment of available funds in structured products based on marketable greenhouse gas emission certificates.

Net cash inflows from the disposal of other assets primarily resulted from repayments of short-term investments in securities, term deposits and structured products based on marketable greenhouse gas emission certificates. In the previous year, net cash inflows from the disposal of other assets also included payments received from contingent consideration.

(24) Inventories

Accounting and measurement policies

Inventories

In addition to directly attributable unit costs, the cost of sales also includes overheads attributable to the production process, which are determined on the basis of normal capacity utilization of the production facilities. Goods for resale are recognized at cost. The “first-in, first-out” (FIFO) method is used to determine the amortized cost of finished and unfinished products, raw materials and merchandise. The weighted average cost formula is applied for supplies.

Inventories are tested for impairment using a business sector-specific method. Under this method, cost is compared to the net realizable values. If the net realizable value is lower than the amortized cost, the asset is written down by a corresponding amount, which is recognized as an expense in the cost of sales.

Impairment may be due to factors relating to the sales market, qualitative reasons or a lack of usability of the items. If the reason for impairment no longer applies, the carrying amount is adjusted to the lower of cost or the current net realizable value.

Since inventories are, for the most part, not manufactured within the scope of long-term production processes, borrowing costs are not included.

Inventory prepayments are reported under other non-financial assets.

Significant discretionary decisions and sources of estimation uncertainty

Identification of impairments or reversal of impairments

Discretionary decisions are required in the identification of impairment as well as in identifying the need to reverse impairment of inventories. There are estimation uncertainties with respect to the calculation of the net realizable value. In particular, expected selling prices and expected costs of completion are considered in calculating this value.

Inventories consisted of the following:

€ million	**Dec. 31, 2024**	Dec. 31, 2023
Raw materials and supplies	1,025	1,164
Work in progress	1,463	1,428
Finished goods/goods for resale	1,996	2,045
Inventories	**4,484**	**4,637**

The year-on-year decline in inventories was primarily due to the reclassification as assets held for sale in connection with the planned divestment of the Surface Solutions business within the Electronics business sector (see Note (6) “**Acquisitions and divestments**”).

Impairment losses included in the cost of sales are presented in Note (10) “**Cost of sales**”.

(25) Trade and other receivables

Accounting and measurement policies

Trade and other receivables

Trade accounts receivable without significant financing components that are not the subject of a factoring agreement are measured at the amount of the unconditional claim for consideration on initial recognition. For additions to trade accounts receivable, loss allowances are recognized to allow for expected credit losses.

At initial recognition, other receivables are measured at fair value plus the direct transaction costs incurred upon acquisition of the asset.

Trade accounts receivable that are potentially designated to be sold on account of a factoring agreement are measured at fair value through other comprehensive income.

The measurement policies applied in determining loss allowances for trade and other receivables are shown in Note (42) “**Management of financial risks**”, in the “**Credit risks**” section.

Loss allowances and reversals of loss allowances are reported under “Impairment losses and reversals of impairment losses on financial assets (net)” in the consolidated income statement if the asset is used in ordinary activities and hence has an operative nature. If the asset is not used in ordinary activities, it is recognized in financial income or financial expenses.

Further information on the accounting and measurement policies governing financial assets can be found in Note (36) “**Other financial assets**”.

Significant discretionary decisions and sources of estimation uncertainty

Trade and other receivables

Information on the significant discretion and estimation uncertainty concerning trade and other receivables can be found in Note (42) “**Management of financial risks**”.

Trade and other receivables were measured as follows:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	Subsequently measured at amortized cost	Subsequently measured at fair value through other comprehensive income	**Total**	Subsequently measured at amortized cost	Subsequently measured at fair value through other comprehensive income	Total
Gross trade accounts receivable	3,902	25	3,926	3,945	25	3,969
Gross other receivables	152	–	152	160	–	160
Gross trade and other receivables	**4,053**	**25**	**4,078**	**4,105**	**25**	**4,130**
Loss allowances on trade accounts receivable	-101	–	-101	-97	–	-97
Loss allowances on other receivables	-3	–	-3	-1	–	-1
Net trade and other receivables	**3,949**	**24**	**3,974**	**4,007**	**25**	**4,031**
thereof: current	3,922	24	3,947	3,979	25	4,004
thereof: non-current	27	–	27	28	–	28

In fiscal 2024, trade accounts receivable in Italy with a nominal value of € 44 million (2023: € 69 million) were sold for € 44 million (2023: € 69 million). These receivables did not involve any further rights of recourse against Merck.

(26) Contract assets

Accounting and measurement policies

Contract assets

Contract assets represent contractual claims to receive payment from customers for whom the contractual performance obligation has already been fulfilled, although an unconditional claim to payment has yet to arise.

The following table shows the change in contract assets:

€ million	**2024**	2023
Jan. 1	**104**	**128**
Additions due to business combinations	1	–
Other additions	398	339
thereof: attributable to performance obligations satisfied in prior periods	–	–
Disposals due to divestments/Reclassification to assets held for sale	–	–
Reclassification to trade accounts receivable	-373	-361
Currency translation	2	-3
Other	–	–
Dec. 31	**132**	**104**

Contract assets resulted in particular from rendering services and manufacturing of products in the Life Science and Electronics business sectors.

(27) Other provisions

Other provisions developed as follows:

€ million	Litigation	Restructuring	Environmental protection	Acceptance and follow-on obligations	Interest and penalties related to income tax	Other	**Total**
Jan. 1, 2024	**59**	**210**	**149**	**181**	**127**	**127**	**852**
Additions	40	123	16	104	26	62	371
Utilizations	-26	-121	-5	-102	-7	-17	-279
Release	-8	-63	-4	-24	-53	-30	-181
Interest effect	–	1	2	–	–	–	4
Currency translation	-1	1	–	–	1	1	3
Changes in scope of consolidation/Other	–	-4	–	4	–	-6	-6
Reclassification to liabilities directly related to assets held for sale	–	-1	–	–	–	-1	-2
Dec. 31, 2024	**65**	**147**	**158**	**162**	**94**	**136**	**761**
thereof: current	54	106	21	138	94	92	505
thereof: non-current	11	40	137	25	–	44	257

Accounting and measurement policies

Provisions for litigation

To assess a recognition obligation in relation to provisions for litigation and to quantify future outflows of resources, Merck draws on the knowledge of the legal department as well as outside counsel.

Assessing the need for recognizing provisions for litigation is based on the likelihood of possible outcomes for proceedings. In particular, the factors influencing this likelihood are:

- the validity of the arguments brought forward by the opposing party, and
- the legal situation and current court rulings in comparable proceedings in the jurisdiction in question.

The following factors are also relevant in measuring provisions for litigation:

- the duration of proceedings in pending legal disputes and the associated legal costs,
- the usual damages and fines for comparable legal disputes, and
- the discount factor to be used.

Provisions for restructuring

Merck uses formal restructuring plans and the expectations of the affected employees concerning the performance of the restructuring measures to assess the recognition obligation for provisions for restructuring projects and the amount of the expected outflow of resources.

Provisions for environmental protection

To assess a recognition obligation in relation to provisions for environmental protection and to quantify future outflows of resources, Merck draws on appraisals by independent external experts and the knowledge of in-house specialists.

The following are key parameters in calculating the present value of the future settlement amount of provisions for environmental protection:

- the future settlement date,
- the extent of environmental damage,
- the applicable remediation methods,
- the associated future costs, and
- the discount factor.

Provisions for acceptance and follow-on obligations

The assessment of the recognition obligation for provisions for acceptance and follow-on obligations and the quantification of future outflows of resources is based on internal project plans as well as on the assessment of the respective matters by in-house and external specialists.

The main parameters in determining the amount of the provision are:

- the ability to use or potential for modification of secured manufacturing capacities at third-party providers, particularly for pharmaceutical compounds,
- the number of affected patients and the expected duration of their continued treatment in clinical development programs,
- the expected date or period of the outflow of resources, and
- the expectations concerning future events influencing the obligations.

Provisions for interest and penalties related to income taxes

Objective assessments are performed to determine the need to recognize provisions for interest and penalties related to income taxes not covered by IAS 12. Provisions for interest and penalties related to income taxes are generally classified as current provisions because the responsible authority can be expected to issue an assessment notice at any time.

Significant discretion and sources of estimation uncertainty

Provisions for litigation

Like the measurement of provisions, the assessment of a recognition obligation for provisions for litigation is, to a particular extent, subject to a degree of estimation uncertainty. The uncertainties relate, in particular, to the assessment of the likelihood and the amount of the outflow of resources.

Provisions for restructuring

Estimation uncertainty about the provisions for restructuring primarily relate to determining the amount of the expected outflow of resources. This is largely influenced by the assumptions made concerning the change in or termination of the employment relationships of the affected employees and the planned implementation date of the restructuring plan.

Provisions for environmental protection

The assessment of a recognition obligation and the measurement of the provisions for environmental protection are subject to discretionary decisions and estimation uncertainties to a particular degree.

The estimation uncertainties relate in particular to the assessment of the timing and likelihood of a future outflow of resources and assessment of the extent of necessary remediation measures and the related calculation of the amount of the liability.

Provisions for acceptance and follow-on obligations

Estimation uncertainty regarding the provisions for acceptance and follow-on obligations primarily relates to determining the amount of the expected outflow of resources.

Provisions for interest and penalties related to income taxes

Estimation uncertainty concerning the provisions for interest and penalties related to income taxes mainly relate to the interpretation of tax codes and the effects of amended case law.

Litigation

The largest individual item within the provisions for litigation was a low-double-digit million-euro amount for the provision for expected legal costs in connection with the legal dispute with Merck & Co., Inc., Rahway, NJ, United States (outside the United States and Canada: MSD) in the United States. Further information can be found in Note (28) "**Contingent liabilities**".

Restructuring

The restructuring provisions recognized as of December 31, 2024, primarily related to obligations for workforce reduction measures in connection with communicated restructuring plans.

They also included provisions for the program that was launched in fiscal 2023 to continuously improve processes and align the Group functions more closely with the businesses. Reversals in a low-double-digit million-euro amount related to this program.

The restructuring provisions also included programs to improve efficiency and increase customer focus in the three business sectors.

These provisions are largely expected to be utilized within the next two years.

Environmental protection

Provisions for environmental protection resulted in particular from obligations for soil remediation and groundwater protection in connection with the crop protection business in Germany and Latin America that was discontinued in 1987.

Most of the provisions are expected to be utilized after more than one year.

Acceptance and follow-on obligations

Provisions for acceptance and follow-on obligations primarily related to costs in connection with discontinued development projects in the Healthcare business sector as well as obligation surpluses from onerous contracts.

A substantial part of the provisions for acceptance and follow-on obligations was attributable to the termination of the xevinapant program (see Note (7) "**Collaboration and licensing agreements**"). A corresponding provision for follow-on obligations was recognized in a high-double-digit million-euro amount. Following partial utilization, this provision still amounted to a mid-double-digit million-euro figure at the end of fiscal 2024. The outflow of resources is mainly expected within the next 12 months.

The utilization was mainly due to last year's termination of phase III clinical trials of evobrutinib.

Interest and penalties related to income taxes

Provisions for interest and penalties related to income taxes mainly included penalties arising from tax audits as well as interest payables associated with or resulting from tax payables.

The reversal primarily related to interest and financial penalties in connection with a tax audit in Mexico for which an agreement was reached with the responsible authorities in fiscal 2024.

Miscellaneous other provisions

Miscellaneous other provisions included provisions for asset retirement obligations, other tax risks not constituting income tax in accordance with IAS 12, risks in connection with employee participation programs and warranty obligations.

(28) Contingent liabilities

Accounting and measurement policies

Contingent liabilities

To identify contingent liabilities from litigation and tax matters, Merck draws on the knowledge of the legal department and the tax department as well as the opinions of external consultants and attorneys.

The key factors in the identification of contingent liabilities are:

- The validity of the arguments brought forward by the opposing party or the tax authority.
- The legal situation and current court rulings in comparable proceedings in the jurisdiction in question.

The amount of the contingent liabilities is based on the best possible estimate which, in turn, is based on the likelihood of possible outcomes of proceedings.

Significant discretionary decisions and sources of estimation uncertainty

Contingent liabilities

The identification and the measurement of contingent liabilities are both subject to considerable uncertainty.

This applies with regard to assessing the likelihood of an outflow of resources as well as determining its amount.

Contingent liabilities in the amount of € 224 million (December 31, 2023: € 204 million) related almost exclusively to litigation and tax matters.

Contingent liabilities from litigation mainly related to obligations under labor law and tort law. The contingent liabilities from tax matters primarily related to the determination of earnings under tax law, customs regulations and excise tax matters.

In addition, there were contingent liabilities from various legal disputes with Merck & Co., Inc., Rahway, NJ, United States (outside the United States and Canada: MSD), among other things, due to breach of the coexistence agreement entered into between the two companies and/or trademark/name right infringement regarding the use of the designation "Merck". In this context, Merck has sued MSD in various countries and has been sued by MSD in the United States. An outflow of resources – except costs for legal defense – was not deemed sufficiently probable as of the balance sheet date to justify the recognition of a provision. Since the contingent liability from these legal disputes could not be reliably quantified as of the balance sheet date, this matter was not included in the total figure for contingent liabilities.

(29) Other non-financial liabilities

Accounting and measurement policies

Other non-financial liabilities

Accruals for personnel expenses reported in other non-financial liabilities include, in particular, liabilities resulting from vacation entitlements, variable and performance-related compensation components, and social security contributions.

Contract liabilities include payments from customers received by Merck prior to completion of contractual performance.

Other non-financial liabilities comprise the following:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	**Current**	**Non-current**	**Total**	Current	Non-current	Total
Accruals for personnel expenses	1,049	–	1,049	916	–	916
Payroll-related liabilities	141	–	141	122	4	126
Liabilities from non-income related taxes	139	1	140	163	1	164
Contract liabilities	203	3	207	249	3	252
Other accruals	29	8	37	29	8	38
Other non-financial liabilities	**1,562**	**12**	**1,574**	**1,479**	**17**	**1,496**

The development of accruals for personnel expenses is due in particular to higher accruals for bonus payments and for the tranche of the Merck Long-Term Incentive Plan that is payable in the months following the reporting date. Further information on the Merck Long-Term Incentive Plan can be found in the "Share-based payments" section of Note (33) "**Provisions for employee benefits**".

The following table shows the development of contract liabilities in the period under review:

	2024			2023		
€ million	**Current**	**Non-current**	**Total**	Current	Non-current	Total
Jan. 1	**249**	**3**	**252**	**282**	**3**	**285**
Additions due to business combinations	10	1	11	–	–	–
Other additions	1,282	–	1,282	1,290	–	1,290
Disposals due to divestments/Reclassification to assets held for sale	-3	–	-3	–	–	–
Recognition of income/reversal	-1,338	–	-1,339	-1,313	–	-1,313
Cumulative catch-up adjustments to revenue	–	–	–	–	–	–
Reclassification non-current/current	–	–	–	–	–	–
Currency translation	4	–	4	-11	–	-11
Other	–	–	–	–	–	–
Dec. 31	**203**	**3**	**207**	**249**	**3**	**252**

As of January 1, 2024, contract liabilities amounted to € 252 million (January 1, 2023: € 285 million), of which a total of € 224 million (2023: € 253 million) was recognized through profit or loss in fiscal 2024.

(30) Trade and other current payables

Accounting and measurement policies

Trade and other current payables

Trade and other payables are subsequently measured at amortized cost.

Trade and other payables as of December 31, 2024, included accrued amounts of € 773 million from outstanding invoices (December 31, 2023: € 775 million).

Employees

(31) Number of employees

The number of employees was 62,557 as of December 31, 2024 (December 31, 2023: 62,908 employees). The number of employees for 2024 includes all employees of fully consolidated subsidiaries with the exception of HUB Organoids Holding B.V., Netherlands, the acquisition of which was concluded on December 23, 2024 (see Note (6) “**Acquisitions and divestments**”).

The following table shows the average number of employees broken down by function:

	2024	2023
Production	23,471	24,105
Marketing and sales	13,786	14,436
Administration	11,837	11,938
Research and development	6,426	6,516
Procurement and logistics	4,916	4,971
Other	1,893	1,676
Average number of employees	**62,329**	**63,642**

(32) Personnel expenses

Personnel expenses comprised the following:

€ million	**2024**	2023
Wages and salaries	5,403	5,299
Compulsory social security contributions and other costs	917	853
Pension expenses	375	365
Personnel expenses	**6,695**	**6,517**

Personnel expenses comprised expenses of € 205 million (2023: € 212 million) for defined contribution plans, which are funded exclusively via external funds and therefore do not represent any obligation for Merck other than making contribution payments. In addition, employer contributions amounting to € 98 million (2023: € 93 million) were transferred to the German statutory pension insurance system, and contributions amounting to € 121 million (2023: € 122 million) were transferred to statutory pension insurance systems abroad.

(33) Provisions for employee benefits

Provisions for employee benefits are composed as follows:

€ million	Dec. 31, 2024	Dec. 31, 2023
Provisions for pensions and other post-employment benefits	1,722	1,975
Non-current other employee benefit provisions	233	217
Non-current provisions for employee benefits	**1,956**	**2,192**
Current provisions for employee benefits	**66**	**83**
Provisions for employee benefits	**2,021**	**2,275**

Provisions for other employee benefits included provisions for share-based payments, which are discussed in greater detail in the section on share-based payments in this note.

Provisions for pensions and other post-employment benefits

Accounting and measurement policies

Provisions for pensions and other post-employment benefits

In addition to retirement benefit obligations, provisions for pensions and other post-employment benefits include obligations for other post-employment benefits, such as medical care.

The present value of the defined benefit obligation for all material pension plans is determined by expert third parties using the actuarial projected unit credit method.

The discount rates for defined benefit pension plans are generally determined by reference to discount rates for similar durations and currencies calculated by external actuaries. This is based on bonds with ratings of at least “AA” or a comparable rating from at least one of the leading rating agencies as of the reporting date.

The other actuarial assumptions used as the basis for calculating the defined benefit obligation, such as rates of salary increases and pension trends, were determined on a country-by-country basis in line with the economic conditions prevailing in each country. The latest country-specific mortality tables are also applied (Germany: Heubeck 2018G; Switzerland: BVG 2020G; United Kingdom: S3PA).

Apart from the net balance of interest expense for the defined benefit obligations and interest income from the plan assets, which is reported in financial income and financial expenses, the expenses for defined benefit plans are allocated to the individual functional areas in the consolidated income statement.

The calculation of the defined benefit obligations was based on the following actuarial parameters and durations:

	Germany		Switzerland		United Kingdom		Other countries	
	2024	2023	**2024**	2023	**2024**	2023	**2024**	2023
Discount rate	3.50%	3.32%	0.90%	1.34%	5.53%	4.80%	4.26%	4.52%
Future salary increases	2.99%	2.75%	2.00%	3.84%	–	–	3.88%	3.81%
Future pension increases	2.14%	2.14%	–	0.02%	2.98%	2.90%	1.81%	1.75%
Duration	18	19	16	16	12	13	12	12

The higher interest rate level in the euro area and the United Kingdom resulted in a reduction in the present value of the defined benefit obligations as well as in the duration of the obligations.

These were average values weighted by the present value of the respective defined benefit obligation.

Significant discretionary decisions and sources of estimation uncertainty

Provisions for pensions and other post-employment benefits

The determination of the present value of the obligation from defined benefit pension plans primarily requires discretionary judgment regarding the selection of methods to determine the discount rate, the selection of suitable mortality tables, and estimates of future salary and pension increases.

The following overview shows how the present value of all defined benefit obligations would have been impacted by changes to relevant actuarial assumptions:

December 31, 2024

€ million	Germany	Switzerland	United Kingdom	Other countries	**Total**
Increase (+)/decrease (–) in present value of all defined benefit obligations if					
the discount rate were 50 basis points lower	272	93	21	15	**401**
the discount rate were 50 basis points higher	-237	-82	-19	-13	**-352**
the expected rate of future salary increase were 50 basis points lower	-58	-16	–	-8	**-82**
the expected rate of future salary increase were 50 basis points higher	66	17	–	9	**91**
the expected rate of future pension increase were 50 basis points lower	-131	–	-8	-4	**-143**
the expected rate of future pension increase were 50 basis points higher	143	47	9	5	**204**
the life expectancy were 1 year lower	-103	-29	-9		
the life expectancy were 1 year higher	102	28	9		

December 31, 2023

€ million	Germany	Switzerland	United Kingdom	Other countries	**Total**
Increase (+)/decrease (–) in present value of all defined benefit obligations if					
the discount rate were 50 basis points lower	295	91	23	18	**426**
the discount rate were 50 basis points higher	-256	-80	-21	-16	**-373**
the expected rate of future salary increase were 50 basis points lower	-73	-17	–	-9	**-98**
the expected rate of future salary increase were 50 basis points higher	82	18	–	9	**109**
the expected rate of future pension increase were 50 basis points lower	-141	-3	-8	-5	**-157**
the expected rate of future pension increase were 50 basis points higher	155	44	9	5	**212**
the life expectancy were 1 year lower	-110	-28	-10		
the life expectancy were 1 year higher	109	27	10		

Sensitivities are determined on the basis of the respective parameters in question, with all other measurement assumptions remaining unchanged.

Both the benefit obligations as well as the plan assets are subject to fluctuations over time. The reasons for such fluctuations could include changes in market interest rates and thus the discount rate, as well as adjustments to other actuarial assumptions (such as life expectancy or expected future pension increases). This could lead to – or cause an increase in – underfunding. Depending on statutory regulations, it may become necessary in some countries to reduce underfunding by providing additional funding.

In order to minimize fluctuations of the net defined benefit liability, Merck also pays attention to potential fluctuations in liabilities in managing its plan assets. The portfolio is structured in such a way that, in the ideal scenario, the impact of exogenous factors on the plan assets and the defined benefit obligations offset each other.

Different retirement benefit systems are provided for employees depending on the legal, economic and fiscal circumstances prevailing in each country. Newly hired employees are only offered plans whose benefits are based on contributions and the return on their investments. Some of these plans require the employer to guarantee a minimum return on investment. Other plans are generally based on the employee's years of service and salary. Pension obligations comprised both obligations from current pensions and accrued benefits for pensions payable in the future.

The value recognized in the consolidated balance sheet for pensions and other post-employment benefits was derived as follows:

€ million	**Dec. 31, 2024**	Dec. 31, 2023
Present value of all defined benefit obligations	**4,626**	**4,787**
Fair value of the plan assets	-2,973	-2,848
Funded status	**1,653**	**1,939**
Effects of the asset ceilings	34	4
Net defined benefit liability	**1,687**	**1,943**
Assets from defined benefit plans	35	33
Provisions for pensions and other post-employment benefits	**1,722**	**1,975**

The defined benefit obligations were based on the following types of benefits provided by the respective plan:

	Dec. 31, 2024				
€ million	Germany	Switzerland	United Kingdom	Other countries	**Total**
Benefit based on final salary					
Annuity	2,279	1	340	67	2,687
Lump sum	–	–	–	129	129
Installments	2	–	–	1	3
Benefit not based on final salary					
Annuity	630	1,100	–	5	1,735
Lump sum	19	–	4	23	46
Installments	4	–	–	–	4
Other	–	–	–	4	4
Medical plan	–	–	–	20	20
Present value of defined benefit obligations	**2,933**	**1,101**	**344**	**248**	**4,626**
Fair value of the plan assets	**1,366**	**1,122**	**367**	**118**	**2,973**

€ million	Dec. 31, 2023 Germany	Switzerland	United Kingdom	Other countries	Total
Benefit based on final salary					
Annuity	2,429	1	354	72	2,856
Lump sum	–	–	–	127	127
Installments	1	–	–	–	1
Benefit not based on final salary					
Annuity	613	1,060	–	59	1,732
Lump sum	10	–	4	29	43
Installments	4	–	–	–	4
Other	–	–	–	4	4
Medical plan	–	–	–	18	18
Present value of defined benefit obligations	**3,058**	**1,061**	**358**	**310**	**4,787**
Fair value of the plan assets	**1,281**	**1,022**	**384**	**160**	**2,848**

The vast majority of defined benefit obligations of German entities were attributable to plans that encompass old-age, disability and surviving dependent pensions. These obligations were based on benefit rules comprising benefit commitments dependent on years of service and final salary, as well as two different direct commitments for employees newly hired since January 1, 2005, that were not based on final salary. The benefit entitlement for new members from January 1, 2005, to December 31, 2020, resulted from the cumulative total of annually determined pension components calculated on the basis of a defined benefit expense and an age-based annuity table. The benefit entitlement for new members from January 1, 2021, resulted from the performance of salary-based employer contributions and voluntary employee contributions, topped up by the employer, to an external fund. A minimum return on contributions has been guaranteed by Merck. There were no statutory minimum funding obligations in Germany.

Pension obligations in Switzerland mainly comprised retirement, disability and surviving dependent benefits regulated by law. The employer and the employees made contributions to the plans. Statutory minimum funding obligations existed.

Pension obligations in the United Kingdom resulted primarily from benefit plans which are based on years of service and final salary and which have been closed to newly hired employees since 2006. The agreed benefits comprised retirement, disability and surviving dependent benefits. The employer and the employees made contributions to the plans. Statutory minimum funding obligations existed. Merck KGaA provided guarantees in respect of the trustees of two pension plans in the United Kingdom that were largely fully funded. These amounted to € 160 million as of December 31, 2024 (December 31, 2023: € 153 million). The guarantees apply in the event that the sponsoring undertakings for these pension plans, which are included in these consolidated financial statements, are unable to reduce potential underfunding by providing additional funding; this eventuality is considered to be unlikely.

The development of the net defined benefit liability was as follows:

2023

€ million	Present value of the defined benefit obligations	Fair value of the plan assets	Effects of the asset ceilings	Net defined benefit liability
January 1, 2023	**-4,287**	**2,634**	**-33**	**-1,685**
Current service cost	-109	–	–	-109
Interest expense	-150	–	–	-150
Interest income	–	89	–	89
Plan administration costs recognized in income	–	-3	–	-3
Past service cost	5	–	–	5
Gains (+) or losses (-) on settlement	–	–	–	–
Currency effects recognized in income	-37	37	–	–
Other effects recognized in income	–	–	–	–
Items recognized in income	**-291**	**123**	**–**	**-168**
Remeasurements of defined benefit obligations				
Actuarial gains (+)/losses (-) arising from changes in demographic assumptions	17	–	–	17
Actuarial gains (+)/losses (-) arising from changes in financial assumptions	-350	–	–	-350
Actuarial gains (+)/losses (-) arising from experience adjustments	10	–	–	10
Remeasurements of plan assets				
Actuarial gains (+)/losses (-) arising from experience adjustments	–	58	–	58
Changes in the effects of the asset ceilings				
Actuarial gains (+)/losses (-)	–	–	29	29
Actuarial gains (+)/losses (-)	**-323**	**58**	**29**	**-236**
Pension payments	147	-61	–	86
Employer contributions	–	57	–	57
Employee contributions	-22	21	–	-1
Payment transactions	**125**	**17**	**–**	**142**
Changes in the scope of consolidation	–	–	–	–
Reclassification to liabilities directly related to assets held for sale	–	–	–	–
Currency translation recognized in equity	-16	20	–	4
Other changes	5	-4	–	1
Other	**-11**	**16**	**–**	**5**
December 31, 2023	**-4,787**	**2,848**	**-4**	**-1,943**

2024

€ million	Present value of the defined benefit obligations	Fair value of the plan assets	Effects of asset ceilings	Net defined benefit liability
January 1, 2024	**-4,787**	**2,848**	**-4**	**-1,943**
Current service cost	-127	–	–	-127
Interest expense	-143	–	–	-143
Interest income	–	79	–	79
Plan administration costs recognized in income	–	-3	–	-3
Past service cost	-1	–	–	-1
Gains (+) or losses (-) on settlement	4	–	–	4
Currency effects recognized in income	7	-7	–	–
Other effects recognized in income	–	–	–	–
Items recognized in income	**-260**	**69**	**–**	**-191**
Remeasurements of defined benefit obligations				
Actuarial gains (+)/losses (-) arising from changes in demographic assumptions	8	–	–	8
Actuarial gains (+)/losses (-) arising from changes in financial assumptions	119	–	–	119
Actuarial gains (+)/losses (-) arising from experience adjustments	24	–	–	24
Remeasurements of plan assets				
Actuarial gains (+)/losses (-) arising from experience adjustments	–	59	–	59
Changes in the effects of the asset ceilings				
Actuarial gains (+)/losses (-)	–	–	-30	-30
Actuarial gains (+)/losses (-)	**150**	**59**	**-30**	**179**
Pension payments	198	-106	–	92
Employer contributions	–	64	–	64
Employee contributions	-23	22	–	-1
Payment transactions	**175**	**-20**	**–**	**155**
Changes in the scope of consolidation	–		–	–
Reclassification to liabilities directly related to assets held for sale	114	-6	–	108
Currency translation recognized in equity	-14	16	–	2
Other changes	-4	6	–	2
Other	**96**	**16**	**–**	**112**
December 31, 2024	**-4,626**	**2,973**	**-34**	**-1,687**

The actual income from plan assets amounted to € 138 million in the year under review (2023: € 147 million).

Covering the benefit obligations with financial assets represents a means of providing for future cash outflows, which are required by law in some countries (for example, Switzerland and the United Kingdom) and voluntarily in other countries (for example, Germany).

The fair value of the plan assets was allocated to the following categories:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	Quoted market price in an active market	No quoted market price in an active market	Total	Quoted market price in an active market	No quoted market price in an active market	Total
Cash and cash equivalents	85	–	85	74	–	74
Equity instruments	660	–	660	620	–	620
Debt instruments	1,216	–	1,216	1,219	–	1,219
Real estate	157	252	409	180	193	373
Investment funds	52	440	492	48	392	439
Insurance contracts	–	53	53	–	61	61
Other	56	2	58	62	–	62
Fair value of the plan assets	**2,226**	**747**	**2,973**	**2,202**	**646**	**2,848**

Plan assets did not directly include financial instruments issued by Group companies or assets used by Group companies.

Employer contributions to plan assets and direct payments to plan beneficiaries for the next year are expected to amount to € 50 million (2023: € 48 million) and € 99 million (2023: € 96 million), respectively.

The expected payments of undiscounted benefits under the plans were as follows:

December 31, 2024

	Expected payments of undiscounted benefits				
€ million	Germany	Switzerland	United Kingdom	Other countries	Total
2025	91	24	20	16	152
2026	98	25	20	21	164
2027	102	27	21	19	169
2028	106	28	22	14	169
2029	110	28	22	17	177
2030-2034	610	168	119	107	1,004

December 31, 2023

	Expected payments of undiscounted benefits				
€ million	Germany	Switzerland	United Kingdom	Other countries	Total
2024	88	26	17	22	153
2025	95	24	17	24	160
2026	99	25	18	29	171
2027	103	27	19	21	170
2028	108	27	19	21	175
2029-2033	607	151	103	133	994

The weighted duration of defined benefit obligations amounted to 17 years (2023: 17 years).

Other employee benefit provisions

Accounting and measurement policies

Other employee benefit provisions

Other employee benefit provisions include obligations from share-based compensation programs. However, they do not contain the tranche of the Merck Long-Term Incentive Plan (LTIP) that is payable in the months following the reporting date, as this is no longer subject to value fluctuations following the reporting date and hence is reported in other current non-financial liabilities. More information on these compensation programs can be found below.

Obligations for partial retirement programs and other severance payments not recognized in connection with restructuring programs, as well as obligations in connection with long-term working hour accounts and anniversary bonuses, are also included in other employee benefit provisions.

Other employee benefit provisions developed as follows:

€ million	Non-current other employee benefit provisions	Current other employee benefit provisions	Total
Jan. 1, 2024	**217**	**83**	**299**
Additions	106	147	253
Utilizations	-17	-114	-131
Release	-30	-33	-63
Interest effect	1	–	1
Currency translation	7	3	10
Reclassification from non-current to current/liabilities	-44	-19	-62
Changes in scope of consolidation/Other	–	–	–
Reclassification to liabilities directly related to assets held for sale	-7	-2	-8
Dec. 31, 2024	**233**	**66**	**299**

Share-based payments

Accounting and measurement policies

Share-based payments

Provisions are recognized for the share-based compensation program with exclusive cash settlement at Merck ("Merck Long-Term Incentive Plan") and reported in other employee benefit provisions. The tranche to be paid out in the months following the reporting date is reclassified to accruals for personnel expenses, and the payment of the tranche is reported in accruals for personnel expenses accordingly.

The fair value of the obligations is calculated by an external expert using a Monte Carlo simulation as of the balance sheet date. The main parameters in the measurement of the share-based compensation programs with cash settlement are long-term indicators of company performance and the price movement of Merck shares in relation to the DAX®. A sustainability factor is also included in the valuation parameters.

The expected volatilities are based on the implicit volatility of Merck shares and the DAX® in accordance with the remaining term of the respective tranche. The dividend payments incorporated into the valuation model are based on medium-term dividend expectations.

Changes to the intrinsic value of share-based compensation programs are allocated to the respective functional costs according to the causation principle. Time value changes are recognized in financial income or finance costs.

Significant discretionary decisions and sources of estimation uncertainty

Share-based payments

The measurement of long-term share-based compensation programs implies extensive estimation uncertainty. The following overview shows the amounts by which the non-current provisions from share-based compensation programs (carrying amount as of December 31, 2024: € 15 million/carrying amount as of December 31, 2023: € 7 million) would have been impacted by changes in the DAX® or the closing price of the Merck share on the balance sheet date. The amounts stated would have led to a corresponding reduction or increase in profit before income tax.

€ million		Increase (+)/decrease (–) of the provision	
		Dec. 31, 2024	Dec. 31, 2023
Variation of Merck share price	10%	2	1
	-10%	-2	-1
Change in the DAX®	10%	–	–
	-10%	–	–

Sensitivities were determined on the basis of the respective parameters in question, with all other measurement assumptions remaining unchanged. The 2022 tranche will not be subject to any value fluctuations between December 31, 2024, and the payout date, and was therefore excluded from the sensitivity analysis (December 31, 2023: exclusion of 2021 tranche).

The existing share-based compensation programs with exclusive cash settlement at Merck are aligned with target achievement based on key performance indicators as well as the long-term performance of Merck shares. Certain employees are eligible to receive a certain number of virtual shares – Merck share units (MSUs) – at the end of a three-year performance cycle. The number of MSUs that could be received depends on the individual grant defined for the respective person and the average closing price of Merck shares in Xetra® trading during the last 60 trading days prior to January 1 of the respective performance cycle (reference price). When the three-year performance cycle ends, the number of MSUs to then be granted is determined based on the development of defined financial key performance indicators (KPIs) and a sustainability factor.

The calculation is based on the performance of the Merck share price compared to the performance of the DAX® with a weighting of 50%, the development of the EBITDA pre margin during the performance cycle as a proportion of a defined target value with a weighting of 25%, and the development of organic sales growth as a proportion of a defined target value, also with a weighting of 25%. At the end of the respective performance cycle, the eligible participants are granted between 0% and 150% of the MSUs they could be eligible to receive, depending on the development of these financial KPIs. The target values for the KPIs are defined by the Executive Board.

The MSUs measured on the basis of financial targets are then multiplied by a sustainability factor composed of the three sustainability criteria: “Dedicated to human progress”, “Partnering for sustainable business impact”, and “Reducing our ecological footprint”.

The weighting of the three sustainability criteria for the 2024 LTIP tranche is as follows:

- “Dedicated to human progress” 30%
- “Partnering for sustainable business impact” 30%
- “Reducing our ecological footprint” 40%

The sustainability factor can range from 0.8 to 1.2. This means that, depending on the result of the financial KPIs (0% to 150%) and the sustainability factor, the eligible participants are granted between 0% and 180% of the MSUs they could be eligible to receive at the end of the respective performance cycle.

A cash payment is made based on the MSUs granted after the three-year performance cycle has ended. The value of a granted MSU, which is relevant for payment, corresponds to the average closing price of Merck shares in Xetra® trading during the last 60 trading days prior to the end of the performance cycle. The payout amounts of the respective tranches are limited to two and a half times the individual grant.

The following table presents the key parameters as well as the development of the potential number of Merck share units (MSUs) for the individual tranches:

	2022 tranche	2023 tranche	2024 tranche
Performance cycle	Jan. 1, 2022 - Dec. 31, 2024	Jan. 1, 2023 - Dec. 31, 2025	Jan. 1, 2024 - Dec. 31, 2026
Term	3 Years	3 Years	3 Years
Reference price of Merck shares in € (60-day average Merck share price prior to the start of the performance cycle)	212.16	173.46	149.40
DAX® value (60-day average of the DAX® prior to the start of the performance cycle)	15,684.57	13,722.30	15,778.70
Potential number of MSU			
Potential number offered for the first time in 2022	509,033	–	–
Forfeited	20,282	–	–
Paid out	227	–	–
Dec. 31, 2022	488,524	–	–
Potential number offered for the first time in 2023	–	672,367	–
Forfeited	22,829	19,901	–
Paid out	1,673	1,266	–
Dec. 31, 2023	464,022	651,200	–
Potential number offered for the first time in 2024	–	–	827,090
Forfeited	17,306	25,708	18,432
Paid out	1,610	1,011	696
Dec. 31, 2024	**445,106**	**624,481**	**807,962**

The total value of the obligations for share-based payments was € 72 million as of December 31, 2024 (December 31, 2023: € 61 million), of which € 15 million was included in provisions as of December 31, 2024 (December 31, 2023: € 7 million). Net expenses of € 64 million were recorded in fiscal 2024 (2023: net income of € 35 million). The three-year tranche issued in fiscal 2021 ended at the end of fiscal 2023; an amount of € 54 million was paid out in fiscal 2024. The three-year tranche issued in fiscal 2022 ended at the end of 2024 and was reclassified from current provisions for employee benefits to other current non-financial liabilities as of December 31, 2024. Based on a decision by the Executive Board, the expected payout for this tranche was increased by a mid-double-digit million-euro amount, in line with the terms of the plan. The tranche is expected to result in a total payout of € 57 million in fiscal 2025. At the reporting date, the average closing prices of Merck shares in Xetra® trading over the last 60 trading days was € 149.81.

Capital Structure, Investments and Financing Activities

(34) Net equity

Accounting and measurement policies

Accounting treatment of the general partner's equity

As a partnership limited by shares, Merck KGaA has two different shareholder groups who have contributed to the company: the general partner E. Merck KG, as the personally liable partner, and the shareholders.

From an accounting perspective, the contributions of both shareholder groups are treated as equity, regardless of the general partner's option to terminate its capital share. This treatment is based on the provision in the Articles of Association of Merck KGaA stating that the limited liability shareholders may decide on the conversion of the company into a stock corporation and thus limit the general partner's settlement claim to fulfillment in equity instruments.

Equity capital/Capital reserves

The equity capital of the company consisted of the subscribed capital composed of shares and the equity interest held by the general partner E. Merck KG (general partner's equity). As of the balance sheet date, the company's subscribed capital amounting to € 168 million was divided into 129,242,251 no-par value bearer shares plus one registered share. Each share therefore corresponded to € 1.30 of the subscribed capital. The amount resulting from the issue of shares by Merck KGaA exceeding the nominal amount was recognized in the capital reserves. The equity interest held by the general partner amounted to € 397 million. As in the previous year, there were no changes in subscribed capital in fiscal 2024.

Retained earnings

Retained earnings developed as follows:

€ million	Retained earnings/net retained profit	Remeasurement of defined benefit plans	Fair value reserve for equity instruments	**Retained earnings**
Jan. 1, 2023	**18,811**	**-401**	**53**	**18,463**
Profit after tax	2,824	–	–	2,824
Gains/losses recognized in equity	–	-187	160	-28
Comprehensive income	**2,824**	**-187**	**160**	**2,796**
Dividend payments	-284	–	–	-284
Capital increases	–	–	–	–
Profit transfer to/from E. Merck KG including changes in reserves	-746	–	–	-746
Transactions with no change of control	-1	–	–	-1
Change in scope of consolidation/Other	31	-4	-27	–
Dec. 31, 2023	**20,635**	**-592**	**186**	**20,228**
Jan. 1, 2024	**20,635**	**-592**	**186**	**20,228**
Profit after tax	2,777	–	–	2,777
Gains/losses recognized in equity	–	90	30	121
Comprehensive income	**2,777**	**90**	**30**	**2,897**
Dividend payments	-284	–	–	-284
Capital increases	–	–	–	–
Profit transfer to/from E. Merck KG including changes in reserves	-755	–	–	-755
Transactions with no change of control	–	–	–	–
Change in scope of consolidation/Other	48	1	-48	–
Dec. 31, 2024	**22,419**	**-501**	**168**	**22,086**

Gains/losses recognized in equity

Gains/losses recognized in equity developed as follows (see also Note (39) “**Derivative financial instruments**”):

€ million	Cash flow hedge reserve	Cost of cash flow hedge reserve	Currency translation difference	Gains/losses recognized in equity
Jan. 1, 2023	**-54**	**-12**	**3,151**	**3,086**
Profit after tax	–	–	–	–
Gains/losses recognized in equity	**-2**	**5**	**-1,016**	**-1,013**
Fair value adjustment	98	-17	-1,001	-920
Reclassification to profit or loss	-95	22	-15	-88
Reclassification to assets	–	–	–	–
Tax effect	-5	–	–	-5
Dec. 31, 2023	**-56**	**-7**	**2,136**	**2,073**
Jan. 1, 2024	**-56**	**-7**	**2,136**	**2,073**
Gains/losses recognized in equity	**-52**	**-2**	**1,429**	**1,375**
Fair value adjustment	92	–	1,444	1,536
Reclassification to profit or loss	-149	-2	-15	-166
Reclassification to assets	–	–	–	–
Tax effect	5	–	–	5
Dec. 31, 2024	**-108**	**-9**	**3,565**	**3,448**

E. Merck KG’s share of net profit

E. Merck KG and Merck KGaA engage in reciprocal net profit transfers. This makes it possible for E. Merck KG, the general partner of Merck KGaA, and the shareholders to participate in the net profit/loss of Merck KGaA in accordance with the ratio of the general partner’s equity interest and the subscribed capital (70.274%, or 29.726% of the equity capital).

The allocation of net profit/loss is based on the net income of both E. Merck KG and Merck KGaA, determined in accordance with the provisions of the German Commercial Code. These figures are adjusted for trade tax and/or corporation tax and create the basis for the allocation of net profit/loss. The adjustment for corporation tax is made to compensate for the difference in the tax treatment between the general partner and the limited liability shareholders. Corporation tax is only calculated on the income received by the limited liability shareholders. Its equivalent is the income tax applicable to the partners of E. Merck KG, which must be paid by them directly. The adjustment thus ensures that the share in net profit corresponds to the respective interests held by the two shareholder groups.

The reciprocal net profit/loss transfer between E. Merck KG and Merck KGaA as stipulated by the Articles of Association was as follows:

		2024		2023	
€ million		**E. Merck KG**	**Merck KGaA**	E. Merck KG	Merck KGaA
Result of E. Merck KG before reciprocal profit transfer, adjusted for trade tax		-31		-12	
Net income of Merck KGaA before reciprocal profit transfer			993		980
Corporation tax		–	2	–	4
Basis for appropriation of profits	**(100%)**	**-31**	**996**	**-12**	**985**
Profit transfer to E. Merck KG (ratio of general partner's equity to equity capital)	(70.274%)	700	-700	692	-692
Profit/loss transfer to Merck KGaA (ratio of subscribed capital to equity capital)	(29.726%)	9	-9	4	-4
Corporation tax			-2		-4
Net income		**677**	**284**	**683**	**285**

The result of E. Merck KG adjusted for trade tax, on which the appropriation of its profit is based, amounted to € -31 million (2023: € -12 million). This resulted in a profit/loss transfer to Merck KGaA of € -9 million (2023: € -4 million). Merck KGaA's net income adjusted for corporation tax, on which the appropriation of its profit is based, amounted to € 996 million (2023: € 985 million). Merck KGaA transferred a profit of € 700 million to E. Merck KG (2023: € 692 million). In addition, an expense from corporation tax charges was reported in the amount of € 2 million (2023: expense of € 4 million).

Appropriation of profits

The profit distribution to be resolved by shareholders also defines the amount of that portion of net profit/loss freely available to E. Merck KG. If the shareholders resolve to carry forward or to allocate to retained earnings a portion of Merck KGaA's net retained profit to which they are entitled, E. Merck KG shall be obliged to allocate to the profit carried forward/retained earnings of Merck KGaA a comparable sum determined according to the ratio of subscribed capital to general partner's equity. This ensures that the retained earnings and the profit carried forward by Merck KGaA correspond to the ownership ratios of the shareholders on the one hand and E. Merck KG on the other hand. Consequently, for distributions to E. Merck KG, the available amount is the amount that results from netting the profit transfer of Merck KGaA with the amount either allocated or withdrawn by E. Merck KG from retained earnings/profit carried forward. This amount corresponds to the sum paid as a dividend to the shareholders and reflects their pro rata shareholding in the company.

Based on the profit transfer, the appropriation of profits by Merck KGaA was as follows:

	2024		2023	
€ million	**Portion E. Merck KG**	**Portion limited liability shareholders**	Portion E. Merck KG	Portion limited liability shareholders
Net income	677	284	683	285
Profit carried forward previous year	81	34	80	34
Withdrawal from revenue reserves	–	–	–	–
Transfer to revenue reserves	–	–	–	–
Retained earnings limited liability shareholders		**319**		**319**
Withdrawal by E. Merck KG	-677		-682	
Profit carried forward E. Merck KG	**81**		**81**	
Dividend proposal		-284		-284
Profit carried forward of limited liability shareholders (preliminary)		**34**		**34**

A dividend of 2,20 € per share was distributed for fiscal 2023. The dividend proposal for fiscal 2024 is unchanged, at € 2.20 per share. With the proposed dividend payment to shareholders amounting to € 284 million (2023: € 284 million), the profit carried forward of the shareholders after the dividend payment would amount to € 34 million (2023: € 34 million). Based on the proposed dividend payment to the shareholders, E. Merck KG would be entitled to withdraw € 677 million (2023: € 682 million), meaning that E. Merck KG would be entitled to a profit brought forward of € 81 million (2023: € 81 million).

Appropriation of profits and changes in reserves

€ million	2024			2023		
	Merck & Cie KmG	Merck KGaA	Total	Merck & Cie KmG	Merck KGaA	Total
Profit transfer to E. Merck KG	-46	-700	-746	-52	-692	-743
Profit/loss transfer to Merck KGaA		-9	-9		-4	-4
Change in profit carried forward of E. Merck KG		–	–		1	1
Profit transfer to E. Merck KG including changes in reserves	**-46**	**-709**	**-755**	**-52**	**-694**	**-746**
Result of E. Merck KG before reciprocal profit transfer adjusted for trade tax		-31			-12	
Profit transfer to E. Merck KG/ withdrawal by E. Merck KG	**-46**	**-677**		**-52**	**-682**	

Based on the proposed appropriation of profits, the profit/loss transfer to E. Merck KG for fiscal 2024, including changes in reserves, amounted to € -755 million. This consisted of the profit transfer to E. Merck KG (€ -700 million), the profit/loss transfer to Merck KGaA (€ -9 million) and the profit transfer from Merck & Cie KmG, Switzerland, to E. Merck KG (€ -46 million). There was no change in the profit carried forward of E. Merck KG. In the previous year, the profit/loss transfer to E. Merck KG, including changes in reserves, amounted to € -746 million. This consisted of the profit transfer to E. Merck KG (€ -692 million), the profit/loss transfer to Merck KGaA (€ -4 million), the change in the profit carried forward of E. Merck KG (€ 1 million) and the profit transfer from Merck & Cie KmG to E. Merck KG (€ -52 million) and was paid to E. Merck KG in fiscal 2024. Merck & Cie KmG is a partnership under Swiss law that is controlled by Merck KGaA but distributes its operating result directly to E. Merck KG. This distribution is a payment to shareholders and is therefore also presented under changes in equity.

Non-controlling interests

The calculation of non-controlling interests was based on the reported equity of the subsidiaries concerned.

The non-controlling interests in consolidated equity and profit or loss essentially related to the non-controlling interests in Versum Materials Taiwan Co., Ltd., Taiwan; Merck Ltd., Thailand; and the listed company PT Merck Tbk., Indonesia.

(35) Cash and cash equivalents

Accounting and measurement policies

Cash and cash equivalents

Cash and cash equivalents also include short-term investments with a maximum maturity of up to three months which can be readily converted to a determined amount of cash. Income from cash and cash equivalents is reported in interest income.

Cash and cash equivalents comprised the following items:

€ million	Dec. 31, 2024	Dec. 31, 2023
Cash, bank balances and cheques	756	501
Short-term cash investments (up to 3 months)	1,761	1,481
Cash and cash equivalents	**2,517**	**1,982**

Changes in cash and cash equivalents as defined by IAS 7 are presented in the consolidated cash flow statement.

Cash and cash equivalents included restricted cash amounting to € 368 million (December 31, 2023: € 404 million). This mainly related to cash and cash equivalents at subsidiaries that are subject to capital controls.

The maximum default risk was equivalent to the carrying amount of cash and cash equivalents.

(36) Other financial assets

Accounting and measurement policies

Other financial assets

This section does not cover the accounting and measurement policies for derivative financial instruments. They are presented in Note (39) “**Derivative financial instruments**”.

Recognition and initial measurement

Financial assets are initially measured at fair value and recognized as of the settlement date. For financial assets not subsequently measured at fair value through profit or loss in subsequent periods, initial measurement also includes directly attributable transaction costs. Any difference between the fair value of a financial instrument on initial recognition (Level 2 and 3 in the IFRS 13 fair value hierarchy) and the transaction price is recognized in income on a straight-line basis over the duration.

Detailed information on the measurement methods for financial assets measured at fair value are presented in Note (43) “**Information on fair value measurement**”.

Classification and subsequent measurement

On initial recognition, financial assets are assigned to one of the following measurement categories, which also correspond to the financial instrument classes as defined in IFRS 9:

- Subsequent measurement at amortized cost
- Subsequent measurement at fair value through other comprehensive income
- Subsequent measurement at fair value through profit or loss.

This classification is based on the business model and the structure of contractual payment flows. Financial assets measured at amortized cost and financial assets at fair value through other comprehensive income are accounted for using the effective interest method and taking account of any impairment losses. The procedure for calculating impairment losses is described in Note (42) “**Management of financial risks**”.

Financial assets measured at amortized cost are held in order to collect their contractual cash flows, which are exclusively principal repayments and interest payments on the outstanding capital amount. In the case of financial assets at fair value through other comprehensive income, the business model provides for the collection of the contractual cash flows as well as the sale of the financial assets. The cash flows for this class are also exclusively principal repayments and interest payments on the outstanding capital amount.

Except for derivative financial instruments with positive market values, the Group only applies subsequent measurement at fair value through profit or loss for debt instruments with contractual properties resulting in cash flows that do not exclusively represent principal repayments and interest payments on the outstanding capital amount. In particular, this includes contingent consideration that was contractually agreed with the acquirer in the context of the disposal of businesses within the meaning of IFRS 3 (see Note (43) “**Information on fair value measurement**”). Merck does not utilize the option of the subsequent measurement of debt instruments at fair value through profit or loss.

Equity instruments are measured at fair value through other comprehensive income if they are intended to be held for the longer term. Further details on the measurement of equity instruments at fair value are presented in Note (43) “**Information on fair value measurement**”.

Financial assets are only reclassified in the event of changes to the business model regarding the management of financial assets.

Derecognition

Financial assets are derecognized if the claim for the compensation is fulfilled by the other counterparty, if there is no longer a reasonable expectation that the counterparty will fulfill its contractual obligations, or if the Group transfers the contractual rights including all material risks and rewards of the financial asset to another counterparty.

Recognition

Measurement effects of debt instruments are reported in the consolidated balance sheet, the consolidated income statement and the consolidated statement of comprehensive income as follows:

Category	Asset type	Impairment losses/reversals of impairment losses	Net gain and net loss on disposal/value adjustments	Foreign currency gains or losses	Interest income or expenses
Subsequent measurement at amortized cost	Operational	Impairment losses, and reversals of impairment losses of financial assets (net)	Other operating income or other operating expenses	Other operating income or other operating expenses	Financial income and expenses (applying the effective interest method)
	Financial	Financial income and expenses	Financial income and expenses	Financial income and expenses	
Subsequent measurement at fair value through other comprehensive income	Operational	Impairment losses, and reversals of impairment losses of financial assets (net)	Group equity (upon derecognition: reclassification to other operating income or other operating expenses)	Other operating income or other operating expenses	Financial income and expenses (applying the effective interest method)
	Financial	Financial income and expenses	Group equity (upon derecognition: reclassification to financial income and expenses)	Financial income and expenses	
Subsequent measurement at fair value through profit or loss	Operational		Other operating income or other operating expenses	Other operating income or other operating expenses	Financial income and expenses
	Financial		Financial income and expenses	Financial income and expenses	

Income from the unwinding of discounts and income and expenses from interest rate-induced changes in contingent considerations measured at fair value through profit or loss subsequent to initial recognition are recognized in financial income and expenses.

The following table provides details on the measurement effects of equity instruments on the consolidated balance sheet, the consolidated income statement and the consolidated statement of comprehensive income:

Category	Asset type	Value adjustments	Foreign currency gains or losses	Dividend income
Subsequent measurement at fair value through other comprehensive income	Operational	Results recognized directly in equity (value adjustments) Reclassification of the cumulative results previously recognized directly in equity in the retained earnings when asset is disposed	Foreign currency gains and losses recognized directly in equity	Other operating income
	Financial	Results recognized directly in equity (value adjustments) Reclassification of the cumulative results previously recognized directly in equity in the retained earnings when asset is disposed	Foreign currency gains and losses recognized directly in equity	Financial income
Subsequent measurement at fair value through profit or loss	Operational	Other operating income or other operating expenses	Other operating income or other operating expenses	Other operating income
	Financial	Financial income and expenses	Financial income and expenses	Financial income

At the reporting date, other financial assets were composed as follows:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	**current**	**non-current**	**Total**	current	non-current	Total
Subsequent measurement at amortized cost	**559**	**3**	**562**	**201**	**4**	**204**
Loans against third parties	1	3	4	1	4	4
Other	558	–	558	200	–	200
Subsequent measurement at fair value through other comprehensive income	**–**	**799**	**799**	**198**	**644**	**842**
Equity instruments	–	798	798	–	643	643
Debt instruments	–	1	1	198	1	199
Subsequent measurement at fair value through profit and loss	**75**	**370**	**445**	**63**	**333**	**396**
Contingent consideration	–	151	151	–	125	125
Other debt instruments	–	162	162	33	161	194
Derivatives without a hedging relationship (financial transactions)	70	–	70	27	–	27
Derivatives without a hedging relationship (operational)	5	57	61	3	47	50
Derivatives with a hedging relationship (operational)	**8**	**–**	**8**	**37**	**–**	**37**
Financial assets	**642**	**1,172**	**1,814**	**499**	**981**	**1,480**

The increase in other current financial assets measured at amortized cost subsequent to initial recognition primarily related to short-term investments in structured products based on marketable greenhouse gas emission certificates.

Equity instruments subsequently measured at fair value through other comprehensive income mainly comprised shares in listed and unlisted companies that invest in innovative technologies and products or that are held as part of the future-oriented M Ventures portfolio:

€ million	**Fair value as of Dec. 31, 2024**	Fair Value: hierarchy level IFRS 13	Fair value as of Dec. 31, 2023	Fair Value: hierarchy level IFRS 13
Artios Pharma Limited, UK	<50	Level 3	<25	Level 3
Asceneuron SA, Switzerland	<25	Level 3	<15	Level 3
Celestial AI Inc., United States	<100	Level 3	<25	Level 3
DNA Script S.A.S., France	<25	Level 3	<50	Level 3
ElectronInks Inc., United States	<15	Level 3	<15	Level 3
Formo Bio GmbH, Germany	<15	Level 3	<15	Level 3
IDRX, Inc., United States	<25	Level 3	<25	Level 3
InfraServ GmbH & Co. Wiesbaden KG, Germany	<25	Level 3	<15	Level 3
iOnctura B.V., Netherlands	<25	Level 3	<15	Level 3
Lightcast Discovery Ltd., UK	<25	Level 3	<15	Level 3
MoonLake Immunotherapeutics Ltd., Cayman Islands	145	Level 1	152	Level 1
Mosa Meat B.V., Netherlands	<25	Level 3	<25	Level 3
Nouscom AG, Switzerland	<15	Level 3	<15	Level 3
Pictor Labs, Inc., USA	<15	Level 3	<15	Level 3
Plexium Inc., United States	<15	Level 3	<15	Level 3
Precigen, Inc., United States	19	Level 1	25	Level 1
SeeQC Inc., United States	<15	Level 3	<15	Level 3
Storm Therapeutics Limited, UK	<15	Level 3	<15	Level 3
Theolytics Ltd., UK	<15	Level 3	<15	Level 3
Vera Therapeutics, Inc., United States	78	Level 1	27	Level 1
Vizgen Inc., United States	<15	Level 3		
Wiliot Ltd., Israel	<25	Level 3	<25	Level 3
Other (notation in an active market)	2	Level 1	3	Level 1
Other (no notation in an active market)	221	Level 3	184	Level 3
Total	**798**		**643**	

Debt instruments measured at fair value through other comprehensive income subsequent to initial recognition declined in fiscal 2024 due to money market instruments maturing.

As in the previous year, contingent consideration primarily included claims arising from the divestment of the biosimilars business to a subsidiary of Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, in 2017.

Details on disposals of equity instruments measured at fair value through other comprehensive income are provided in the following table.

€ million	Reasons for the disposal	Fair value on the date of derecognition	The cumulative gain (+) or loss (–) on disposal recognized in other comprehensive income	Transfer of the cumulative gains (+) or losses (–) within group equity to retained earnings
2024				
Equity instruments with subsequent measurement at fair value through other comprehensive income	Portfolio adjustment/restructuring and full acquisition by third parties	7	–	–
2023				
MoonLake Immunotherapeutics Ltd., Cayman Islands	Partial sale	11	10	10
Other equity instruments with subsequent measurement at fair value through other comprehensive income	Portfolio adjustment/restructuring and full acquisition by third parties	29	18	17

(37) Financial debt/capital management

Accounting and measurement policies

Financial debt/capital management

Except for lease liabilities and derivatives with negative market values, financial debt is initially recognized at fair value and subsequently measured at amortized cost using the effective interest method.

The accounting and measurement policies for lease liabilities and derivatives are presented in Notes (21) "**Leasing**" and (39) "**Derivative financial instruments**".

The composition of financial debt as well as a reconciliation to net financial debt are presented in the following table:

	Dec. 31, 2024 € million	Dec. 31, 2023 € million	Maturity	Interest rate %	Nominal value million	Nominal value Currency
USD bond 2015/2025	1,537	–	March 2025	3.250	1,600	USD
Eurobond 2020/2025	749	–	July 2025	0.125	750	€
Bonds (current)	**2,286**	**–**				
Bank loans	287	277				
Liabilities to related parties	549	206				
Loans from third parties and other financial debt	14	20				
Liabilities from derivatives (financial transactions)	31	77				
Lease liabilities (IFRS 16)	137	122				
Current financial debt	**3,304**	**702**				
USD bond 2015/2025	–	1,444	March 2025	3.250	1,600	USD
Eurobond 2020/2025	–	748	July 2025	0.125	750	€
Eurobond 2022/2026	499	499	June 2026	1.875	500	€
Eurobond 2019/2027	599	598	July 2027	0.375	600	€
Eurobond 2020/2028	748	748	July 2028	0.500	750	€
Eurobond 2022/2030	498	497	June 2030	2,375	500	€
Eurobond 2019/2031	798	797	July 2031	0.875	800	€
Hybrid bond 2024/2054	793	–	Aug. 2054[1]	3,875	800	€
Hybrid bond 2014/2074	–	499	Dec. 2074[2]	3,375	500	€
Hybrid bond 2019/2079	–	499	June 2079[3]	1.625	500	€
Hybrid bond 2019/2079	633	632	June 2079[4]	2.875	634	€
Hybrid bond 2020/2080	841	840	Sep. 2080[5]	1.625	842	€
Bonds (non-current)	**5,407**	**7,802**				
Bank loans	41	7				
Liabilities to related parties	880	990				
Loans from third parties and other financial debt	45	47				
Lease liabilities (IFRS 16)	625	393				
Non-current financial debt	**6,997**	**9,239**				
Financial debt	**10,301**	**9,941**				
less:						
Cash and cash equivalents	2,517	1,982				
Current financial assets[6]	629	459				
Net financial debt[7]	**7,155**	**7,500**				

[1] Merck has the right to prematurely repay the hybrid bond issued in August 2024 in November 2029.
[2] Merck excercised the right to prematurely repay the hybrid bond issued in December 2014 in December 2024.
[3] Merck excercised the right to prematurely repay the hybrid bond issued in June 2019 in December 2024.
[4] Merck has the right to prematurely repay the hybrid bond issued in June 2019 in June 2029.
[5] Merck has the right to prematurely repay the hybrid bond issued in September 2020 in September 2026.
[6] Excluding current derivatives (operational) and contingent considerations, which are recognized in the context of business combinations according to IFRS 3.
[7] Not defined by International Financial Reporting Standards (IFRS).

The hybrid bonds issued by Merck KGaA are bonds for which the leading rating agencies have given equity credit treatment to half of the issuances, thus making the issuances more favorable to Merck's credit rating than traditional bond issues. The bonds are recognized in full as financial liabilities in the balance sheet. Although Merck intends to repay them at the earliest possible date, these bonds are principally reported as non-current financial debt for accounting purposes.

As announced on November 20, 2023, the nominal amount of € 275 million of the hybrid bonds issued in 2019 and 2020 was repaid partially.

The early repayment of the hybrid bond issued in 2014 with a nominal volume of € 500 million and the hybrid bond issued in 2019 with a nominal volume of € 500 million took place in December 2024.

The financial debt was not secured by liens or similar forms of collateral. The loan agreements do not contain any financial covenants. The average borrowing cost on December 31, 2024, was 2.2% (December 31, 2023: 2.1%).

Liabilities to related parties primarily consist of liabilities to E. Merck Beteiligungen KG and E. Merck KG.

Information on liabilities to related parties can be found in Note (45) "**Related party disclosures**".

Capital management

The objective of capital management is to ensure the necessary financial flexibility in order to maintain long-term business operations and realize strategic options. Maintaining a stable investment grade rating, ensuring liquidity, limiting financial risks, as well as optimizing the cost of capital are the objectives of our financial policy and set important framework conditions for capital management. In this context, net financial debt as well as gearing, calculated as the ratio of EBITDA pre to net financial debt, are important capital management indicators at Merck.

Traditionally, the capital market represents a major source of financing for Merck through bond issues, among other things. As of December 31, 2024, there were liabilities of € 3.9 billion from the debt issuance program under which all of the euro-denominated bonds were issued (December 31, 2023: € 3.9 billion). In addition, Merck had access to a commercial paper program to meet short-term capital requirements with a volume of € 2.5 billion (December 31, 2023: € 2.5 billion), none of which was utilized as of December 31, 2024, or as of the prior-year reporting date.

Loan agreements represent another major source of financing for Merck. On the balance sheet date, the financing commitments from banks in respect of Merck were as follows:

	Dec. 31, 2024		Dec. 31, 2023			
€ million	**Financing commitments from banks**	**Utilization**	Financing commitments from banks	Utilization	Interest	Maturity of financing commitments
Syndicated loan	2,500	–	2,500	–	variable	2029
Bilateral credit agreement with banks	375	–	375	–	variable	2025
Various bank credit lines	287	287	277	277	variable	< 1 year
Project financing	41	41	7	7	fix	2027
	3,203	**328**	**3,158**	**283**		

There were no indications that the availability of extended credit lines was restricted.

(38) Other financial liabilities

Accounting and measurement policies

Other financial liabilities

With the exception of liabilities from derivatives and contingent considerations recognized in the context of business combinations according to IFRS 3, other financial liabilities are initially measured at fair value and in subsequent periods at amortized cost, applying the effective interest method. The accounting and measurement policies for derivatives are presented in Note (39) "**Derivative financial instruments**".

Other financial liabilities comprised the following:

	Dec. 31, 2024			Dec. 31, 2023		
€ million	**Current**	**Non-current**	**Total**	Current	Non-current	Total
Miscellaneous other financial liabilities	993	116	1,109	998	129	1,127
thereof: liabilities to related parties	743	–	743	732	–	732
thereof: interest accruals	50	–	50	47	–	47
Liabilities from derivatives (operational)	38	18	56	7	18	25
Other financial liabilities	**1,030**	**135**	**1,165**	**1,005**	**147**	**1,152**

The liabilities to related parties primarily consist of liabilities to E. Merck KG.

(39) Derivative financial instruments

Accounting and measurement policies

Derivative financial instruments

The IFRS 9 provisions are applied for hedge accounting. Hedging transactions are entered into for highly probable forecast transactions in foreign currencies and for hedging fair values of assets on the balance sheet. Cash flow hedge accounting for forecast transactions in foreign currency means the hedged item is recognized at a fixed exchange rate on a net basis instead of being recognized at the spot exchange rate at the transaction date. As a result of hedging fair values of assets on the balance sheet, the compensating changes in value of the corresponding hedged item and hedging instrument offset each other.

Merck mainly only uses derivatives as hedging instruments. Merck uses the dollar offset method as well as regression analyses to measure hedge effectiveness.

Hedging ineffectiveness may occur in the timing of forecast cash flows or if hedged items are dissolved. Derivatives that do not or no longer meet the documentation or effectiveness requirements for hedge accounting, whose hedged item no longer exists, or for which hedge accounting rules are not applied are classified as financial assets or liabilities at fair value through profit or loss depending on their balance.

Where options are used as hedging instruments, only their intrinsic value is designated as the hedging instrument. Changes in the fair value of the time value component of options that are used for hedge accounting are recognized in other comprehensive income and in the cost of cash flow hedge reserve within equity. The subsequent accounting of these amounts depends on the type of hedged transaction.

Where forward contracts are used as hedging instruments, only the spot element is designated as the hedging instrument. Changes in the fair value of the forward element in forward contracts are recognized in other comprehensive income in the cost of cash flow hedge reserve within equity. The subsequent accounting of these amounts depends on the type of hedged transaction.

As the virtual power purchase agreements concluded by Merck are designed as contracts for difference, they fulfill the definition of a derivative financial instrument and are measured at fair value through profit or loss in accordance with IFRS 9. Because no physical electricity is purchased, the own use exemption that allows certain derivative financial instruments to be treated as executory contracts does not apply.

With the exception of the accounting treatment of amounts included directly from the reserve in the initial cost or in the other carrying amount of a non-financial asset or liability, derivative financial instruments are recognized in the consolidated balance sheet, the consolidated income statement and the consolidated statement of comprehensive income as follows:

					Changes in fair value in the consolidated income statement and the consolidated statement of comprehensive income	
Hedging relationship	**Type of underlying**	**Type of hedged item**	**Market value**	**Presentation on the balance sheet**	**during the term**	**at maturity**
Derivatives with a cash flow hedging relationship	Currency	Transactions in operating business	Positive market values	Other financial assets	Fair value adjustments (in equity)	Other operating income
			Negative market values	Other financial liabilities	Fair value adjustments (in equity)	Other operating expenses
Derivatives without a hedging relationship	Currency	Financial transactions	Positive market values	Other financial assets	Financial income and expenses	
			Negative market values	Financial debt		
	Virtual power purchase agreements	Transactions in operating business	Positive market values	Other financial assets	Other operating income	
			Negative market values	Other financial liabilities	Other operating expenses	

The nominal amounts of Merck’s derivative exposures at the respective reporting dates were as follows:

	Dec. 31, 2024		Dec. 31, 2023	
€ million	current	non-current	current	non-current
Cash flow hedge	2,928	–	2,075	–
Currency	2,928	–	2,075	–
No hedge accounting	11,090	–	7,412	–
Currency	11,090	–	7,412	–
Virtual power purchase agreements[1]				
	14,018	**–**	**9,487**	**–**

[1] The virtual power purchase agreements do not have fixed nominal amounts.

The increase in the nominal amounts of derivatives used in currency hedging without a hedging relationship was due in particular to measures implementing the hedging strategy.

The fair values of the derivatives were as follows:

December 31, 2024

	Positive market values				Negative market values			
	Financial transactions		Transactions in operating business		Financial transactions		Transactions in operating business	
€ million	**current**	**non-current**	**current**	**non-current**	**current**	**non-current**	**current**	**non-current**
Cash flow hedge	**–**	**–**	**8**	**–**	**–**	**–**	**36**	**–**
Currency	–	–	8	–	–	–	36	–
No hedge accounting	**70**	**–**	**5**	**57**	**31**	**–**	**2**	**18**
Currency	70	–	–	–	31	–	–	–
Virtual power purchase agreements	–	–	5	57	–	–	2	18
	70	**–**	**13**	**57**	**31**	**–**	**38**	**18**

December 31, 2023

	Positive market values				Negative market values			
	Financial transactions		Transactions in operating business		Financial transactions		Transactions in operating business	
€ million	current	non-current	current	non-current	current	non-current	current	non-current
Cash flow hedge	**–**	**–**	**37**	**–**	**–**	**–**	**5**	**–**
Currency	–	–	37	–	–	–	5	–
No hedge accounting	**27**	**–**	**3**	**47**	**77**	**–**	**2**	**18**
Currency	27	–	–	–	77	–	–	–
Virtual power purchase agreements	–	–	3	47	–	–	2	18
	27	**–**	**40**	**47**	**77**	**–**	**7**	**18**

As in the previous year, all hedging relationships were transaction related. Netting of derivatives from an economic perspective was possible due to the existing framework agreements on derivatives trading that Merck had entered into with commercial banks. Actual netting only takes place in the case of insolvency of the contract partner. Derivatives were not offset on the face of the balance sheet.

The following table presents the potential netting volume of the reported derivative assets and liabilities:

December 31, 2024

€ million	Gross presentation	Netting	Net presentation	Potential netting volume: due to master netting agreements	Potential netting volume: due to financial collateral	Potential net amount
Derivative assets	139	–	139	48	–	91
Derivative liabilities	-88	–	-88	-48	–	-40

December 31, 2023

€ million	Gross presentation	Netting	Net presentation	Potential netting volume: due to master netting agreements	Potential netting volume: due to financial collateral	Potential net amount
Derivative assets	114	–	114	40	–	74
Derivative liabilities	-102	–	-102	-40	–	-62

The reserves for cash flow hedges and the cost of cash flow hedging of the Group related to the following hedging instruments (see also Note (34) “**Equity**”):

	Cost of cash flow hedge reserve			Cash flow hedge reserve		
€ million	Time value of options	Forward component of currency forwards	**Total**	Intrinsic value of options	Spot component of currency forwards	**Total**
Jan. 1, 2023	**-1**	**-11**	**-12**	**-4**	**-50**	**-54**
Fair value adjustment (directly recognized in equity)	-5	-12	-17	31	67	98
Reclassification to profit or loss	–	22	22	-36	-59	-95
Reclassification to assets	–	–	–	–	–	–
Tax effect	–	–	–	–	-4	-5
Dec. 31, 2023	**-6**	**-1**	**-7**	**-10**	**-46**	**-56**
Jan. 1, 2024	**-6**	**-1**	**-7**	**-10**	**-46**	**-56**
Fair value adjustment (directly recognized in equity)	-8	8	–	109	-17	92
Reclassification to profit or loss	–	-2	-2	-121	-28	-149
Reclassification to assets	–	–	–	–	–	–
Tax effect	–	–	–	–	4	5
Dec. 31, 2024	**-13**	**4**	**-9**	**-21**	**-86**	**-108**

(40) Finance income and expenses/net gains and losses from financial instruments

Finance income and expenses were as follows:

€ million	**2024**	2023
Interest income and similar income	164	153
Capital gain from disposal of debt instruments with subsequent measurement at amortized cost	3	1
Income from fair value changes from debt instruments with subsequent measurement at fair value through profit or loss	5	25
Income from fair value changes from equity instruments with subsequent measurement at fair value through profit or loss	–	–
Currency differences from financing activities	28	–
Other interest income	–	19
Finance income	**200**	**197**
Interest expense and similar expenses	-292	-319
Expenses from fair value changes from debt and equity instruments with subsequent measurement at fair value through profit or loss:	-7	2
Expenses from fair value changes of share-based compensation programs	-11	-2
Currency differences from financing activities	–	-1
Other interest expenses	–	-2
Finance costs	**-309**	**-322**
Financial result	**-108**	**-125**

Interest and similar income and expenses arose as follows:

	2024		2023	
€ million	**Interest income**	**Interest expenses**	Interest income	Interest expenses
Financial instruments[1]	120	-215	90	-203
thereof: Financial assets		–		–
Subsequent measurement at fair value at amortized cost	49	–	41	–
Subsequent measurement at fair value through other comprehensive income	1	–	1	–
Subsequent measurement at fair value through profit or loss	69	–	48	–
thereof: Financial debt		–		–
Subsequent measurement at fair value at amortized cost	–	-215	–	-202
Subsequent measurement at fair value through profit or loss	–	–	–	–
Leases	–	-25	–	-14
Pension provisions	–	-63	–	-61
Tax items	28	-14	39	-50
Other non-current provisions	–	-4	–	-5
Other interest income/expenses and similar income and expenses	16	-9	24	-9
Capitalized borrowing costs for		38		22
Property, plant and equipment		26		18
Other intangible assets		13		4
Interest income/expenses and similar income and expenses	**164**	**-292**	**153**	**-319**

[1] Previous year's figures have been adjusted.

The following table shows the development of net gains and losses, currency differences as well as dividend income from financial instruments (excluding items recognized in other comprehensive income) by measurement category:

				Net gains and losses			
€ million		**Currency differences**	**Dividends**	Impairment losses/reversal of impairment losses (net)	Fair value adjustments	Disposal gains/losses	**Total**
Financial assets							
Subsequent measurement at amortized cost	**2024**	1		-8		3	-5
	2023	-3		-51		1	-50
Subsequent measurement at fair value through other comprehensive income							
Equity Instruments	**2024**		–				
	2023		–				
thereof: investments derecognized	**2024**		–				
	2023		–				
thereof: investments held	**2024**		–				
	2023		–				
Debt Instruments	**2024**	–		–		–	–
	2023	–		–		–	–
Subsequent measurement at fair value through profit or loss (without derivatives)	**2024**	1	–		43		43
	2023	–	–		95		95
Financial debt							
Subsequent measurement at amortized cost	**2024**	–				–	–
	2023	–				–	–
Subsequent measurement at fair value through profit or loss (without derivatives)	**2024**	–			1		1
	2023	–			1		1
Derivatives without a hedging relationship (net)	**2023**	–			133		133
	2022	–			-18		-18
Total	**2024**	**2**	**1**	**-8**	**177**	**3**	**171**
	2023	**-3**	**–**	**-51**	**79**	**1**	**29**

In the table above, interest income or expenses related to derivatives without a hedging relationship, with the exception of the virtual power purchase agreements, are reported as a component of fair value adjustments.

The currency result from equity instruments with subsequent measurement at fair value through other comprehensive income was recognized in other comprehensive income.

(41) Cash flow from financing activities

Accounting and measurement policies

Cash flow from financing activities

The option to recognize dividend payments and profit withdrawals in the cash flows from financing activities is exercised in determining the cash flows from financing activities.

Furthermore, the net reporting option has been exercised to report cash receipts and payments for items in which the turnover is quick, the amounts large and the maturities short. This primarily relates to rolling financing by way of commercial paper and short-term bank loans reported under “Payments from new borrowings of other current and non-current financial debt” and “Repayment of other current and non-current financial debt”.

The change in financial debt was as follows:

2024

		Cash			Non-cash					
€ million	**Jan. 1, 2024**	Cash inflows	Repay-ments	Lease interest	Change in lease liabilities	Ex-change rate effects	Fair value adjust-ment	Other	Changes in scope of consoli-dation	**Dec. 31, 2024**
Financial liabilities to E. Merck KG and E. Merck Beteiligungen KG	1,195	683	-453	–	–	–	–	–	–	1,425
Other current and non-current financial liabilities	8,746	2,113	-2,950	-16	383	118	457	7	17	8,876
Financial debt	**9,941**	**2,796**	**-3,403**	**-16**	**383**	**118**	**457**	**7**	**17**	**10,301**
Derivative assets	-27	661	–	–	–	–	-703	–	–	-70

2023

		Cash			Non-cash					
€ million	**Jan. 1, 2023**	Cash inflows	Repay-ments	Lease interest	Change in lease liabilities	Ex-change rate effects	Fair value adjust-ment	Other	Changes in scope of consoli-dation	**Dec. 31, 2023**
Financial liabilities to E. Merck KG and E. Merck Beteiligungen KG	918	697	-420	–	–	–	–	–	–	1,195
Other current and non-current financial liabilities	9,510	519	-1,973	-14	201	-83	603	-15	–	8,746
Financial debt	**10,428**	**1,216**	**-2,394**	**-14**	**201**	**-83**	**603**	**-15**	**–**	**9,941**
Derivative assets	-16	609	–	–	–	–	-620	–	–	-27

Interest payments for leases were recognized in operating cash flow but served as a reconciliation item in the above table as the underlying lease liabilities were a component of financial debt. Changes in lease liabilities included additions and retirements of right-of-use from leases and the effects from unwinding of the discount on lease liabilities.

Fair value adjustments of other current and non-current financial liabilities were entirely attributable to liabilities from derivatives. In the consolidated cash flow statement, cash changes of assets from derivatives of € 661 million (2023: € 609 million) were reported together with repayments of other current and non-current financial debt of € 2,950 million (2023: € 1,973 million) in the item “Repayments of other current and non-current financial debt” with a net amount of € 2,290 million (2023: € 1,364 thousand). Changes of assets from derivatives were reported separately in the above reconciliation, as they did not form part of financial liabilities.

The amount of unused credit lines that could be employed for future operating activities and to meet obligations and information on changes in financial debt can be found in Note (37) “**Financial debt/Capital management**”.

(42) Management of financial risks

Market fluctuations with respect to foreign exchange and interest rates represent significant profit and cash flow risks for the Group. Merck aggregates these Group-wide risks and steers them centrally, partly by using derivative financial instruments. Merck uses scenario analyses to estimate existing risks of foreign exchange and interest rate fluctuations. Merck is not subject to any material risk concentration from financial transactions.

Merck primarily uses marketable forward exchange contracts, options and interest swaps as hedging instruments. The strategy to hedge interest rate and foreign exchange rate fluctuations arising from forecast transactions and transactions already recognized in the balance sheet is set by a risk committee, which meets on a regular basis. The use of derivatives is regulated by extensive guidelines and is subject to ongoing risk controls by Group Treasury. Speculation is prohibited. The strict separation of functions between trading, settlement and control functions is ensured. Derivatives are only entered into with banks that have a good credit rating. Related default risks are continuously monitored.

The Report on Risks and Opportunities included in the combined management report provides further information on the management of financial risks.

Foreign exchange risks

Owing to the international nature of its business, Merck is exposed to transactional foreign exchange risks within the scope of both its operating activities and its financing activities. Foreign exchange risks are continuously analyzed, and different hedging strategies are used to limit or eliminate these risks.

The entire foreign exchange exposure is divided into several defined subsets with different risk profiles and is systematically hedged using suitable hedging instruments. Hedging is performed based on a regularly reviewed basket of currencies. The maximum time horizon for hedging is 12 months.

Foreign exchange risks from the following transactions are economically hedged through the use of foreign exchange contracts and currency options:

- Intragroup financing in non-functional currency.
- Receivables from and liabilities to third parties in non-functional currency.

Foreign exchange risks from the following transactions are hedged using foreign exchange contracts and currency options applying hedge accounting:

- Forecast transactions in non-functional currency, the expected probability of which is very high for the next 12 months.
- Firm purchase commitments over the next 12 months in non-functional currency.

The following table shows the net exposure and the effects of transactional exchange rate movements of the key currencies against the euro in relation to the net income and equity of the Group on the balance sheet date:

December 31, 2024

€ million		CHF	CNY	JPY	KRW	TWD	USD
Net exposure		**-636**	**817**	**102**	**231**	**191**	**685**
Exchange rate -10% (appreciation vs. €)	Consolidated income statement	-64	82	10	23	19	69
	Equity (other comprehensive income)	–	-75	-8	-11	-5	-94
Exchange rate +10% (depreciation vs. €)	Consolidated income statement	64	-82	-10	-23	-19	-69
	Equity (other comprehensive income)	–	49	6	9	4	49

December 31, 2023

€ million		CHF	CNY	JPY	KRW	TWD	USD
Net exposure		**-593**	**474**	**31**	**294**	**117**	**420**
Exchange rate -10% (appreciation vs. €)	Consolidated income statement	-59	47	3	29	12	42
	Equity (other comprehensive income)	2	-93	-10	-9	-6	-58
Exchange rate +10% (depreciation vs. €)	Consolidated income statement	59	-47	-3	-29	-12	-42
	Equity (other comprehensive income)	-2	77	9	7	5	52

In this presentation, effects of cash flow hedges are taken into consideration in the equity of the Group. The net exposure of each of the above currencies consisted of the following components:

- Planned cash flows in the next 12 months in the respective currency, less
- the nominal values of hedging instruments of these planned cash flows.

The planned cash flows in the next 12 months are analyzed and divided into subsets in accordance with the risk management strategy. In the first subset, 25% of a regularly reviewed basket of currencies is hedged. The second subset hedges a more flexible basket of currencies selected on the basis of hedging costs and correlation with the euro. The hedging strategy achieves an economic hedge ratio of at least 40% across all hedging subsets. Depending on scenario analyses, this can be increased to up to 90% using a rule-based approach. As in the previous year, balance sheet items in the above currencies were economically hedged by derivatives in full if they did not correspond to the functional currency of the respective Group company. Accordingly, they do not affect the net exposure presented above.

The impact of cash flow hedge accounting for forecast transactions in foreign currency was as follows for the major currencies:

December 31, 2024

€ million	CNY	JPY	KRW	TWD	USD
Notional amount	1,075	91	96	42	1,610
thereof: current	1,075	91	96	42	1,610
thereof: non-current	–	–	–	–	–
Fair Value of the hedging instrument	-8	–	4	–	-24
thereof: positive market values	1	1	4	–	6
thereof: negative market values	-9	-1	–	–	-30
Maturity profile	January 2025 – December 2025	January 2025 – December 2025	January 2025 – December 2025	January 2025 – December 2025	January 2025 – December 2025
Hedge ratio[1]	1:1	1:1	1:1	1:1	1:1
Change in value of outstanding hedging instruments since January 1, 2024	-8	–	4	–	-24
Change in value of hedged item used to determine hedge effectiveness since January 1, 2024	8	–	-4	–	24
Weighted average hedging rate	7.68	159.90	1,480.00	34.09	1.08

[1] The hedging instruments and the corresponding hedged items were denominated in the same currency, therefore the hedge ratio was 1:1.

December 31, 2023

€ million	CNY	JPY	KRW	TWD	USD
Notional amount	922	114	78	52	839
thereof: current	922	114	78	52	839
thereof: non-current	–	–	–	–	–
Fair value of the hedging instrument	22	5	1	–	6
thereof: positive market values	23	5	1	1	8
thereof: negative market values	-2	–	–	-1	-2
Maturity profile	January 2024 – December 2024	January 2024 – December 2024	January 2024 – December 2024	January 2024 – December 2024	January 2024 – December 2024
Hedge ratio[1]	1:1	1:1	1:1	1:1	1:1
Change in value of outstanding hedging instruments since January 1, 2023	22	5	1	–	6
Change in value of hedged item used to determine hedge effectiveness since January 1, 2023	-22	-5	-1	–	-6
Weighted average hedging rate	7.63	146.50	1,415.00	33.26	1.10

[1] The hedging instruments and the corresponding hedged items were denominated in the same currency, therefore the hedge ratio was 1:1.

In addition to the transactional foreign exchange risks described previously, currency translation risks resulted from the fact that many of Merck's subsidiaries are located outside the euro area and have functional currencies other than the reporting currency. Exchange differences resulting from translation of the assets and liabilities of these companies into euro, the reporting currency, are recognized in equity.

Interest rate risks

The Merck Group's net exposure to interest rate changes comprised the following:

€ million	**Dec. 31, 2024**	Dec. 31, 2023
Short-term or variable interest rate monetary deposits	3,066	2,403
Short-term or variable interest rate monetary borrowings	-3,272	-625
Net interest rate exposure	**-205**	**1,778**

The increase in investments and borrowing is discussed in Note (37) "**Financial debt/Capital management**".

The effects on the consolidated income statement and consolidated equity of a parallel shift in the yield curve by +100 or -100 basis points relative to all short-term or variable monetary deposits and monetary borrowings falling within the scope of IAS 32, with the exception of contingent considerations, are presented in the following table. In the event of a downward shift, the interest rate for instruments subject to a contractual interest rate floor of zero percent was limited accordingly:

€ million	**2024**		2023	
Change in market interest rate	**+ 100 basis points**	**– 100 basis points**	**+ 100 basis points**	**– 100 basis points**
Effects on consolidated income statement	24	-24	21	-21
Effects on equity (other comprehensive income)	–	–	–	–

Electricity price risks

As part of the implementation of its sustainability strategy, Merck has concluded so-called virtual power purchase agreements in order to cover the purchased electricity volumes in Europe and the United States with energy certificates from renewable sources. At the reporting date, agreements were in place with wind and solar farm operators in the United States and Spain. The wind and solar farms in Spain were still under construction. The fundamental structure of all of the agreements was identical, involving a fixed exercise price for Merck and the assumption of the exposure from variable spot energy prices in the respective market regions. Merck receives green electricity certificates for the volumes of electricity produced and attributed to Merck. Merck uses the certificates it receives solely for itself. The agreements have remaining terms of between 9 and 16 years as of the reporting date.

In financial terms, the most important agreement is the one concluded with a wind energy project developer in the United States, which involves an installed capacity attributable to Merck of 68 megawatts. The fair value of the agreement was € 50 million as of the end of the reporting period (2023: € 44 million). The electricity price of around 40% of the expected production volume under this virtual power purchase agreement is economically hedged by a separate hedging instrument. Consequently, the net effect of the fixed price for the virtual power purchase agreement is zero for this quantity. The accounting provisions on hedge accounting were not applicable.

In total, the agreements including the hedging instrument resulted in a net gain on fair value measurement of € 6 million in fiscal 2024 (2023: € 3 million) that was recognized in other operating income/expenses.

A change in the material valuation parameters would have had the following impact on the fair value of the agreements excluding the hedging instrument:

December 31, 2024

	Change in expected future electricity prices		Change in expected annual production volume		Change in cost of capital after tax	
	percentage		percentage		percentage points	
€ million	**+10**	**-10**	**+10**	**-10**	**+1**	**-1**
Change in the fair value of the virtual power purchase agreements	20	-19	6	-6	-3	3

December 31, 2023

	Change in expected future electricity prices		Change in expected annual production volume		Change in cost of capital after tax	
	percentage		percentage		percentage points	
€ million	+10	-10	+10	-10	+1	-1
Change in the fair value of the virtual power purchase agreements	19	-19	6	-6	-3	3

Liquidity risks

The risk that Merck cannot meet its payment obligations resulting from financial liabilities is limited by establishing the required financial flexibility and by Group-wide cash management. Information on issued bonds and other sources of financing can be found in Note (37) "**Financial debt/Capital management**".

Liquidity risks are monitored and reported to management on a regular basis.

The following liquidity risk analysis presents the undiscounted, contractually fixed cash flows such as repayments and interest on financial liabilities and the net cash flows of derivatives with negative fair values:

December 31, 2024

		Cash flows < 1 year		Cash flows 1–5 years		Cash flows > 5 years	
€ million	**Carrying amount**	**Interest**	**Repayment**	**Interest**	**Repayment**	**Interest**	**Repayment**
Subsequent measurement at amortized cost							
Bonds and commercial paper[1]	7,693	-123	-2,287	-311	-4,126	-26	-1,300
Bank loans	327	-9	-287	-1	-41	–	–
Trade accounts payable	2,275	–	-2,275	–	–	–	–
Liabilities to related parties	2,172	-40	-1,292	-78	-550	-21	-330
Other financial liabilities	346	–	-234	–	-112	–	–
Loans from third parties and other financial debt	59	-5	-13	-8	-45	–	–
Subsequent measurement at fair value through profit or loss							
Contingent considerations	20	–	-15	–	-5	–	–
Derivatives without a hedging relationship	52	–	-34	–	-9	–	-10
Derivatives with a hedging relationship	**36**	**–**	**-36**	**–**	**–**	**–**	**–**
Refund liabilities	**869**	**–**	**-869**	**–**	**–**	**–**	**–**
Lease liabilities	**761**	**-21**	**-126**	**-64**	**-274**	**-82**	**-351**
	14,610	**-198**	**-7,466**	**-462**	**-5,162**	**-129**	**-1,991**

[1] For the hybrid bonds, repayment is assumed at the earliest possible date.

December 31, 2023

		Cash flows <1 year		Cash flows 1–5 years		Cash flows >5 years	
€ million	Carrying amount	Interest	Repayment	Interest	Repayment	Interest	Repayment
Subsequent measurement at amortized cost							
Bonds and commercial paper[1]	7,802	-164	-1,000	-241	-4,888	-63	-1,934
Bank loans	283	-8	-277	-1	-7	–	–
Trade accounts payable	2,545	–	-2,545	–	–	–	–
Liabilities to related parties	1,928	-37	-938	-97	-550	-35	-440
Other financial liabilities	393	–	-266	–	-127	–	–
Loans from third parties and other financial debt	68	-5	-20	-9	-47	–	–
Subsequent measurement at fair value through profit or loss							
Contingent considerations	2	–	–	–	-2	–	–
Derivatives without a hedging relationship	96	–	-79	–	-8	–	-10
Derivatives with a hedging relationship	**5**	**–**	**-5**	**–**	**–**	**–**	**–**
Refund liabilities	**877**	**–**	**-877**	**–**	**–**	**–**	**–**
Finance lease liabilities	**515**	**-11**	**-120**	**-22**	**-256**	**-15**	**-137**
	14,515	**-225**	**-6,127**	**-370**	**-5,885**	**-113**	**-2,521**

[1] For the hybrid bonds, repayment is assumed at the earliest possible date.

Credit risks

Credit risk for the Group means the risk of a financial loss if a customer or other contract partner is not able to meet its contractual payment obligations. Merck is exposed to credit risks mainly due to existing trade accounts receivable, other receivables, other debt instruments, derivatives and contract assets.

Credit risks are monitored on an ongoing basis. The risks arising from extending credit to customers and in the course of other business relationships are also managed.

The Group analyzes all trade accounts receivable that are more than 90 days past due in order to establish whether a default exists. In addition, all other financial instruments that are more than 30 days past due are examined in order to establish whether there has been a significant increase in the credit risk. Both methods are used to examine whether there is objective evidence of impairment requiring the recognition of additional loss allowances.

Accounting and measurement policies

Credit risks

Impairment of trade accounts receivable and contract assets

The Group uses the simplified impairment model for trade accounts receivable and contract assets, pursuant to which any credit losses expected to occur over the entire lifetime of an asset are taken into account. In order to measure expected credit losses, the assets are grouped based on the existing credit risk structure and the respective maturity structure.

The customer groups with comparable default risks to be considered are determined according to the specific business sector and the place of business of the respective customers.

The expected credit loss rates used in the simplified impairment model are derived on the basis of past default rates and current macroeconomic expectations. In doing so, country-specific ratings are taken into consideration since many customers depend directly or indirectly on the economic trends in the country where their place of business is located (public and private healthcare systems, universities and research companies from within the pharmaceutical industry, as well as industries subsidized under development plans, particularly in Asia). These country ratings are aggregated into three separate rating groups. Under the impairment model, past default rates and country ratings are used as an approximation of the defaults to be expected in the future.

When a country’s rating changes, the historical default rates of the rating group to which the respective country has been reallocated have to be applied accordingly, rather than the historical default rates of the previous rating group.

If there is objective evidence that certain trade accounts receivable or contract assets are fully or partially impaired, additional loss allowances are recognized to account for expected credit losses.

To ensure the financial stability and planability of operating business, a default is generally always assumed when the debtor can no longer meet its liabilities in full.

A debtor’s creditworthiness is assumed to be impaired if there are objective indications that the debtor is in financial difficulties, such as the disappearance of an active market for its products or impending insolvency. The nominal amounts of trade accounts receivable considered as originated credit-impaired financial assets are recognized using the risk-adjusted effective interest rate, which reflects the expected credit losses over the original lifetime.

Impairment of other receivables

The simplified impairment model is applied to the leasing receivables included in other receivables, while the three-stage model is applied to all other receivables. The individual credit rating of the contract partner is used to determine the impairment loss of other receivables. If there is considered to be a substantially increased risk of default, the expected credit loss is calculated over the entire lifetime.

Individual cases are also analyzed to ascertain whether objective findings suggest that the value of other receivables is impaired. Such suggestions may include, for example, economic difficulties of the debtor, contractual breaches, or the renegotiation of contractual payment obligations.

Impairment of other financial assets

Investments in debt instruments subsequently measured either at amortized cost or at fair value through other comprehensive income are fundamentally considered to be investments with low risk, meaning that the expected credit loss in the upcoming 12 months is used to determine the impairment loss.

For financial assets with only a minimal default risk, the rules concerning the mandatory recognition of a risk provision for the lifetime expected credit loss are not applied at initial recognition or during subsequent measurement. Therefore, no assessment of whether there has been a significant increase in the credit risk is carried out for such assets. Merck does not presume an increased credit risk as of the balance sheet date if the contract partner has an investment grade rating.

If there are indications that the debtor’s creditworthiness has worsened but that this is not yet reflected in its existing credit rating, the credit risk assessment is adjusted and the impairment allowances recognized for expected credit losses are increased. In all other cases, there are no new risk assessments as of the balance sheet date and the risk profile initially assumed is maintained.

Wherever a considerable increase in the default risk is assumed, the lifetime expected credit loss of the financial asset is considered.

On the balance sheet date, the theoretical maximum default risk for all items referenced above corresponds to the net carrying amounts less any compensation from credit insurance.

Significant discretionary decisions and sources of estimation uncertainty

Credit risks

Impairment of trade accounts receivable and contract assets

In terms of the impairment of trade accounts receivable and of contract assets, there is significant discretion and estimation uncertainty regarding:

- The identification of customer groups with identical default risks.
- The identification of impaired creditworthiness.
- The calculation of the expected credit losses.

Impairment of other financial assets

Discretionary judgment is applied in determining individual impairment allowances.

The following table shows impairments for financial assets from operative transactions and contract assets as well as gains from their reversals recognized in the consolidated income statement:

€ million	**2024**	2023
Impairment losses	**-8**	**-51**
of trade accounts receivable	-7	-50
of contract assets	–	–
of debt instruments subsequently measured at amortized cost	-2	-1
of debt instruments subsequently measured at fair value through other comprehensive income	–	–

The loss allowances and reversals recognized for trade accounts receivable as shown above applied entirely to receivables resulting from contracts with customers. The loss allowances for trade accounts receivable in a mid-double-digit million-euro amount in 2023 were mainly attributable to receivables from a distribution partner in the Healthcare business sector.

Credit risks from trade accounts receivable

The credit risk from trade accounts receivable is largely impacted by the specific circumstances of individual customers. Merck also considers additional factors such as the general default risk in the respective industry and country in which the customer operates.

The credit risk of customers is assessed using established credit management processes. This is done in particular by analyzing the maturity structure of trade accounts receivable.

The Group continuously reviews and monitors the open positions of all its customers in the corresponding countries and takes steps to mitigate credit risks if necessary.

The tables below contain an overview of the credit risk exposure by business sector and country rating as established by leading rating agencies:

December 31, 2024

€ million	Life Science	Healthcare	Electronics	Other	**Group**
External rating of at least A- or comparable	1,213	1,001	554	9	2,777
External rating of at least BBB- or comparable	170	293	11	–	474
External rating lower than BBB- or comparable	65	608	–	–	673
Trade accounts receivable before loss allowances	**1,448**	**1,903**	**565**	**9**	**3,926**

December 31, 2023

€ million	Life Science	Healthcare	Electronics	Other	Group
External rating of at least A- or comparable	1,260	1,003	565	10	2,838
External rating of at least BBB- or comparable	158	280	15	–	454
External rating lower than BBB- or comparable	66	609	2	–	676
Trade accounts receivable before loss allowances	**1,484**	**1,892**	**582**	**10**	**3,969**

Goods were generally sold under retention of title. Other guarantees were not generally demanded. The scope of credit-insured receivables was immaterial for Merck.

Loss allowances based on expected credit losses for trade accounts receivable as of December 31, 2024, were as follows:

December 31, 2024

€ million	Not yet due	Up to 90 days past due	Up to 180 days past due	Up to 360 days past due	More than 360 days past due	Total
Expected loss rate	0.3%	0.4%	1.5%	25.7%	70.7%	
Trade accounts receivable before loss allowances	3,310	408	51	47	111	3,926
thereof: credit impaired	4	1	1	10	74	90
Loss allowances	**-9**	**-2**	**-1**	**-12**	**-78**	**-101**
thereof credit impaired trade accounts receivable	-3	–	–	-10	-72	-85

Loss allowances based on expected credit losses for trade accounts receivable as of December 31, 2023, were as follows:

December 31, 2023

€ million	Not yet due	Up to 90 days past due	Up to 180 days past due	Up to 360 days past due	More than 360 days past due	Total
Expected loss rate	0.4%	0.8%	7.4%	39.0%	72.4%	
Trade accounts receivable before loss allowances	3,342	432	67	55	73	3,969
thereof: credit impaired	10	1	4	18	46	79
Loss allowances	**-15**	**-3**	**-5**	**-22**	**-53**	**-97**
thereof credit impaired trade accounts receivable	-9	-1	-4	-18	-46	-78

Credit risks from other receivables

Gross other receivables amounted to € 152 million as of December 31, 2024 (December 31, 2023: € 160 million). Other receivables of € 146 million were allocated to Level 1 of the three-level impairment model (December 31, 2023: € 157 million), meaning that the credit loss expected in the next 12 months was used to determine the amount of impairment when examining the individual credit risk of the respective contract partner. The impairment losses recognized for other receivables are shown in the table below.

Credit risks from other financial assets

Merck limits credit risks from other financial assets by entering into contracts almost exclusively with contract partners whose creditworthiness is good. The credit risk from financial contracts is monitored daily on the basis of market information on credit default swap rates and regularly on the basis of rating information.

Impairment losses on financial assets developed as follows:

2024

€ million	Jan. 1	Net Additions	Utilizations	Reclassification within levels	Effects of currency translation	Changes in scope of consolidation	Dec. 31
Trade and other receivables (including current leasing receivables)	-97	-7	5	1	-3	–	-101
thereof: Level 1/2	-20	3	–	1	–	–	-16
thereof: Level 3	-74	-10	5	–	-3	–	-83
thereof: POCI[1]	-3	1	–	–	–	–	-2
Contract Assets	–	–	–	–	–	–	–
thereof: Level 1/2	–	–	–	–	–	–	–
thereof: Level 3	–	–	–	–	–	–	–
Other Receivables (including non-current leasing receivables)	-1	-2	–	–	–	–	-3
thereof: Level 1	–	–	–	–	–	–	–
thereof: Level 2	–	–	–	–	–	–	–
thereof: Level 3	–	-2	–	–	–	–	-2
Loss allowances for financial assets	**-99**	**-8**	**5**	**1**	**-3**	**–**	**-105**

[1] Purchased or originated credit-impaired receivables.

2023

€ million	Jan. 1	Net Additions	Utilizations	Reclassification within levels	Effects of currency translation	Changes in scope of consolidation	Dec. 31
Trade and other receivables (including current leasing receivables)	-63	-50	11	–	4	–	-97
thereof: Level 1/2	-31	2	–	7	1	–	-20
thereof: Level 3	-31	-50	11	-7	2	–	-74
thereof: POCI[1]	-1	-2	–	–	–	–	-3
Contract Assets	–	–	–	–	–	–	–
thereof: Level 1/2	–	–	–	–	–	–	–
thereof: Level 3	–	–	–	–	–	–	–
Other Receivables (including non-current leasing receivables)	-1	–	–	–	–	–	-1
thereof: Level 1	–	–	–	–	–	–	–
thereof: Level 2	–	–	–	–	–	–	–
thereof: Level 3	–	–	–	–	–	–	–
Loss allowances for financial assets	**-64**	**-51**	**11**	**–**	**4**	**–**	**-99**

[1] Purchased or originated credit-impaired receivables.

Changes in the expected credit loss rates used in the simplified impairment model did not result in any significant changes in the additions to and reversals of impairment losses in Level 2.

(43) Information on fair value measurement

Accounting and measurement policies

Information on fair value measurement

The measurement techniques and main input factors used to determine the fair value of financial instruments are as follows:

Fair value determined by official prices and quoted market values (Level 1)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through other comprehensive income			
Equity instruments	Shares	Derived from active market	Quoted prices in an active market
Other debt instruments	Bonds		
	Other (short-term) cash investments		
Subsequent measurement at fair value through profit or loss			
Equity instruments	Shares	Derived from active market	Quoted prices in an active market
Other debt instruments	Publicly-traded funds		
	Other (short-term) cash investments		
Cash and Cash equivalents	Money market funds		
Financial liabilities			
Subsequent measurement at amortized cost			
Financial debt	Bonds	Derived from active market	Quoted prices in an active market

Fair value determined using input factors observable in the market (Level 2)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Forward exchange contracts and currency options	Use of recognized financial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Derivatives (with a hedging relationship)	Forward exchange contracts and currency options	Use of recognized financial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Financial liabilities			
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Forward exchange contracts and currency options	Use of recognized financial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Derivatives (with a hedging relationship)	Forward exchange contracts and currency options	Use of recognized financial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Subsequent measurement at amortized cost			
Financial liabilities	Liabilities to banks and other loan liabilities	Discounting of future cash flows	Interest rates observable on the market

Fair value determined using input factors unobservable in the market (Level 3)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through other comprehensive income			
Equity instruments	Equity investments in unlisted companies	Discounting of expected future cash flows	Expected cash flows from recent business planning, average cost of capital, expected long-term growth rate
		Derived from observable prices within the scope of equity refinancing sufficiently close to the balance sheet date, considered risk allowances	Observable prices derived from equity refinancing
		Cost-based determination	Acquisition cost
Trade and other receivables	Trade accounts receivable that are intended for sale due to a factoring agreement	Nominal value less factoring fees	Nominal value of potentially sold trade accounts receivable, average fees for sales of trade accounts receivable
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Virtual power purchase agreements	Discounting of expected future cash flows	Electricity future price curves, expected electricity production volumes, discount factors
Contingent consideration	Contingent considerations from the sale of businesses or shares in corporations	Discounting of probability-weighted future milestone payments and license fees	Sales planning, milestone payments, probabilities of regulatory and commercial events, discount rates
Other debt instruments	Loans with variable repayments	Discounting of expected future cash flows	Expected cash flows from recent business planning, discount rates
	Interests in unlisted funds	Consideration of the fair value of companies in which the funds are invested	Net asset values of the fund interests
	Units with cancellation or redemption options	Derived from observable prices in the context of refinancing sufficiently close to the reporting date, considered risk allowances	Derived observable prices from similar refinancing transactions
	Bonds with embedded settlement option for equity in an unlisted company	Use of recognized financial methods	Interest rates observable on the market
Financial liabilities			
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Virtual power purchase agreements and their hedging transaction	Discounting of expected future cash flows Use of recognized financial methods	Electricity future price curves, expected electricity production volumes, discount factors
Contingent consideration	Contingent considerations from the purchase of businesses	Discounting of probability-weighted future milestone payments and license fees	Sales planning, milestone payments, probabilities of regulatory and commercial events, discount rates

Counterparty credit risk is taken into consideration for measurements of financial instruments at fair value. In the case of non-derivative financial instruments, such as other liabilities or interest-bearing securities, this is reflected using risk premiums on the discount rate, while discounts on market value (credit valuation adjustments and debit valuation adjustments) are used for derivatives. Transfers between the individual hierarchy levels at fair value are made at the end of the month in which the triggering event – e.g. an initial public offering – took place.

Assets and liabilities from contingent considerations (Level 3)

The fair values of assets and liabilities from contingent considerations are calculated by weighting the expected future cash flows in connection with milestone payments and royalties using their probability of occurrence and discounting them. The main parameters when determining contingent considerations are:

- The estimated probability of reaching the individual milestone events.
- The underlying sales planning used to derive royalties.
- The discount factor used.

When determining the probability of occurrence of the individual milestone events in connection with the development of drug candidates, the focus is on empirically available probabilities of success of development programs in comparable phases of clinical development in the relevant therapeutic areas. Internal sales plans and sales plans of external industry services are used to determine the sales plan. The discount rate (after tax) of 6.0% as of December 31, 2024 (December 31, 2023: 6.6%) was calculated using the weighted average cost of capital.

Income and expenses from the discounting of probability-weighted future milestone payments and royalties and from changes in discount rates are reported in the financial result.

Significant discretionary decisions and sources of estimation uncertainty

Equity investments in unlisted companies

Determining the parameters that are to be included in discounted cash flow methods and deriving the fair value from observable prices within the scope of equity refinancing are both subject to discretionary decisions and estimation uncertainty.

Assets from contingent consideration

The calculation of the fair value of assets from contingent considerations is subject to significant discretionary judgment.

The most significant contingent consideration was the future purchase price claim from the disposal of the biosimilars business to a subsidiary of Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, on August 31, 2017. It was calculated by an external valuation expert upon initial recognition in 2017 and was subsequently recognized on this basis. As of December 31, 2024, the carrying amount was € 126 million (December 31, 2023: € 118 million).

Following the achievement of the last regulatory milestone in connection with the disposal of the biosimilars business in fiscal 2024, the probability of approval is no longer a factor in determining the fair value of the contingent consideration; instead, this is based solely on the entitlement to sales-based royalties and the discount factor. If, in the context of determining the fair value of this contingent consideration at the balance sheet date, the discount factor had been estimated to be lower or higher, this would have led to the following changes in the measurement and the corresponding effects on the profit before income tax:

December 31, 2024

		Change in probability of regulatory approval		
€ million		-10%	**unchanged**	10%
Change of discount rate	5.5%		3	
	6.0% (unchanged)		–	
	6.5%		-3	

December 31, 2023

		Change in probability of regulatory approval		
€ million		-10%	unchanged	10%
Change of discount rate	6.1%	-3	3	9
	6.6% (unchanged)	-6	–	6
	7.1%	-8	-3	3

The following table presents the carrying amounts and fair values of the individual financial assets and liabilities as of December 31, 2024, for each individual financial instrument class pursuant to IFRS 9:

December 31, 2024

€ million	Consoli-dated notes	Carrying amount: Current	Carrying amount: Non-current	Carrying amount: Total	Fair value[1]: Fair value determined by official prices and quoted market values (Level 1)	Fair value[1]: Fair value determined using input factors observable in the market (Level 2)	Fair value[1]: Fair value determined using input factors not observable in the market (Level 3)	**Total**
Financial assets								
Subsequent measurement at amortized cost								
Cash and cash equivalents	35	859	–	859				
Trade and other receivables (excluding leasing receivables)	25	3,916	25	3,940				
Other debt instruments	36	559	3	562				
Subsequent measurement at fair value through other comprehensive income								
Equity instruments	36	–	798	798	243	–	555	798
Trade and other receivables	25	24	–	24	–	–	24	24
Other debt instruments	36	–	1	1	1	–	–	1
Subsequent measurement at fair value through profit or loss								
Cash and cash equivalents	35	1,658	–	1,658	1,658	–	–	1,658
Contingent considerations	36	–	151	151	–	–	151	151
Other debt instruments	36	–	162	162	68	–	94	162
Derivatives without a hedging relationship	36, 39	75	57	131	–	70	61	131
Derivatives with a hedging relationship	36, 39	8	–	8	–	8	–	8
Lease receivables (measured in accordance with IFRS 16)[2]	25	6	3	9				
Total		**7,105**	**1,200**	**8,305**	**1,970**	**78**	**885**	**2,933**
Financial liabilities								
Subsequent measurement at amortized cost								
Trade payables and other liabilities	30	2,275	–	2,275				
Financial debt	37	3,136	6,373	9,508	7,469	1,823	–	9,292
Other financial liabilities	38	977	112	1,089				
Subsequent measurement at fair value through profit or loss								
Contingent considerations	38	15	5	20	–	–	20	20
Derivatives without a hedging relationship	37, 38, 39	34	18	52	–	31	21	52
Derivatives with a hedging relationship	36, 39	36	–	36	–	36	–	36
Refund liabilities	9	869	–	869				
Lease liabilities (measured in accordance with IFRS 16)[2]	37	137	625	761				
Total		**7,478**	**7,132**	**14,610**	**7,469**	**1,890**	**41**	**9,400**

[1] The simplification option under IFRS 7.29(a) was used for disclosures of certain fair values. IFRS 7.29(d) explicitly does not require disclosure of the fair value of lease liabilities.

[2] Measurements within the scope of IFRS 16 are exempted from the requirements of IFRS 13 (IFRS 13.6(b)).

The following table presents the carrying amounts and fair values of the individual financial assets and liabilities as of December 31, 2023, for each individual financial instrument class pursuant to IFRS 9:

December 31, 2023

		Carrying amount			Fair value[1]			
€ million	Consoli-dated notes	Current	Non-current	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using input factors observable in the market (Level 2)	Fair value determined using input factors not observable in the market (Level 3)	Total
Financial assets								
Subsequent measurement at amortized cost								
Cash and cash equivalents	35	1,017	–	1,017				
Trade accounts receivable and other receivable (excluding leasing receivables)	25	3,973	25	3,998				
Other debt instruments	36	201	4	204				
Subsequent measurement at fair value through other comprehensive income								
Equity instruments	36	–	643	643	207	–	436	643
Trade accounts receivable and other receivable	25	25	–	25	–	–	25	25
Debt instruments	36	198	1	199	199	–	–	199
Subsequent measurement at fair value through profit or loss								
Cash and cash equivalents[3]	35	965	–	965	965	–	–	965
Contingent consideration	36	–	125	125	–	–	125	125
Other debt instruments	36	33	161	194	98	–	95	194
Derivatives without a hedging relationship	36, 39	30	47	77	–	27	50	77
Derivatives with a hedging relationship	36, 39	37	–	37	–	37	–	37
Finance lease receivables (to be measured in accordance with IFRS 16)[2]	25	6	3	9				
Total		**6,485**	**1,008**	**7,493**	**505**	**65**	**731**	**2,265**
Financial liabilities								
Subsequent measurement at amortized cost								
Trade accounts payable	30	2,545	–	2,545				
Financial debt	37	503	8,846	9,349	7,367	2,665	–	10,032
Other financial liabilities	38	998	127	1,125				
Subsequent measurement at fair value through profit or loss								
Contingent consideration	38	–	2	2	–	–	2	2
Derivatives without a hedging relationship	37, 38, 39	79	18	96	–	77	20	96
Derivatives with a hedging relationship	38, 39	5	–	5	–	5	–	5
Refund liabilities	9	877	–	877				
Finance lease liabilities (to be measured in accordance with IFRS 16)[2]	37	122	393	515				
Total		**5,129**	**9,387**	**14,515**	**7,367**	**2,747**	**22**	**10,136**

[1] The simplification option under IFRS 7.29(a) was used for disclosures of certain fair values. IFRS 7.29(d) explicitly does not require disclosure of the fair value of lease liabilities.

[2] Measurements within the scope of IFRS 16 are exempted from the requirements of IFRS 13 (IFRS 13.6(b)).

[3] Previous year's figures have been adjusted.

The changes in financial assets and liabilities for each of the individual classes of financial instruments allocated to Level 3 and measured at fair value were as follows in the previous year:

2023

	Financial assets					Financial liabilities		
	Subsequent measurement at fair value through profit or loss			Subsequent measurement at fair value through other comprehensive income		Subsequent measurement at fair value through profit or loss		
€ million	Other debt instruments	Contingent consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration	Derivatives without a hedging relationship	**Total**
Net carrying amounts as of Jan. 1, 2023	**93**	**250**	**53**	**415**	**22**	**-4**	**-23**	**806**
Additions	21	–	–	59	72	–	–	152
Transfers into Level 3 from Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes	–	–	–	–	–	–	–	–
Gains (+)/losses (–) recognized in the consolidated income statement (other operating result)	10	56	2		–	–	1	69
thereof: attributable to assets/liabilities held as of the balance sheet date	10	6	-2		–	–	1	16
Gains (+)/losses (–) recognized in the consolidated income statement (financial income and expenses)	5	10	–		–	–	–	14
thereof: attributable to assets/liabilities held as of the balance sheet date	5	10	–		–	–	–	14
Gains (+)/losses (–) recognized in other comprehensive income				47	–			47
Currency translation difference	-2	–	-3	-1	–	–	–	-5
Disposals	-21	-190	-2	-29	-69	2	3	-307
Transfers out of Level 3 into Level 1/Level 2	–	–	–	-3	–	–	–	-3
Other	-11	–	–	-51	–	–	–	-62
Net carrying amounts as of Dec. 31, 2023	**95**	**125**	**50**	**436**	**25**	**-2**	**-20**	**710**

The changes in financial assets and liabilities for each of the individual classes of financial instruments allocated to Level 3 and measured at fair value were as follows in fiscal 2024:

2024

	Financial assets					Financial liabilities		
	Subsequent measurement at fair value through profit or loss			Subsequent measurement at fair value through other comprehensive income		Subsequent measurement at fair value through profit or loss		
€ million	Other debt instruments	Contingent consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration	Derivatives without a hedging relationship	Total
Net carrying amounts as of Jan. 1, 2024	**95**	**125**	**50**	**436**	**25**	**-2**	**-20**	**710**
Additions	30	10	–	107	44	-18	–	173
Transfers into Level 3 from Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes	–							
Gains (+)/losses (−) recognized in the consolidated income statement (other operating result)	–	46	8		–	1	-3	52
thereof: attributable to assets/liabilities held as of the balance sheet date	–	7	8		–	1	-3	13
Gains (+)/losses (−) recognized in the consolidated income statement (financial income and expenses)	3	12	1		–	–	–	16
thereof: attributable to assets/liabilities held as of the balance sheet date	3	12	1		–	–	–	16
Gains (+)/losses (−) recognized in other comprehensive income				-3	–			-2
Currency translation difference	3	–	3	–	–	–	–	6
Disposals	-19	-42	–	-4	-44	–	2	-108
Transfers out of Level 3 into Level 1/Level 2	–	–	–	–	–	–	–	–
Other	-19	–	–	19	–	–	–	–
Net carrying amounts as of Dec. 31, 2024	**94**	**151**	**61**	**555**	**24**	**-20**	**-21**	**845**

Disposals during the reporting period related in particular to payments received in connection with the contingent consideration arising from the disposal of the biosimilars business to a subsidiary of Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, as well as trade accounts receivable under factoring agreements. The "Other" line item primarily contains loans that were converted into equity instruments in the year under review. In the previous year, the reclassification of the fair value of the equity investment in Calypso Biotech B.V., Netherlands (Calypso), to assets held for sale was also included in the "Other" line item. The Calypso equity instruments were sold for a mid-double-digit million-euro amount effective January 8, 2024. The cumulative income of € 48 million recognized in other comprehensive income was reclassified to retained earnings. Further information on the disposal group can be found in Note (6) "**Acquisitions and divestments**". The gains and losses from Level 3 assets recognized in other comprehensive income were reported in the consolidated statement of comprehensive income item "Fair value adjustments".

(44) Other financial obligations

Other financial obligations comprised the following:

€ million	**Dec. 31, 2024**	Dec. 31, 2023
Acquisition of intangible assets	745	1,431
Acquisition of property, plant, and equipment	325	483
Other financial obligations	**1,071**	**1,914**

Obligations to acquire intangible assets related to contingent considerations in connection with in-licensing agreements in particular. In these agreements, Merck has entered into an obligation to make milestone payments once specific targets have been reached. In the unlikely event that all of the milestones are achieved, Merck would be obligated to pay up to € 745 million (December 31, 2023: € 1,431 million) for the acquisition of intangible assets. The table above does not contain any other financial obligations from possible future sales-based royalties and milestone payments. The decline in other financial obligations to acquire intangible assets was primarily due to the discontinuation of the xevinapant program (see Note (7) “**Collaboration and licensing agreements**”).

The expected maturities of the obligations to acquire intangible assets were as follows:

€ million	**Dec. 31, 2024**	Dec. 31, 2023
Within 1 year	38	278
In 1-5 years	349	548
After more than 5 years	359	604
Obligations to acquire intangible assets	**745**	**1,431**

Other financial obligations were recognized at nominal value.

Other Disclosures

(45) Related party disclosures

Accounting and measurement policies

Related party disclosures

Related parties in respect of the Merck Group are E. Merck KG, E. Merck Beteiligungen KG and Emanuel-Merck-Vermögens-KG. Furthermore, direct or indirect subsidiaries of Merck KGaA, associates of the Merck Group, joint ventures of the Merck Group, as well as pension funds that are classified as defined benefit plans in accordance with IAS 19 are also related parties within the meaning of IAS 24. Members of the Executive Board and the Supervisory Board of Merck KGaA, the Executive Board and the Board of Partners of E. Merck KG as well as close members of their families are also related parties, as are companies controlled or jointly controlled by this group of persons.

Transactions were conducted with related parties as follows:

	Income		Expenses		Receivables		Liabilities	
€ million	**2024**	2023	**2024**	2023	**Dec. 31, 2024**	Dec. 31, 2023	**Dec. 31, 2024**	Dec. 31, 2023
E. Merck KG	3.1	2.3	16.4	11.3	0.0	0.1	1,178.7	826.5
E. Merck Beteiligungen KG	1.6	0.4	33.4	32.4	0.0	0.0	990.1	1,100.1
Merck Capital Asset Management Limited, Malta	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Engel-Apotheke, Darmstadt[1]		0.1		0.0		0.0		0.0
Associated companies	0.6	0.9	0.1	0.0	8.9	19.5	0.0	0.0
Joint ventures	3.3	2.3	0.0	0.0	0.8	0.6	0.0	0.0
Non-consolidated subsidiaries	0.4	0.2	0.1	0.6	3.0	2.9	2.9	0.2
Majority interest in non-controlled companies	0.4	0.3	0.1	0.0	0.0	0.0	0.5	0.9

[1] The former owner of Engel-Apotheke, Darmstadt, was a member of the Supervisory Board of Merck KGaA until April 2024, but has not been the owner of Engel-Apotheke since the 2024 financial year.

As in the previous year, the liabilities of Group companies in respect of E. Merck KG primarily resulted from mutual profit transfers between Merck KGaA and E. Merck KG as well as the profit transfer by Merck & Cie KmG, Switzerland, to E. Merck KG. They also included financial liabilities of € 435.3 million (December 31, 2023: € 94.7 million) that were subject to standard market interest rates. Furthermore, the financial liabilities in respect of E. Merck Beteiligungen KG in the amount of € 990.0 million (December 31, 2023: € 1,100.0 million) were also subject to standard market interest rates. Neither collateral nor guarantees existed either in favor or to the disadvantage of the Merck Group.

The expense from impairment losses on receivables from non-consolidated subsidiaries recognized in fiscal 2024 amounted to € 0.0 million (2023: € 7.0 million).

Information on pension funds that are classified as defined benefit plans in accordance with IAS 19 can be found in Note (33) "**Provisions for employee benefits**".

Information on Executive Board and Supervisory Board compensation can be found in Note (46) "**Executive Board and Supervisory Board compensation**". Above and beyond this, no material activities between companies of the Merck Group and members of the Executive Board or the Supervisory Board of Merck KGaA, the Executive Board or the Board of Partners of E. Merck KG, or members of their immediate families took place in either fiscal 2024 or the previous year.

(46) Executive Board and Supervisory Board compensation

The compensation of the Executive Board of Merck KGaA is recognized by the general partner, E. Merck KG, which is not included in these consolidated financial statements. It was composed as follows:

€ million	**2024**	2023
Fixed compensation	6.3	6.3
Variable compensation	18.2	18.5
Additional benefits[1]	0.7	0.8
Short-term benefits	**25.2**	**25.6**
Post-employment benefits	2.4	2.6
Other long-term benefits	0.2	0.7
Termination benefits	0.0	0.0
Share-based payments	4.4	3.8
Total compensation pursuant to IAS 24.17	**32.2**	**32.7**

[1] The previous year's figure includes € 0.6 million for the loss of variable compensation entitlements from previous employments, which were reported as "Other compensation" in the previous year.

The total compensation granted to members of the Executive Board within the meaning of section 314 (1) no. 6 a) HGB amounted to € 29.8 million in fiscal 2024 (2023: € 30.1 million). In addition to the short-term benefits shown in the table above, this includes compensation under the standalone long-term incentive plan for the Executive Board, the structure of which is essentially as described in Note (33) "**Provisions for employee benefits**", with differences concerning the holding period and the targets to be achieved for the individual indicators, as well as other long-term benefits. On the basis of the long-term incentive plan, 67,149 virtual shares, also referred to as Merck Share Units (MSUs), were made potentially available in fiscal 2024 (2023: 57,164 MSUs).

Payments to former members of the Executive Board and their surviving dependents in accordance with section 314 (1) no. 6 b) HGB were made as pension payments, as profit sharing under the long-term incentive plan, and as the waiting allowance for a post-contractual non-competition clause. These payments amounted to € 18.3 million in fiscal 2024 (2023: € 14.4 million). Provisions for defined benefit pension commitments reported by E. Merck KG amounted to € 121.5 million as of December 31, 2024 (December 31, 2023: € 123.8 million).

The compensation of the Supervisory Board in accordance with section 314 (1) no. 6 a) HGB and IAS 24.17 was composed as follows:

€ thousand	**2024**	2023
Fixed portion	1,163	808
Meeting attendance fees	109	58
Committee membership compensation	265	95
Total compensation granted in the fiscal year	**1,537**	**961**

As in the previous year, no compensation was paid to former members of the Supervisory Board in fiscal 2024.

The members of the Executive Board and the Supervisory Board did not receive any advances or loans from companies included in the consolidated financial statements in fiscal 2024 or 2023. As in the previous year, no contingent liabilities were entered into for the benefit of these persons in fiscal 2024.

Further individualized information and disclosures, as well as a presentation of the compensation system for the members of the Executive Board and the Supervisory Board, can be found in the compensation report.

(47) Auditor's fees

The costs for the auditor of the consolidated financial statements (Deloitte) in accordance with section 314 (1) no. 9 HGB were composed as follows:

	2024	
€ million	**Group**	**thereof: Deloitte GmbH Wirtschaftsprüfungsgesellschaft, Germany**
Audits of financial statements	12.2	5.4
thereof for prior year	0.5	0.5
Other audit-related services	1.2	1.0
Tax consultancy services	–	–
Other services	–	–
Total	**13.4**	**6.4**

The expenses for other audit-related services in respect of Deloitte GmbH Wirtschaftsprüfungsgesellschaft primarily related to the audit of the Combined Sustainability Statement and for the voluntary audit in connection with the planned sale of the Surface Solutions business unit.

Scope of Consolidation

(48) List of shareholdings

The shareholdings of Merck KGaA as of December 31, 2024, are presented below:

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
I. Fully consolidated companies				
Germany				
Germany	Merck KGaA	Darmstadt	Parent company	
Germany	AZ Electronic Materials GmbH A)	Darmstadt	100.00	
Germany	Biochrom GmbH A)	Berlin	100.00	
Germany	Chemitra GmbH A)	Darmstadt	100.00	100.00
Germany	Emedia Export Company mbH	Gernsheim	100.00	
Germany	Merck 12. Allgemeine Beteiligungs-GmbH A)	Darmstadt	100.00	100.00
Germany	Merck 13. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 15. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 16. Allgemeine Beteiligungs-GmbH A)	Darmstadt	100.00	
Germany	Merck 20. Allgemeine Beteiligungs-GmbH A)	Darmstadt	100.00	
Germany	Merck 21. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 24. Allgemeine Beteiligungs-GmbH A)	Darmstadt	100.00	100.00
Germany	Merck 25. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck Chemicals GmbH A)	Darmstadt	100.00	
Germany	Merck Consumer Health Holding Germany GmbH	Darmstadt	100.00	100.00
Germany	Merck Display Trading GmbH A)	Darmstadt	100.00	
Germany	Merck Electronics KGaA A)	Darmstadt	100.00	
Germany	Merck Export GmbH A)	Darmstadt	100.00	100.00
Germany	Merck Financial Services GmbH	Darmstadt	100.00	100.00
Germany	Merck Financial Trading GmbH	Gernsheim	100.00	
Germany	Merck Gernsheim Holding GmbH A)	Darmstadt	100.00	
Germany	Merck Healthcare Germany GmbH A)	Weiterstadt	100.00	100.00
Germany	Merck Healthcare Holding GmbH	Darmstadt	100.00	100.00
Germany	Merck Healthcare KGaA A)	Darmstadt	100.00	
Germany	Merck Holding GmbH	Gernsheim	100.00	100.00
Germany	Merck International GmbH	Darmstadt	100.00	100.00
Germany	Merck Internationale Beteiligungen GmbH	Darmstadt	100.00	
Germany	Merck Life Science Holding GmbH	Darmstadt	100.00	100.00
Germany	Merck Life Science KGaA A)	Darmstadt	100.00	
Germany	Merck LS RTU GmbH A)	Weiterstadt	100.00	100.00
Germany	Merck Patent GmbH A)	Darmstadt	100.00	
Germany	Merck Performance Materials GmbH	Wiesbaden	100.00	
Germany	Merck Performance Materials Holding GmbH	Darmstadt	100.00	100.00
Germany	Merck Real Estate GmbH A)	Darmstadt	100.00	100.00
Germany	Merck Schuchardt OHG	Hohenbrunn	100.00	
Germany	Merck Site Management GmbH A)	Gernsheim	100.00	100.00
Germany	Merck Surface Solutions GmbH A)	Gernsheim	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
Germany	Merck Vierte Allgemeine Beteiligungsgesellschaft mbH	Gernsheim	100.00	
Germany	Merck Wohnungs- und Grundstücksverwaltungsgesellschaft mbH A)	Darmstadt	100.00	100.00
Germany	Sigma-Aldrich Biochemie GmbH	Hamburg	99.99	
Germany	Sigma-Aldrich Chemie GmbH	Schnelldorf	99.99	
Germany	Sigma-Aldrich Chemie Holding GmbH	Taufkirchen	99.99	
Germany	Sigma-Aldrich Grundstücks GmbH & Co. KG	Schnelldorf	100.00	
Germany	Sigma-Aldrich Logistik GmbH	Schnelldorf	100.00	
Germany	Sigma-Aldrich Verwaltungs GmbH	Schnelldorf	100.00	100.00
Germany	Unity Semiconductor GmbH	Dresden	100.00	
Germany	Versum Materials Germany GmbH	Darmstadt	100.00	
Other European countries				
Austria	Merck Chemicals and Life Science GesmbH	Vienna	100.00	
Austria	Merck Gesellschaft mbH	Vienna	100.00	
Austria	Sigma-Aldrich Handels GmbH	Vienna	100.00	
Belgium	Merck Chemicals NV/SA	Hoeilaart	100.00	
Belgium	Merck Life Science BV	Hoeilaart	100.00	
Belgium	Merck NV/SA	Hoeilaart	100.00	
Bulgaria	Merck Bulgaria EAD	Sofia	100.00	
Croatia	Merck d.o.o.	Zagreb	100.00	
Czech Republic	Merck Life Science spol. s r.o.	Prague	99.99	
Czech Republic	Merck spol. s r.o.	Prague	99.99	
Denmark	Merck A/S	Soborg	99.98	
Denmark	Merck Life Science A/S	Soborg	99.99	
Estonia	Merck Serono OÜ	Tallinn	100.00	
Finland	Merck Life Science OY	Espoo	99.99	
Finland	Merck OY	Espoo	100.00	
France	Gonnon S.A.S.	Lyon	99.86	
France	Merck Biodevelopment S.A.S.	Lyon	99.86	
France	Merck Chimie S.A.S.	Fontenay s/Bois	99.86	
France	Merck Performance Materials S.A.S.	Trosly Breuil	99.86	
France	Merck S.A.	Lyon	99.86	
France	Merck Santé S.A.S.	Lyon	99.86	
France	Merck Serono S.A.S.	Lyon	99.86	
France	Millipore S.A.S.	Molsheim	99.87	
France	Sigma-Aldrich Chimie S.a.r.l.	Saint Quentin Fallavier	99.87	
France	Sigma-Aldrich Chimie SNC	Saint Quentin Fallavier	99.99	
France	Sigma-Aldrich Holding S.a.r.l.	Saint Quentin Fallavier	99.99	
France	Unity-SC SAS	Montbonnot-Saint-Martin	100.00	
France	Unity Semiconductor SAS	Montbonnot-Saint-Martin	100.00	
Greece	Merck Commercial Industrial Pharmaceutical Chemical Single Member S.A.	Maroussi	100.00	
Hungary	Merck Kft.	Budapest	99.99	
Hungary	Merck Life Science Kft.	Budapest	99.99	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
Ireland	Merck Finance Limited	Carrigtwohill	100.00	
Ireland	Merck Life Science Limited	Arklow	99.99	
Ireland	Merck Millipore Ltd.	Carrigtwohill	99.99	
Ireland	Merck Serono (Ireland) Ltd.	Dublin	100.00	
Ireland	Millipore Cork Unlimited Company	Carrigtwohill	99.99	
Ireland	Sigma-Aldrich Ireland Ltd.	Arklow	99.99	
Ireland	Versum Materials Ireland Limited	Dublin	100.00	
Italy	Istituto di Ricerche Biomediche Antoine Marxer RBM S.p.A.	Colleretto Giacosa	99.74	
Italy	Merck Life Science S.r.l.	Milan	100.00	
Italy	Merck S.r.l.	Milan	100.00	
Italy	Merck Serono S.p.A.	Rome	99.74	
Italy	Versum Materials Italia S.r.l.	Milan	100.00	
Latvia	Merck Serono SIA	Riga	100.00	
Lithuania	Merck Serono, UAB	Vilnius	100.00	
Luxembourg	Merck Chemicals Holding S.à r.l.	Luxembourg	100.00	
Luxembourg	Merck Finance S.à r.l.	Luxembourg	100.00	
Luxembourg	Merck Finanz S.à.r.l.	Luxembourg	100.00	
Luxembourg	Merck Holding S.à r.l.	Luxembourg	99.99	
Luxembourg	Merck Invest SCS	Luxembourg	100.00	
Luxembourg	Merck Re S.A.	Luxembourg	100.00	100.00
Luxembourg	Millipore International Holdings S.à r.l.	Luxembourg	100.00	
Luxembourg	Sigma-Aldrich Global S.à r.l.	Luxembourg	100.00	
Luxembourg	Sigma-Aldrich S.à r.l.	Luxembourg	99.99	
Malta	Merck Capital Holding Limited	Pietà	100.00	50.29
Malta	Merck Capital Limited	Pietà	100.00	
Netherlands	eyrise B.V.	Veldhoven	100.00	100.00
Netherlands	HUB Organoids B.V.	Utrecht	99.99	
Netherlands	HUB Organoids Holding B.V.	Utrecht	99.99	
Netherlands	HUB Organoids IP B.V.	Utrecht	99.99	
Netherlands	Merck B.V.	Schiphol-Rijk	99.98	
Netherlands	Merck Chemicals B.V.	Amsterdam	100.00	
Netherlands	Merck Europe B.V.	Amsterdam	99.98	
Netherlands	Merck Holding Netherlands B.V.	Schiphol-Rijk	100.00	
Netherlands	Merck Life Science N.V.	Amsterdam	99.99	
Netherlands	Merck Ventures B.V.	Amsterdam	99.98	
Netherlands	Serono Tri Holdings B.V.	Schiphol-Rijk	99.98	
Netherlands	Sigma-Aldrich B.V.	Amsterdam	99.99	
Netherlands	Versum Materials Holdings Nederland B.V.	Amsterdam	100.00	
Netherlands	Versum Materials International B.V.	Amsterdam	100.00	
Netherlands	Versum Materials Netherlands B.V.	Amsterdam	100.00	
Netherlands	Versum Materials Netherlands International B.V.	Amsterdam	100.00	
Netherlands	Versum Materials Pacific B.V.	Amsterdam	100.00	
Norway	Merck Life Science AS	Oslo	99.99	
Poland	Merck Business Solutions Europe Sp. z o.o.	Wroclaw	99.98	
Poland	Merck Life Science Sp. z o.o.	Poznan	99.99	
Poland	Merck Sp. z o.o.	Warsaw	99.99	
Portugal	Merck, S.A.	Algés	99.91	
Romania	Merck Romania S.R.L.	Bucharest	100.00	
Russia	Merck Life Science LLC	Moscow	100.00	
Russia	Merck LLC	Moscow	100.00	
Serbia	Merck d.o.o. Beograd	Belgrade	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
Slovakia	Merck Life Science spol. s r.o.	Bratislava	99.99	
Slovakia	Merck spol. s r.o.	Bratislava	100.00	
Slovenia	Merck d.o.o.	Ljubljana	100.00	
Spain	Merck Chemicals and Life Science S.A.U.	Madrid	99.99	
Spain	Merck Life Science S.L.U.	Madrid	99.99	
Spain	Merck, S.L.U.	Madrid	100.00	
Sweden	Merck AB	Solna	100.00	
Sweden	Merck Life Science AB	Solna	100.00	
Switzerland	Ares Trading SA	Aubonne	99.98	
Switzerland	Chord Therapeutics SA	Eysins	99.98	
Switzerland	Merck & Cie KmG	Altdorf	51.63	51.63
Switzerland	Merck (Schweiz) AG	Zug	99.98	
Switzerland	Merck Performance Materials (Suisse) SA	Eysins	100.00	
Switzerland	Merck Serono SA	Aubonne	99.98	
Switzerland	SeroMer Holding SA	Eysins	100.00	
Switzerland	Sigma-Aldrich (Switzerland) Holding AG	Buchs	99.99	
Switzerland	Sigma-Aldrich Chemie GmbH	Buchs	99.99	
Switzerland	Sigma-Aldrich International GmbH	Buchs	99.99	
Switzerland	Sigma-Aldrich Production GmbH	Buchs	99.99	
Türkiye	Merck Ilac, Ecza Ve Kimya Ticaret Anonim Sirketi	Istanbul	99.99	
United Kingdom	BioReliance Limited	Aberdeen	100.00	
United Kingdom	Epichem Group Limited	Gillingham	99.99	
United Kingdom	Merck Holding Ltd.	Feltham	100.00	
United Kingdom	Merck Investments Ltd.	Feltham	100.00	
United Kingdom	Merck Life Science UK Limited	Gillingham	99.99	
United Kingdom	Merck Performance Materials Limited	Feltham	99.99	
United Kingdom	Merck Serono Ltd.	Feltham	99.99	
United Kingdom	Millipore (U.K.) Limited	Feltham	99.99	
United Kingdom	SAFC Biosciences Limited	Gillingham	99.99	
United Kingdom	SAFC Hitech Limited	Gillingham	99.99	
United Kingdom	Sigma-Aldrich Company Limited	Gillingham	99.99	
United Kingdom	Versum Materials UK Limited	Feltham	100.00	
North America				
Canada	EMD Inc.	Mississauga	99.98	
Canada	MilliporeSigma Canada Ltd.	Oakville	99.99	
United States	Aldrich Chemical Co. LLC	Milwaukee	100.00	
United States	Aldrich Chemical Foreign Holding LLC	St. Louis	99.99	
United States	Aldrich-APL, LLC	Urbana	100.00	
United States	BioControl Systems, Inc.	Wilmington	100.00	
United States	BioReliance Corporation	Rockville	100.00	
United States	Cell Marque Corporation	Rocklin	100.00	
United States	Cerilliant Corporation	Round Rock	100.00	
United States	Electron Transfer Technologies, Inc.	West Trenton	100.00	
United States	EMD Biotech LLC	Wilmington	100.00	
United States	EMD Digital Inc.	Burlington	100.00	
United States	EMD Finance LLC	Wilmington	100.00	
United States	EMD Group Holding, Inc.	Wilmington	100.00	
United States	EMD Holding Corp.	Rockland	100.00	
United States	EMD Invest LLC	Wilmington	100.00	
United States	EMD Millipore Corporation	Burlington	100.00	
United States	EMD Performance Materials Corp.	Wilmington	100.00	
United States	EMD Serono Holding, Inc.	Rockland	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
United States	EMD Serono Research & Development Institute, Inc.	Billerica	100.00	
United States	EMD Serono, Inc.	Wilmington	100.00	
United States	Exelead Inc.	Wilmington	100.00	
United States	FloDesign Sonics, Inc.	Wilmington	100.00	
United States	Intermolecular, Inc.	Wilmington	100.00	
United States	J.C. Schumacher Company	Glendale	100.00	
United States	Millipore Asia Ltd.	Wilmington	100.00	
United States	MilliporeSigma Distribution LLC	Wilmington	100.00	
United States	Mirus Bio, LLC	Wilmington	100.00	
United States	Research Organics, LLC	Cleveland	100.00	
United States	SAFC Biosciences, Inc.	Lenexa	100.00	
United States	SAFC Carlsbad, Inc.	Carlsbad	100.00	
United States	SAFC, Inc.	Madison	100.00	
United States	Sigma Chemical Foreign Holding LLC	St. Louis	99.99	
United States	Sigma Redevelopment Corporation	St. Louis	100.00	
United States	Sigma-Aldrich Co. LLC	St. Louis	100.00	
United States	Sigma-Aldrich Corporation	St. Louis	100.00	
United States	Sigma-Aldrich Manufacturing LLC	St. Louis	100.00	
United States	Sigma-Aldrich Missouri Insurance Company	St. Louis	100.00	
United States	Sigma-Aldrich Research Biochemicals, Inc.	Wilmington	100.00	
United States	Sigma-Aldrich RTC, Inc.	Laramie	100.00	
United States	Sigma-Aldrich, Inc.	Madison	100.00	
United States	Sigma-Genosys of Texas LLC	The Woodlands	100.00	
United States	Supelco, Inc.	Bellefonte	100.00	
United States	Unity Semiconductor Inc.	Ashland	100.00	
United States	Versum Materials Manufacturing Company, LLC	Wilmington	100.00	
United States	Versum Materials Technology LLC	Wilmington	100.00	
United States	Versum Materials US International, Inc.	Wilmington	100.00	
United States	Versum Materials US, LLC	Wilmington	100.00	
United States	Versum Materials, Inc.	Wilmington	100.00	
Asia-Pacific (APAC)				
Australia	Merck Healthcare Pty. Ltd.	Macquarie Park	99.98	
Australia	Merck Life Science PTY LTD	Bayswater	99.99	
Australia	Merck Pty. Ltd.	Bayswater	99.99	
Australia	Sigma-Aldrich Oceania Pty. Ltd.	Bayswater	99.99	
China	Merck Chemicals (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Merck Display Materials (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Merck Electronic Materials (Suzhou) Ltd.	Suzhou	100.00	
China	Merck Electronics (Zhangjiagang) Co., Ltd.	Zhangjiagang	100.00	
China	Merck Holding (China) Co., Ltd.	Shanghai	100.00	
China	Merck Life Science Ltd.	Kowloon	99.99	
China	Merck Life Science Technologies (Nantong) Co., Ltd.	Nantong	100.00	
China	Merck Ltd.	Hong Kong	100.00	
China	Merck Performance Materials Hong Kong Ltd.	Hong Kong	100.00	
China	Merck Pharmaceutical (HK) Ltd.	Hong Kong	100.00	
China	Merck Pharmaceutical Distribution (Jiangsu) Co., Ltd.	Nantong	100.00	
China	Merck Pharmaceutical Manufacturing (Jiangsu) Co., Ltd.	Nantong	100.00	
China	Merck Serono (Beijing) Pharmaceutical Distribution Co., Ltd.	Beijing	100.00	
China	Merck Serono (Beijing) Pharmaceutical R&D Co., Ltd.	Beijing	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
China	Merck Serono Co., Ltd.	Beijing	100.00	
China	Merck Testing and Certification (Shanghai) Co., Ltd.	Shanghai	99.99	
China	SAFC Hitech (Shanghai) Co., Ltd.	Shanghai	99.99	
China	Sigma-Aldrich (Shanghai) Trading Co., Ltd.	Shanghai	99.99	
China	Sigma-Aldrich (Wuxi) Life Science & Technology Co., Ltd.	Wuxi	99.99	
China	Unity Semiconductor China Co., Ltd	Shanghai	100.00	
China	Versum Materials (Dalian) Co., Ltd.	Dalian	100.00	
China	Versum Materials (Shanghai) Co., Ltd.	Shanghai	100.00	
India	Merck Life Science Pvt. Ltd.	Mumbai	100.00	
India	Merck Performance Materials Pvt. Ltd.	Mumbai	100.00	
India	Merck Specialities Pvt. Ltd.	Mumbai	100.00	
India	Sigma-Aldrich Chemicals Private Limited	Bangalore	99.99	
Indonesia	P.T. Merck Chemicals and Life Sciences	Jakarta	100.00	
Indonesia	P.T. Merck Tbk.	Jakarta	86.65	
Japan	Merck Biopharma Co., Ltd.	Tokyo	99.98	
Japan	Merck Electronics Ltd.	Tokyo	100.00	
Japan	Merck Holdings G.K.	Tokyo	100.00	
Japan	Merck Ltd.	Tokyo	100.00	
Japan	Merck Performance Materials G.K.	Tokyo	100.00	
Japan	Sigma-Aldrich Japan G.K.	Tokyo	99.99	
Japan	Versum Materials Japan Inc.	Tokyo	100.00	
Malaysia	Merck Sdn Bhd	Kuala Lumpur	100.00	
Malaysia	Sigma-Aldrich (M) Sdn Bhd	Kuala Lumpur	100.00	
Malaysia	Versum Materials Malaysia Sdn Bhd	Kuala Lumpur	100.00	
New Zealand	Merck Life Science Limited	Auckland	99.99	
New Zealand	Merck Ltd.	Auckland	99.99	
Philippines	Merck Business Solutions Asia Inc.	Taguig	100.00	
Philippines	Merck Inc.	Taguig	99.97	
Republic of Korea	Merck Electronic Materials Ltd.	Seoul	100.00	
Republic of Korea	Merck Ltd.	Seoul	99.99	
Republic of Korea	Merck Performance Materials Ltd.	Pyeongtaek-si	100.00	
Republic of Korea	Sigma-Aldrich Korea Ltd.	Seoul	99.99	
Republic of Korea	Versum Materials ADM Korea Inc.	Ansan-si	100.00	
Republic of Korea	Versum Materials HYT Inc.	Ansan-si	100.00	
Republic of Korea	Versum Materials Korea Inc.	Siheung-si	100.00	
Republic of Korea	Versum Materials PM Korea Inc.	Siheung-si	100.00	
Republic of Korea	Versum Materials SPC Korea Ltd.	Pyeongtaek-si	100.00	
Singapore	Merck Performance Materials Pte. Ltd.	Singapore	100.00	
Singapore	Merck Pte. Ltd.	Singapore	99.99	
Singapore	Sigma-Aldrich Pte. Ltd.	Singapore	99.99	
Singapore	Unity Semiconductor Pte.Ltd.	Singapore	100.00	
Singapore	Versum Materials Singapore International Pte. Ltd.	Singapore	100.00	
Singapore	Versum Materials Singapore Pte. Ltd.	Singapore	100.00	
Taiwan	Merck Ltd.	Taipei	100.00	
Taiwan	Merck Performance Materials Ltd.	Taipei	100.00	
Taiwan	SAFC Hitech Taiwan Co., Ltd.	Kaohsiung	99.99	
Taiwan	Unity Semiconductor Limited Company	Zhubei City	100.00	
Taiwan	Versum Materials Taiwan Co., Ltd.	Taipei	74.00	
Thailand	Merck Ltd. B)	Bangkok	45.11	
Vietnam	Merck Healthcare Vietnam Limited	Ho Chi Minh City	100.00	
Vietnam	Merck Vietnam Company Limited	Ho Chi Minh City	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
Latin America				
Argentina	Merck S.A.	Buenos Aires	99.99	
Argentina	Sigma-Aldrich de Argentina S.R.L.	Buenos Aires	99.99	
Brazil	Merck S.A.	Rio de Janeiro	100.00	
Brazil	Sigma-Aldrich Brasil Ltda.	Barueri	100.00	
Chile	Merck S.A.	Santiago de Chile	100.00	
Chile	Sigma-Aldrich Quimica Ltda.	Santiago de Chile	100.00	
Colombia	Merck S.A.	Bogota	100.00	
Ecuador	Merck C.A.	Quito	100.00	
Guatemala	Merck, S.A.	Guatemala City	100.00	
Mexico	Merck Biopharma Distribution S.A. de C.V.	Mexico City	100.00	
Mexico	Merck, S.A. de C.V.	Mexico City	100.00	
Mexico	Sigma-Aldrich Quimica, S. de R.L. de C.V.	Toluca	100.00	
Panama	Merck, S.A.	Panama City	100.00	
Panama	Mesofarma Corporation	Panama City	100.00	
Peru	Merck Peruana S.A.	Lima	100.00	
Uruguay	Ares Trading Uruguay S.A.	Montevideo	99.98	
Middle East and Africa (MEA)				
Algeria	Merck Algerie SARL C)	Algier	49.00	
Egypt	Merck Ltd.	Cairo	100.00	
Israel	Inter-Lab Ltd.	Yavne	99.98	
Israel	InterPharm Laboratories Ltd.	Yavne	99.98	
Israel	Merck Serono Ltd.	Herzliya Pituach	99.98	
Israel	PMatX Ltd.	Yavne	99.98	
Israel	QLight Nanotech Ltd.	Jerusalem	100.00	
Israel	Sigma-Aldrich Israel Ltd.	Rehovot	100.00	
Israel	Versum Materials Israel Ltd.	Tel Aviv	100.00	
Kenya	Merck Healthcare and Life Science Limited	Nairobi	100.00	
Saudi Arabia	MERCK Limited	Riyadh	100.00	
Saudi Arabia	Merck Regional Headquarters Company (A One-Person Limited Liability Company)	Riyadh	100.00	
South Africa	Merck (Pty) Ltd.	Modderfontein	99.99	
South Africa	Merck Life Science (Pty) Ltd.	Modderfontein	99.99	
Tunisia	Merck Promotion SARL	Tunis	100.00	
Tunisia	Merck SARL	Tunis	100.00	
United Arab Emirates	Merck Serono Middle East FZ-Ltd.	Dubai	100.00	
II. Companies accounted for using the equity method				
Other European countries				
United Kingdom	MM Domain Holdco Limited	London	50.00	50.00
North America				
United States	Syntropy Technologies LLC	Wilmington	50.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
III. Companies measured at fair value through other comprehensive income in accordance with IFRS 9 due to immateriality and other equity investments				
Germany				
Germany	beeOLED GmbH	Dresden	21.58	
Germany	GreenTech Accelerator Gernsheim GmbH	Gernsheim	20.00	20.00
Germany	Merck 26. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 27. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 28. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 29. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 37. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 38. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 39. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 40. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 41. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 42. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 43. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 44. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 45. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 46. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 47. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 48. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 49. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Other European countries				
Belgium	ReWind Therapeutics NV	Leuven-Heverlee	25.72	
France	MERCK 8ème S.A.S.	Lyon	99.86	
France	Surface Solutions S.A.S.	Lyon	99.86	
France	Scipio Bioscience S.A.S.	Montrouge	21.68	
Netherlands	iOnctura B.V.	Amsterdam	20.08	
Norway	Merck AS	Oslo	100.00	
Poland	Bissantille Investments Sp. z o.o.	Warsaw	100.00	
Russia	Chemical Trade Limited LLC	Moscow	100.00	
Switzerland	CAM AG Chemie-Erzeugnisse und Adsorptionstechnik AG	Muttenz	39.11	
Switzerland	Repronovo SA	Lausanne	24.51	
United Kingdom	Macrophage Pharma Limited	London	22.20	
United Kingdom	Merck Cross Border Trustees Ltd.	Feltham	100.00	
United Kingdom	Merck Ltd.	Feltham	99.99	
United Kingdom	Merck Pension Trustees Ltd.	Feltham	99.99	
United Kingdom	Outrun Therapeutics Limited	Dundee	35.39	
United Kingdom	Sigma Chemical Co. Ltd.	Gillingham	99.99	
United Kingdom	Surface Materials Ltd	London	100.00	
North America				
Canada	Future Fertility Inc.	Toronto	29.37	
United States	Altoida, Inc.	Suwanee	26.30	
United States	ActiThera Inc.	Dover	49.99	
United States	ImmuneBridge Inc.	Wilmington	30.05	
United States	Indi Molecular, Inc.	Wilmington	32.15	
United States	MemryX Inc.	Ann Arbor	20.66	
United States	Pictor Labs, Inc.	Los Angeles	22.24	
United States	Polaris Electro-Optics, Inc	Wilmington	24.92	
United States	Prolog Healthy Living Fund II, L.P. D)	St. Louis	44.53	
United States	Surface Solutions, LLC	Wilmington	100.00	

Footnotes follow at the end of the table.

Country	Company	Registered office	Equity interest (%)	thereof: Merck KGaA (%)
Asia-Pacific (APAC)				
China	Merck Testing (Shanghai) Co., Ltd.	Shanghai	100.00	
Japan	Merck Semiconductor Solutions Ltd.	Tokyo	100.00	
Japan	Resonac Versum Materials Co. LTD E)	Kawasaki	35.00	
Malaysia	Surface Solutions Sdn. Bhd.	Kuala Lumpur	100.00	
Republic of Korea	Surface Solutions, Inc.	Gwacheon-si	100.00	
Singapore	Merck Life Science Testing Services Pte. Ltd.	Singapore	99.99	
Thailand	Surface Materials (Thailand) Ltd.	Bangkok	100.00	
Latin America				
Brazil	Surface Solutions Brasil Ltda.	São Paulo	100.00	
Dominican Republic	Merck Dominicana, S.R.L.	Santo Domingo	100.00	
Middle East and Africa (MEA)				
Algeria	Novapharm Production SARL	Wilaya de Tipiza	20.00	
Israel	Genopore Ltd.	Ramat-Gan	20.17	
Israel	Metabomed Ltd.	Yavne	20.44	
Israel	PxE Computational Imaging Ltd.	Rehovot	29.18	
Israel	Sentaur Bio Ltd.	Yavne	98.37	
Nigeria	Merck Pharmaceutical and Life Sciences Ltd.	Lagos	99.98	
IV. Majority interest in non-controlled companies				
Germany				
Germany	Merck Foundation gGmbH	Darmstadt	100.00	100.00
Latin America				
Venezuela	Merck S.A.	Caracas	99.98	
Venezuela	Representaciones MEPRO S.A.	Caracas	99.98	

A) Companies opting for exemption as provided for by section 264 (3) and section 264b of the German Commercial Code.

B) Fully consolidated due to majority of voting rights.

C) Fully consolidated due to contractual agreement.

D) Closed-end funds classified as debt instruments in accordance with IFRS 9.

E) This is an affiliate within the meaning of IFRS 11 (joint activity).

Darmstadt, February 17, 2025

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

Helene von Roeder