

TCFD index

TCFD disclosure 2022

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

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

Governance

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

Strategy

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

Risk management

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

Metrics and targets

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

Climate Scenarios

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

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

Physical and transitional risks and opportunities

Physical risks

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

Acute



Cyclones & hurricanes



Floods



Drought



Fire



Heat waves



Sea level rise

Chronic

Transition risks

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



Policy and legal



Technology



Markets



Reputation

...but also transition opportunities

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



Resource efficiency



Energy source



Products and services



Markets



Resilience

The physical risk and opportunities analysis (4 °C)

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

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

The transition risk and opportunities analysis (1.5 °C)

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

Supply Chain

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

Production process

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

Demand

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