

Climate Change Risk Management (TCFD)

Introduction

The earth's climate is not stable. Natural (sun activity, volcanoes, seawater currents, etc.) and man-made (deforestation, marshland melioration, carbon dioxide emissions, etc.) factors are influencing the climate. In the past decades we experienced increasing temperatures and, probably caused by this, a growing number of extreme weather events (draughts, floods, heavy storms etc.) with negative impacts like food and water shortage, wildfires, landslides and corresponding damage to the built and the natural environment.

These changes may also put our business at risk: our ability to serve our patients with life-saving medicines and diagnostic services and to generate profits to keep the business going may be compromised. That is why we thoroughly analyze and manage such risks as an integral part of our enterprise risk management in order to avoid, reduce or mitigate these negative impacts.

On the other hand climate change could also offer good business opportunities. We therefore examine potential business strategies to assess if and how we could benefit from this.

For our analysis we follow the **TCFD framework** (Taskforce on Climate-related Financial Disclosures) with the four pillars: Governance, Strategy, Risk Management and Metrics & Targets. While this report gives a brief outline on these four elements, we disclose the identified risks and the corresponding mitigation measures. We have set up a taskforce to develop a more detailed report by 2022.

Governance

The management of climate-related risks is embedded in our enterprise risk management system. The risk management methodology, the identified and evaluated risks (including potential opportunities) and the mitigation measures are regularly discussed with the Corporate Executive Committee and the Board of Directors. Likewise, the climate targets and results are discussed at the Board level.

We have set up a Corporate Sustainability Steering Committee and a Corporate Sustainability Operations Committee, both made up of members from all parts of the company. They coordinate the sustainability strategy and activities throughout the company, including the topic of climate change.

A roadmap towards real zero greenhouse gas emissions by 2050 has been developed and intermediate goals (5 years, 10 years) have been set (see our website). Managers of all global functions and affiliates / sites develop, maintain and implement concrete action plans to ensure we achieve the goals. With this strong involvement of the whole organization we have already achieved massive improvements over the past (see our website).

A separate team of professionals in global procurement is managing the climate strategy and action in the supply chain. They closely partner with our business critical suppliers and service providers.

Several grass-roots organizations within Roche propose and implement numerous ideas and projects to reduce our greenhouse gas emissions.

We have included several ESG topics in our Group-wide bonus plan system. In particular the bonus of managers and employees is dependent on our goals regarding the total environmental impact, which is mainly (about 75%) driven by climate change aspects.

Strategy and Risk management

We have conducted a rough risk analysis: we

- identified hazards,
- developed scenarios,
- assessed the probability and impact of such scenarios,
- estimated the risk and
- identified/developed mitigation measures.

We come to the conclusion that the risks are under control and no urgent additional measures are needed. The Roche internal taskforce will further analyze the situation and develop a more comprehensive risk assessment (2022).

Hazards

We consider the following hazards that could influence our business:

- Higher (or lower) air temperatures and humidity
- Higher water temperatures (surface waters, groundwater)
- Heavy rainfall
- Droughts
- Severe storms
- Strong regulation

Scenarios – Risks – Mitigation measures

These hazards may trigger the following main scenarios which could impact our business. We mitigate these risks with the indicated measures.

Hazard	Scenario	Potential impact	Mitigation
Higher (or lower) air temperatures and humidity	More cooling (or heating) of manufacturing plants and offices needed	Higher energy bill. A 20 % increase in energy consumption for cooling would cause cost in the range of 6 MCHF ¹ → very low risk	Energy efficient buildings: internal regulation. Energy recovery. Result: Very low risk (<5 MCHF).

¹ Assumption: Cooling with electric power; 0.1 CHF / kWh; 0.3x10⁹ kWh used for cooling → Total cost of electric power 30 MCHF; 20 % thereof = 6 MCHF (million Swiss Francs).

Hazard	Scenario	Potential impact	Mitigation
	Reduction of productivity of employees	Productivity reduced by 10 %. Thus 10 % higher personnel cost = 1.5 BCHF ² → significant risk	People work in well thermally isolated and air conditioned offices: internal regulation on indoor room climate conditions. Result: low risk (<100 MCHF)
	Emergence of new diseases: our employees getting ill	Loss of productive working hours by 10 %. Thus 10 % higher personnel cost = 1.5 BCHF → significant risk	We provide good health-care to employees, including vaccination where appropriate. Business continuity management is in place to mitigate potential sudden dropping out of a significant number of employees. Result: low risk (<100 MCHF)
Higher water temperatures	Increase of water and energy consumption for cooling	10 % higher utility bill, in the range of 10 MCHF → very low risk	Energy and water efficient utility infrastructure. Energy recovery. Result: very low risk (<10 MCHF)
	Water too warm for cooling → alternative cooling needed	Additional investment cost in the range of 50 MCHF. Additional cost for electric power in the range of 10 MCHF. → very low risk	Implementation of innovative and very efficient technologies. Result: very low risk (<10 MCHF)

² BCHF = billion Swiss Francs

Hazard	Scenario	Potential impact	Mitigation
Heavy rainfall	Flooding and/or landslides damage our buildings and plants as well as transport routes	Business interruption with loss of sales of 100 MCHF and repair cost of 50 MCHF → low risk	Business continuity management processes are in place. Resumption of deliveries should be possible before patients run out of life-saving products. Buildings are typically located in places with low flooding and landslide risk. Result: very low risk (<10 MCHF)
	Flooding and/or landslides damage buildings and plants of our suppliers and service providers and the transport routes	Supply / service interruption and thus downtime of our plants. Loss of sales in the range of 1 BCHF. → significant risk	Careful selection and supervision of suppliers and service providers. Support for risk mitigation at their premises. Business Continuity Management. Result: low risk (<100 MCHF)
	Water polluted and not suitable for production	Water used in our production processes is already being cleaned by validated processes. Additional cost would be marginal.	Regular check of water quality. Result: very low risk (<10 MCHF)

Hazard	Scenario	Potential impact	Mitigation
Droughts	Shortage in water for manufacturing (reduced allowance)	<p>Higher cost for water in the range of 1 MCHF.</p> <p>Cost for transporting water to our plant by truck in the range of 10 MCHF.</p> <p>Delays in manufacturing: can be avoided.</p> <p>→ very low risk</p>	<p>Water recycling.</p> <p>Process optimization to reduce water consumption.</p> <p>Transport of water needed to our plant by truck.</p> <p>We would probably get priority by authorities for our life-saving medicines and diagnostics.</p> <p>Result: very low risk (<10 MCHF)</p>
	Wildfires damage our plants and offices (or those of our suppliers and service providers)	Business interruption with loss of sales of 100 MCHF and repair cost of 100 MCHF → low risk	<p>Business continuity management processes in place.</p> <p>Resumption of deliveries should be possible before patients run out of life-saving products.</p> <p>Dual sourcing.</p> <p>Careful selection of business critical suppliers and service providers.</p> <p>Result: low risk (<50 MCHF)</p>
Severe storms	Damage to infrastructure (buildings, plants, utilities)	Business interruption, production interruption: loss of sales up to 1 BCHF. Repair cost in the range of 50 MCHF → significant risk	<p>Storm-proof construction; preparation before storm.</p> <p>Business continuity management is in place.</p> <p>Result: low risk (<100 MCHF)</p>
	Damage to premises of suppliers and service providers and the transport routes	Same as under heavy rainfall (see above)	Same as under heavy rainfall (see above)

Hazard	Scenario	Potential impact	Mitigation
Strong regulation	The states relevant for our operations introduce CO ₂ taxes of 100 CHF per ton, with no mechanisms to distribute back the money or to avoid the taxes	With total CO ₂ emissions of ca. 1 Mt for scope 1, 2 and several scope 3 categories (including air travel) and an estimated twice this amount for the remaining scope 3 emissions (including purchased goods and services and investments which would become more expensive) this would result in additional costs of ca. 300 MCHF → high risk	Significant improvement of energy efficiency of our own operations. Substitution of fossil fuels with sustainable energies. Managing our procurement for lower CO ₂ "content" in scope 3 elements. Result: fairly small risk (ca. 100 MCHF)
	Ban of certain technologies (e.g. heating with fossil fuels) or materials (e.g. halogenated refrigerants) would force us to use more expensive alternatives	Reconstruction of utilities with cost in the range of 500 MCHF. Process changes with limited cost implications (<100 MCHF).	Pro-active utilization of sustainable technologies. We regularly replace SVHC ³ and are well underway to eliminate the halogenated refrigerants. Result: low risk (<100 MCHF)

Opportunities

A changing climate could also offer new business opportunities. We did a general analysis of corresponding opportunities. We don't see any significant opportunities due to climate change for our company short- to mid-term (5 – 15 years). Long-term the global pattern of diseases might change with the changing climate. This may lead to a need for more and others medicines and diagnostics which could offer opportunities for

³ SVHC = substance of very high concern according to the EU REACH regulation

our business to grow. The Roche internal taskforce will further evaluate these opportunities (2022).

Metrics and Targets

We have set strong and detailed goals and targets, including a goal to reduce our greenhouse gas emissions to real zero by 2050. See our website (www.roche.com) for more details.

We have a comprehensive set of key figures which we collect according to the GRI standard and report on our website and in the Roche Annual Report. The process for collecting the numbers and the results are verified by an independent external audit company (see our website).

Summary

Measures to mitigate the worst climate change related risks are in place and are managed professionally. Consequently the total value at risk is in the range of less than 500 MCHF (less than 1 % of our sales). The probability of one of the significant risks listed above materializing is estimated to less than once every ten years (worst case scenario). Thus **the risk value per year is less than 50 MCHF** and therefore **negligible**. **We don't see specific short- to mid-term business opportunities** for our company due to climate change.

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