

Task Force on Climate-related Financial Disclosures (TCFD) report 2023

Novartis started implementing the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in 2020, and reports on these annually.¹ We have established governance, strategy and risk management processes, as well as metrics, that align our approach to environmental sustainability to the TCFD recommendations.

In 2023, we further strengthened our quantitative assessment of climate-related risks and opportunities with additions, including medium emissions pathways, new risks and opportunities, and an analysis of the supply chain. We will continue to strengthen our disclosure on climate-related risks and opportunities in 2024, when the Swiss Climate Ordinance becomes effective.

Governance

Board oversight

Ultimate responsibility for our climate strategy lies with the Novartis Board of Directors. The Board has delegated certain duties and responsibilities related to climate change and environmental sustainability to some of its committees. The committees report back to the Board of Directors on their activities and findings.

The primary responsibility for the oversight of climate-related strategy and governance is held by the Governance, Sustainability and Nomination Committee (GSNC), which consists of five non-executive Board members. The GSNC's role with regards to sustainability is to:

- Oversee the company's strategy and governance on sustainability, including environmental sustainability
- Review and discuss the company's performance against relevant environmental, social and governance (ESG) reporting frameworks and indices at least once a year
- Review and discuss emerging trends with regards to sustainability
- Advise the Board and provide counsel to management on ESG matters (including climate)

In 2023, environmental topics, including climate, were brought to the attention of the GSNC four times, the Audit and Compliance Committee (ACC) four times, the Risk Committee once, and the full Board once. For the GSNC, this included an update from management on progress against targets (ESG scorecard, including climate-related targets) at each of its three regular meetings, and a discussion on the annual review of the environmental sustainability strategy. In addition, an education session was jointly organized by the GSNC and the ACC, with the full Board taking part, focusing on the evolving ESG regulatory landscape, including climate regulation.

In addition to the GSNC, several other Board committees have responsibilities that relate to environmental sustainability. The ACC is responsible for internal controls and all compliance processes and

procedures, including those related to climate. The Risk Committee oversees the company's risk management (including both physical and transition climate risk). The Compensation Committee determines how ESG topics (including climate) are incorporated into compensation plans for members of the Executive Committee of Novartis (ECN).

Eight members of the Board (61%) have competencies on ESG (including climate-related skills). We assess Board-level competence through criteria that include: (a) whether the respective Board member has comprehensive/expert understanding of ESG- and climate-related topics (educational background and professional experience); and (b) whether the respective

Main governance and management bodies with climate-related responsibilities



¹ This disclosure is based on the report 'Recommendations of the Task Force on Climate-related Financial Disclosures' (June 2017) and the annex 'Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures' (October 2021), and follows both cross-sectoral and sector-specific recommendations, as well as the 'Guidance on Metrics, Targets, and Transition Plans' (October 2021)

Board member has led an organization to adopt ESG and climate goals or shape external sustainability leadership initiatives (personal achievements).

Management oversight

The Chief Executive Officer (CEO) leads the ECN and is responsible for implementing the environmental sustainability strategy and the company's climate, water and waste targets. The CEO chairs the ECN-level ESG Committee, which meets every two months to oversee ESG performance and make decisions in key ESG areas where needed. At each meeting, the ESG Committee is informed both on the progress against climate and other targets, and readiness for upcoming regulatory requirements (including climate regulation), in addition to receiving updates on selected topics. In 2023, topics discussed by the ESG Committee included our transition path to net zero, progress on our ESG performance, opportunities to optimize the implementation of our ESG strategy, and upcoming ESG-related regulatory requirements.

Reporting to the CEO, the President, Operations, is responsible for leading the delivery of environmental sustainability targets and for the operational aspects of reaching the companywide 2025, 2030 and 2040 climate targets.

Within our Operations organizational unit, the Environmental Sustainability Operations team handles the implementation of the strategy, including our pathway to net zero, through operational projects and corresponding budgeting.

The Chief Ethics, Risk & Compliance (ERC) Officer, who is also a member of the ECN, is responsible for ensuring climate risk is integrated into our Enterprise Risk Management (ERM) processes. The Chief ERC Officer reports quarterly to the Risk Committee, including on climate-related physical and transition risks as appropriate.

Additionally, the Head of Corporate Affairs, a permanent guest of the ECN and direct report to the CEO, oversees the company's Global Health and Sustainability team, which is responsible for integrating ESG matters into the overall business.

Within this team, the Sustainability and ESG Office (SEO) coordinates ESG initiatives across the company and oversees the development of the Novartis ESG strategy, including the environmental sustainability strategy, as well as the company's ESG-related external and internal engagement. It works across departments to address regulatory and ESG rating requirements, of which climate requirements represent a large part.

The SEO serves as the secretariat for the CEO-chaired ESG Committee and reports on a number of topics at each meeting. Climate-related topics were discussed at five of six meetings in 2023. Additionally, the SEO organizes quarterly meetings of the ESG Leaders Forum, whose members report to the ECN and are responsible for co-creating the ESG strategy. The SEO works on cross-functional projects to integrate climate actions within the organization.

Link to compensation

The CEO has five equally weighted strategic objectives across key priority areas, including targets related to ESG matters. Performance against these strategic objectives accounts for 40% of the CEO's total annual incentive (60% depend on financial performance measures related to the company). Environmental sustainability is included within the strategic objective 'Strengthen foundations (ESG/Human Capital)'. This includes performance against the company's absolute emissions reduction targets and other environmental sustainability targets. See the [Novartis in Society Integrated Report 2023](#) (NiS report) for information on our 2023 performance and the related compensation outcomes.

Performance measures for other members of the ECN include emissions reduction targets where relevant for their area of responsibility. See the [Annual Report 2023](#) for more details on the executive remuneration policy and 2023 compensation.

Strategy

Our governance structure is designed to integrate climate topics into our strategy, business model and financial planning process. Climate risks and opportunities are a core part of a five-year ESG strategy roadmap endorsed by the ESG Committee. Key 2023 projects include our net-zero transition plan (see [page 9](#)), strengthening our Scope 3 data accounting and reporting, evaluating our strategy for biodiversity, and implementing new

regulatory requirements on climate reporting.

Financial planning

Novartis applies a carbon shadow price of USD 100/tCO₂e in decisions on strategic capital expenditure. This price is reviewed annually. In addition, all capital expenditure over USD 20 million requires an environmental sustainability assessment to determine its potential impact on the climate and/or the organization's exposure to climate risks. Some parts of the organization apply lower thresholds — for instance, USD 5 million for manufacturing capital expenditure.

Beyond the shadow price of carbon, we factor climate change risks and opportunities into our financial planning by means of budgeting to achieve our climate targets. In 2023, Novartis deployed capital expenditure of USD 25.5 million on environmental projects to reduce consumption of natural resources, improve energy efficiency, and adopt renewable energy solutions across our operations. This spending is aligned with our long-term target for net-zero emissions by 2040, and our short-term target for carbon neutrality in our own operations by 2025.

Climate resilience

We conduct an annual climate scenario analysis to assess climate-related risks and opportunities (CRROs). In 2023, we selected our CRROs (four physical risks, three transition risks and two transition opportunities) from a list of risks and opportunities based on: our previous assessments (comprising 50+ risks and opportunities selected following a review

of scientific literature); benchmarking with other healthcare companies; and screening across both acute and chronic physical risks using Munich Re's Location Risk Intelligence climate tool. The analysis was discussed in workshops with relevant internal stakeholders to ensure it is most relevant to our sites and day-to-day operations.

In 2023, we further strengthened the process in the following areas, in accordance with best practice guidance:

- **Medium emissions pathways:** We enhanced our analysis with the Intergovernmental Panel on Climate Change's (IPCC) SSP2-4.5 scenario for physical risk, and the International Energy Agency's (IEA) Announced Pledges Scenario for transition risk.
- **Site coverage:** For physical risks to our own operations, we expanded site coverage to all manufacturing sites, excluding only radioligand therapy manufacturing sites. We plan to further expand site coverage in future TCFD analyses. For transition risks and opportunities, the coverage also includes our R&D labs and commercial offices.
- **Suppliers:** For selected CRROs, we calculated how we may be affected by climate change through our upstream supply chain.¹ We expanded physical risk exposure assessments to our manufacturing suppliers, as the

continuation of our production processes depends on the timely delivery of key materials. We included Scope 3 emissions in the assessment of our carbon pricing transition risk, as more than 90% of carbon emissions associated with our business are generated outside our own operations. Expanding the scope of our assessment to include suppliers allows us to build a more resilient supply chain and be aware of our suppliers' potential exposure to climate risks.

- **Abatement:** For selected CRROs, we modelled the exposure of our own operations and then compared this against a scenario in which we invest in risk mitigation actions in line with our targets.
- **Additional CRROs:** We added CRROs to our disclosure based on risk screening and peer benchmarking. Additional CRROs included wildfire, sea level rise², and changing demand for healthcare. When we modelled risk exposure to wildfire and sea-level rise, however, a very low number of sites were affected and the financial impact was deemed immaterial.³

To conduct our analysis, we used the scenarios listed on [pages 5](#) and [7](#), based on data from the IPCC and the IEA.

We typically assess all risks and opportunities on a short-, medium- and long-term basis and define these as:

- **Short-term:** until 2025, covering our carbon-neutrality target for Scopes 1 and 2 from energy
- **Medium-term:** between 2026 and 2030, covering our near-term target across Scopes 1, 2 and 3
- **Long-term:** from 2031 to 2050, covering our long-term net-zero target (2040), as well as the upper end of our scenario analysis (2050)

For the quantitative scenario analysis, we assessed physical risks on a 2030 and 2050 time horizon, in line with IPCC scenarios, and transition risks and opportunities on a 2030, 2040 and 2050 horizon, in line with IEA scenarios.

Results from our 2023 scenario analysis show that: (a) climate change potentially presents both risks and opportunities for Novartis; and (b) the company's current

strategy and financial position remain resilient to the possible impacts of climate change. The results also show that meeting our targets on emissions reductions, energy use and the circular economy can substantially lower our risks and increase our opportunities.

Financial quantification

The financial ranges that we apply to determine substantive impact for the aggregate climate risk are less than 1% (Insignificant), 1-1.5% (Minor), more than 1.5–2% (Moderate), more than 2–3% (Major) and more than 3% (Severe) of sales.⁴ For the analysis of individual climate hazards in the scenario analysis, a substantive financial impact of more than 1% on the corresponding line item in the financial statement has been used.⁵ Only carbon pricing was found to be over the 1% threshold in a worst-case scenario for 2050 (SSP5-8.5).⁶

Total potential physical and transition risk impact (own operations)

	<u>2030</u>	<u>2050</u>
Sales loss potential	USD 43 – 89 million	USD 93 – 149 million
Operating cost increase potential ⁷	USD 26 – 69 million	USD 34 – 161 million
Asset value at risk	USD 2.8 – 2.9 million	USD 2.8 – 3.0 million

Total potential transition opportunity impact (own operations)

Sales increase potential ⁸	USD -7 – 31 million	USD 33 – 240 million
Operating cost savings potential	USD 6 – 39 million	USD 29 – 59 million

¹ In our first year of modelling the supply chain exposure to physical risks, we included all manufacturing suppliers (around 180 sites across 35 countries), and for the carbon pricing transition risk we focused on Scope 3 categories 1, 2 and 4.
² More frequent and severe wildfires may cause serious damage to infrastructure and equipment and block key access routes, while coastal flooding caused by sea level rise may submerge and damage infrastructure and equipment, as well as disrupt logistics.
³ While the impact on our own sites was deemed immaterial overall, we found manufacturing suppliers for Novartis are partly exposed to these risks, which are included in the combined physical risk exposure of these suppliers (see graph [page 6](#)).
⁴ To determine the overall risk classification, ERM also considers nonfinancial factors, such as reputational or regulatory impacts.

⁵ Results of the financial quantification were assessed against net sales to third parties, cost of goods sold, and total property plant and equipment, as disclosed in our Annual Report/Form 20-F.
⁶ Assuming no abatement measures are implemented related to operating cost impact potential. With abatement measures in place, in line with our environmental sustainability strategy, no substantive impact is observed.
⁷ Assumes no abatement measures are in place (i.e., it excludes existing abatement measures in place, including measures to address the carbon pricing risk).
⁸ Excluding impact from Global Health pipeline due to differences in methodology (impact per USD million of potential future sales). See [page 8](#).

Physical risks

Scenarios for physical risk analysis ¹	Low emissions pathway: IPCC SSP1-2.6 (central estimate for temperature rise by 2100 +1.8°C)	Medium emissions pathway: IPCC SSP2-4.5 (central estimate for temperature rise by 2100 +2.7°C)	High emissions pathway: IPCC SSP5-8.5 (central estimate for temperature rise by 2100 +4.4°C)
Time horizon	2030, 2050		
Data sources	Intergovernmental Panel on Climate Change (IPCC), Munich Re's Location Risk Intelligence climate tool, Climate Impact Explorer, and internal data		
Coverage and assumptions	All manufacturing sites excluding those for radioligand therapy; around 180 Novartis manufacturing suppliers across 35 countries (supply chain exposure) – results show % supplier spend exposed to very high risk. ² The model assumes no mitigation or adaptation measures are in place, except where otherwise indicated. For the supply chain, the model assumes supplier portfolio and spend remain unchanged. Acute risks refer to event-driven risks, while chronic risks refer to longer-term shifts in climate patterns.		

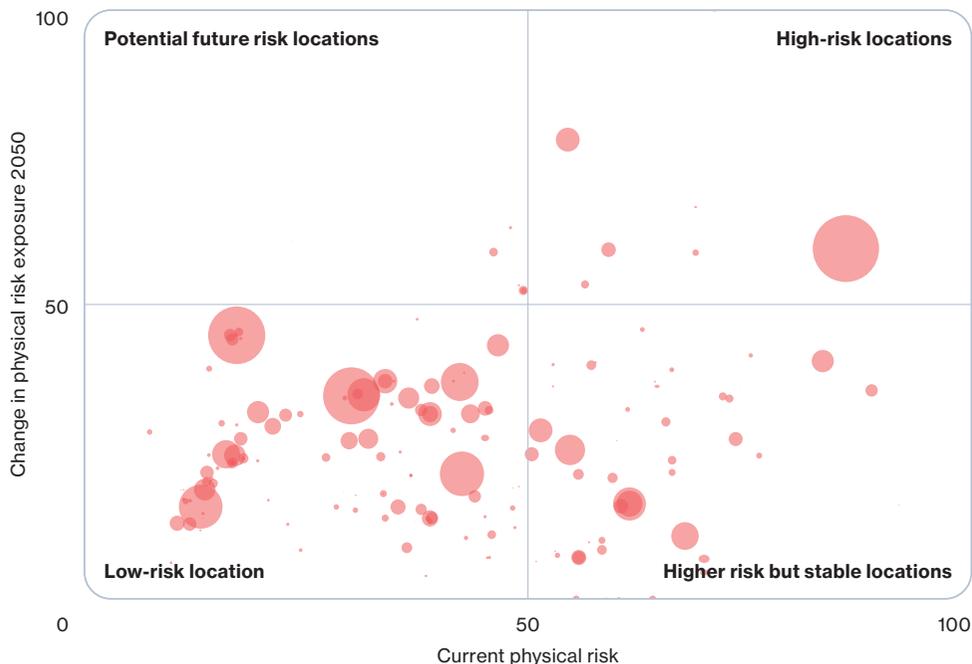
Physical risk	Description and approach	Potential financial impact in 2030	Potential financial impact in 2050	Risk treatment
Chronic Flood and precipitation	<p>Increased flooding or heavy rainfall could lead to disruption or delays in manufacturing processes (e.g., through property and infrastructure damage or repairs, fresh-water availability etc.) and interruptions in the supply and distribution of products.</p> <p>To calculate potential financial impact to operations, we estimated the additional number of days of business interruption expected based on projected changes in maximum rainfall over five days in combination with flash flood hazard-zone mapping.</p> <p>For river flood risk we also applied annual Climate Expected Loss (CEL)³ rates to net asset values for each site to estimate the expected loss per year due to physical damage to buildings (asset value at risk).</p>	<p>Own operations (sales loss potential) USD 19 – 39 million</p> <p>Own operations (asset value at risk)⁴ USD 2.7 – 2.8 million</p> <p>Manufacturing supply chain spend exposed to very high risk Precipitation stress: 27.3 – 27.5% River flood: 25.4 – 25.6%</p>	<p>USD 53 – 78 million</p> <p>USD 2.7 – 2.9 million</p> <p>Precipitation stress: 31.6 – 31.9% River flood: 25.3 – 25.4%</p>	<p>We are implementing water management practices to reduce the risk of flooding, such as constructing retention basins, installing rain gardens and improving stormwater drainage.</p>
Water stress and drought	<p>Water stress and drought could impact sales, should they lead to temporary site closures. Higher water costs, lower efficiency or a shutdown of water-intensive production processes caused by such events could also impact sales.</p> <p>We used Consecutive Dry Days (CDDs) sourced from the IPCC Working Group I (WGI) Atlas, and an estimate of daily revenue at site level. We assumed a number of business interruption days linked to the projected increase in CDDs, and calculated the financial impact by multiplying average daily site revenue by the additional number of days of business interruption expected.</p>	<p>Own operations (sales loss potential) USD 8 – 12 million</p> <p>Manufacturing supply chain spend exposed to very high risk 0.6 – 0.8%</p>	<p>USD 15 – 19 million</p> <p>0.6 – 11.1%</p>	<p>Sites have water management programs that include measures for reusing, recycling and storing water. We have targets to reduce water consumption by half by 2025 and become water neutral in our own operations by 2030.</p> <p>Environmental sustainability criteria are being integrated into supply contracts (with the goal to cover all suppliers by 2025). Suppliers are expected to implement action plans with mechanisms to monitor and report on progress, mitigate risks and remediate failures. We aim to co-create sustainability roadmaps with key suppliers to understand their environmental sustainability plans.</p>
Extreme heat	<p>Extreme heat could increase operating costs by augmenting our cooling needs and energy consumption to ensure processes and equipment operate efficiently. Among other things, increases in heat waves may cause illnesses such as heatstroke, reduce labor productivity, and impact supply chains through increased stress on cold-chain logistics.</p> <p>To calculate the potential financial impact to operations, we used the change in cooling degree days as a proxy for the increased demand to cool an environment.</p>	<p>Own operations (operational cost increase potential) USD 7 – 8 million</p> <p>Manufacturing supply chain spend exposed to very high risk 6.3 – 6.4%</p>	<p>USD 10 – 19 million</p> <p>6.4 – 7.9%</p>	<p>We have an active energy management system to optimize energy consumption based on site-specific requirements. We are also implementing energy-efficiency initiatives across our operations to reduce energy demand. Some of the key initiatives include optimizing heating, ventilation and air conditioning, proactive maintenance for chillers, upgrading to energy-efficient equipment, and improving building insulation. We are creating shaded areas using trees and other structures to provide relief from direct sunlight.</p>
Acute Tropical cyclones	<p>Tropical cyclones could cause interruptions at our sites (e.g., property damage, equipment repairs) or disruption in the supply chain such as across transport networks (e.g., delaying delivery of raw materials to sites or finished products).</p> <p>To calculate the potential financial impact to operations, we estimated the additional number of days of business interruption expected based on projected changes in annual damage from tropical cyclones.</p> <p>Separately, we also applied annual CEL³ rates to net asset values for each site to estimate the expected loss per year due to physical damage to buildings (asset value at risk).</p>	<p>Own operations (sales loss potential) USD 12 – 25 million</p> <p>Own operations (asset value at risk)⁴ USD 0.06 – 0.07 million</p> <p>Manufacturing supply chain spend exposed to very high risk 1.3 – 2.6%</p>	<p>USD 25 – 33 million</p> <p>USD 0.06 – 0.07 million</p> <p>1.3 – 2.7%</p>	<p>We have a resilient supply chain with a broad geographic footprint, dual supply for key products, and adequate inventory level / stock policies. Our sites have physical infrastructure mitigation in place (e.g., shelters, flood defenses, building insulation, back-up generators), supported by administrative procedures (e.g., emergency response / business continuity plans).</p>

¹ Low emissions pathway, SSP1-2.6: Stays below 2.0°C warming relative to 1850-1900 (median) with implied net-zero greenhouse gas emissions in the second half of the century; Medium emissions pathway, SSP2-4.5: Scenario approximately in line with the upper end of aggregate Nationally Determined Contributions emissions levels by 2030; High emissions pathway, SSP5-8.5: A high reference scenario with no additional climate policy where greenhouse gas emissions roughly double from current levels by 2050.

² Calculation based on a total manufacturing supply chain spend of USD 2.6 billion. Risk scale ranged across five levels, from very low to very high.

³ Climate Expected Loss (CEL), also known as average annual loss, is the expected loss per year due to physical damage to buildings and their contents due to specific natural hazard events. Data is sourced from Munich Re's tool, which combines its natural catastrophe models with asset vulnerability assumptions calibrated using historical losses.

⁴ Based on net book values.



Physical risk exposure of our manufacturing suppliers (currently vs 2050 under the SSP5-8.5 scenario)

Exposure weighted by supplier spend

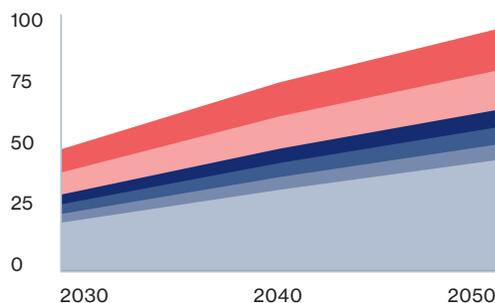
The graph shows how the physical risk exposure of around 180 Novartis manufacturing suppliers might change in a worst-case emissions scenario. Each supplier location has been assigned a physical risk score from 0 to 100. The horizontal (X) axis shows the current score, while the vertical (Y) axis shows the difference between the current score and the score in 2050 under a worst-case emissions scenario. The size of each bubble corresponds to the share of Novartis spending with the respective supplier.

Spotlight: Carbon pricing

Carbon pricing is one of our transition risks. The risk is concentrated in a few jurisdictions and can be substantially mitigated through emission reductions. As shown in the graph opposite, carbon costs from the five most important jurisdictions – the US, Austria, UK, Slovenia and Switzerland – are higher than from the rest of the world, which comprises 68 jurisdictions where we have Scope 1 and/or 2 emissions. Focusing on abatement in these jurisdictions can more than halve our costs, and abatement can generally lower our risks substantially. If we reduce Scope 1 and 2 emissions in line with our current targets, our global exposure to potential carbon costs under the high emissions pathway (IEA Stated Policies Scenario) is expected to decrease from USD 91 million to USD 7 million in 2050.

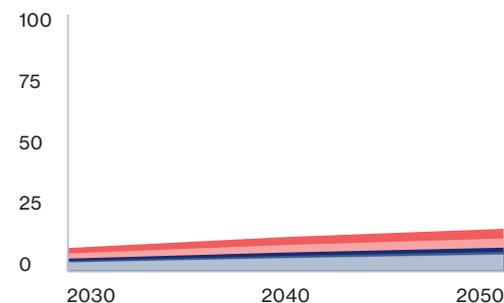
Unabated Scope 1+2 carbon costs under IEA Net Zero Emissions by 2050

USD millions



Abated Scope 1+2 carbon costs under IEA Net Zero Emissions by 2050

USD millions



● United States ● Austria ● United Kingdom ● Slovenia ● Switzerland ● Rest of world

Transition risks

Scenarios for transition risks and opportunities analysis ¹	Low emissions pathway: IEA Net Zero Emissions by 2050 (peak temperature rise +1.4°C)	Medium emissions pathway: IEA Announced Pledges Scenario (peak temperature rise +1.7°C)	High emissions pathway: IEA Stated Policies Scenario (peak temperature rise +2.5°C)
Time horizon	2030, 2040, 2050		
Data sources	IEA, IPCC WGI Interactive Atlas database, Climate Impact Explorer, Institute for Health Metrics and Evaluation's Global Burden of Disease database and other scientific literature, and internal data.		
Coverage and assumptions	Includes all sites for our own operations, and key suppliers contributing to Scope 3 emissions for category 1 (purchased goods and services), category 2 (capital goods) and category 4 (upstream transportation and distribution). The model assumes no mitigation or adaptation measures are in place, except where otherwise indicated.		

Transition risk	Description and approach	Potential financial impact in 2030	Potential financial impact in 2040	Potential financial impact in 2050	Risk treatment
Carbon pricing	<p>Carbon prices – in the form of emissions trading or carbon taxes – are likely to increase further in major operating and supplier countries, which may increase operating costs.</p> <p>Carbon prices from the IEA were applied to our Scope 1, 2 and 3 emissions (see 'Coverage and assumptions' in table header). For Scope 2 and 3 emissions, an additional cost pass-through rate² was used to determine the share of carbon costs that could affect our profits.</p>	<p>Own operations (operational cost increase potential without emission reductions)</p> <p>USD 19 – 46 million</p> <p>Own operations (operational cost increase potential with emission reductions in line with our targets)</p> <p>USD 2 – 4 million</p> <p>Supply chain (operational cost increase potential without emission reductions)</p> <p>USD 25 – 92 million</p> <p>Supply chain (operational cost increase potential with emission reductions in line with our targets)</p> <p>USD 13 – 46 million</p>	<p>USD 21 – 71 million</p> <p>USD 2 – 5 million</p> <p>USD 30 – 145 million</p> <p>USD 3 – 15 million</p>	<p>USD 24 – 91 million</p> <p>USD 2 – 7 million</p> <p>USD 36 – 182 million</p> <p>USD 4 – 18 million</p>	<p>We have a target to achieve net-zero emissions by 2040 and a transition plan to reach this target. We plan to reduce our energy demand by adopting new and advanced manufacturing technologies. At the same time, we are transitioning to clean energy solutions. For example, we already source 100% of our electricity in the US, Canada and the EU from renewable sources.</p> <p>This risk would likely impact us indirectly through higher overall costs passed through from our upstream suppliers. We focus our engagement on emissions with suppliers on the reduction of our Scope 3 emissions.</p>
Net-zero healthcare	<p>Many countries in which we operate have ambitious national net-zero targets. Failing to decarbonize in line with these targets may threaten our license to operate in these countries, potentially affecting our financial performance.</p> <p>To calculate this CRRO, we looked at countries accounting for ≥0.1% of 2022 sales (61 countries with combined sales of USD 40.6 billion) and identified those with net-zero targets in line with or more ambitious than our own. We multiplied current sales in these countries by percentage assumptions on the share affected by the regulation, which we assumed to become increasingly stringent over time (a lower range was used for countries with targets in line with our own).</p>	<p>Own operations (sales loss potential)</p> <p>USD 4 – 13 million</p>	<p>USD 13 – 59 million</p>	<p>USD 0 – 19 million</p>	<p>We have a target to achieve net-zero emissions by 2040 and a transition plan to reach this target. Currently, our risk exposure is to one jurisdiction. We continue to monitor the publication of national net-zero targets as part of our annual TCFD analysis.</p>
Change in input material prices	<p>Many materials face additional costs from increased regulation to reduce waste, pollution and energy consumption, particularly plastics. Projected dwindling supply of virgin plastics, together with targeted policy intervention, are expected to increase upward pressure on plastics prices. This could lead to an increase in input costs for Novartis in packaging operations.</p> <p>To calculate this CRRO, we assumed that plastics used for primary packaging are hit by a global plastic tax. Depending on the scenario, the tax starts at the level of the UK plastic tax and rises either (a) in line with carbon prices; or (b) to reach the societal costs of plastic by 2050 as estimated by the World Wide Fund for Nature (WWF). The model assumes that the use for primary packaging remains constant.</p>	<p>Own operations (operational cost increase potential)</p> <p>USD 0.2 – 15 million</p>	<p>USD 0.3 – 33 million</p>	<p>USD 0.4 – 51 million</p>	<p>Our 2025 target is to eliminate PVC in secondary and tertiary packaging.</p> <p>By 2030, we additionally aim to ensure all new products meet sustainable design principles.</p>

¹ Low emissions pathway, IEA Net Zero by 2050 Scenario (NZE): Describes how energy demand and the energy mix will need to evolve if the world is to achieve net-zero emissions by 2050; Medium emissions pathway, IEA Announced Pledges Scenario (APS): Assumes that all climate commitments made by governments around the world, including Nationally Determined Contributions (NDCs) and longer-term net-zero targets, will be met in full and on time; High emissions pathway, IEA Stated Policies Scenario (STEPS): Reflects current policy settings based on a sector-by-sector assessment of the specific policies that are in place, as well as those that have been announced by governments around the world. For selected CRROs, such as change in input material prices and changing demand for healthcare, additional scenarios were constructed to supplement existing climate scenarios.

² The cost pass-through rate determines what share of carbon costs is passed through from the supplier to Novartis. A cost pass-through of 100% means that the supplier raises the price by exactly the amount of the carbon cost. A lower rate implies that the supplier absorbs some of the costs through a lower profit margin and only passes on a fraction of the carbon costs to Novartis.

Transition opportunities

Transition opportunity	Description and approach	Potential financial impact in 2030	Potential financial impact in 2040	Potential financial impact in 2050	Risk treatment
Energy cost reductions	<p>Prices for electricity generated from renewable energy are lower than those from fossil-fuel energy, and are expected to fall further. This may result in lower operating costs from electricity use, either through lower market prices, cheaper Power Purchase Agreements (PPAs) or on-site renewable energy generation.</p> <p>To calculate this CRRO, changes in different electricity technology costs over time were applied to the respective electricity grid mix in each climate scenario. A separate scenario calculated the cost changes under a 100% renewable electricity mix, in line with our target. The changes over time were then applied to our current spend on electricity.</p>	<p>Own operations (electricity cost decrease potential)</p> <p>USD 6 – 39 million¹</p> <p>In line with our plans, a switch to 100% renewable energy might shift the decrease potential to USD 63 – 64 million.</p>	N/A	<p>USD 29 – 59 million¹</p> <p>In line with our plans, a switch to 100% renewable energy might shift the decrease potential to USD 68 – 69 million.</p>	We plan to transition to 100% renewable electricity by end-2025 in line with our RE100 commitment. We already reduced Scope 2 emissions by 89% between 2016 and 2023, and are currently using 100% renewable electricity in the US and Europe.
Changing demand for healthcare	<p>Climate change is likely to impact the prevalence and level of severity of certain health conditions and diseases.</p> <p>To calculate this CRRO, we focused on health conditions affected by climate-related environmental factors (e.g., cardiovascular diseases, respiratory conditions, lung cancer or malaria). We estimated the potential impact on future sales attributable to climate-related factors, including temperature rise and air pollution. For this calculation, we assumed geographical distribution and market share remain constant over time.</p> <p>For products in the pipeline designed to address tropical diseases, including malaria and dengue, we modelled potential future sales impacts per USD 1 million of sales.</p>	<p>Own operations (sales increase/decrease potential) – Commercial products²</p> <p>USD -7 – 31 million</p> <p>Own operations (sales increase/decrease potential) – Global Health pipeline (per USD million of potential future global sales)</p> <p>Malaria USD 0.3 million</p> <p>Dengue USD -0.2 – 0.6 million</p>	<p>USD 52 – 180 million</p> <p>USD 0.5 – 0.6 million</p> <p>USD -0.3 – 1 million</p>	<p>USD 33 – 240 million</p> <p>USD 0.8 – 0.9 million</p> <p>USD -0.5 – 3 million</p>	These results feed into an existing, strategy-led workstream that explores the potential implications of climate change for our current and potential future portfolio of medicines (see the NiS report).

¹ If the electricity mix resembles the electricity grid's energy supply mix.

² As a basis for the financial modelling, six commercial products were used as a proxy to assess the opportunity in future time periods.

Risk management

The results of our quantitative and qualitative scenario analyses feed directly into the ‘Climate change’ risk that is managed as part of our annual Enterprise Risk Management process (see the [NiS report](#)). It is an aggregate view of our individual physical and transition CRROs, assessed as likely to occur within the next five years and having a minor impact overall.

Climate change is also captured under ‘Environmental, social and governance matters,’ a strategic risk for Novartis. It is defined as a failure to meet ESG expectations, including, among others, the failure to comply with climate-related regulations.

We are taking action to mitigate our exposure to CRROs and our impact on the

environment. Our actions are consistent with our ambition to limit global warming to 1.5°C. They are regularly monitored during the annual ERM cycle, and their effectiveness reviewed as part of the annual risk assessment process.

All risks, including climate change, are consolidated into the Novartis Risk Compass, where they are categorized as strategic, operational or emerging. Potential future risks are classified as awareness topics. Climate change is categorized as an emerging risk.

Metrics and targets

We have a long-term target to become net zero across our value chain by 2040, which is aligned with ambitions to limit the global rise

in temperature to 1.5°C compared with the pre-industrial era. We have interim targets to mark progress toward our net-zero goal. We have a near-term target approved by the Science Based Targets initiative (SBTi).¹ Separately, we have committed to reach carbon neutrality by 2030 across Scopes 1, 2 and 3. Our 2025 target is to become carbon neutral in our own operations from energy (Scopes 1 and 2). For an overview of our targets, including those related to water and waste, see the [NiS report](#).²

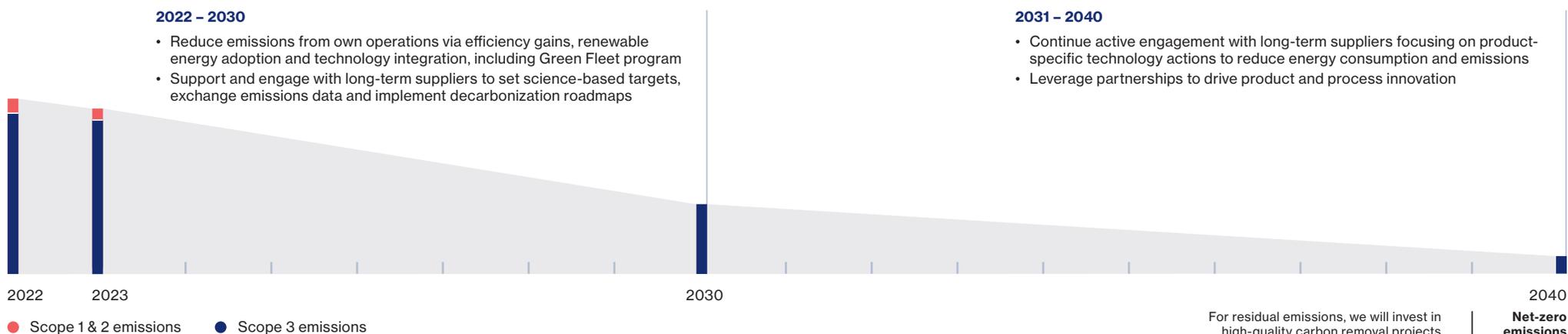
We measure progress against targets using changes in climate-related indicators such as Scope 1, 2, and 3 emissions, in line with ‘Guidance on Metrics, Targets and Transition Plans’ (October 2021 version). These indicators can be found in the environment performance indicators table in the [NiS report](#), along with other

indicators relevant to our climate-related risks and opportunities on water, waste and energy.

We have established a clear transition plan to achieve our long-term and interim targets, and are on course with its implementation. We have reduced our Scope 1 emissions by 30% since 2016 by implementing energy efficiency and other technology-based solutions. We have reduced Scope 2 emissions by 89% since 2016 by shifting to 100% renewable electricity in North America (US and Canada) and Europe (RE100 market boundary) through our virtual Power Purchase Agreements. We have defined the necessary activities to achieve net zero by 2040 (see illustration below). We plan to make limited use of high-quality carbon removal offsets to compensate unabated emissions in line with SBTi guidance.

Our path to net zero

In 2021, we committed to a target of net-zero greenhouse gas emissions across our value chain by 2040. We are also in the process of updating our near-term target for 2030, in accordance with the latest SBTi Corporate Net-Zero Standard. We have submitted the targets to SBTi and expect their validation in 2024.



¹ Approved by the SBTi in March 2019. In line with our commitment made in 2021 to achieve net-zero emissions by 2040, we have submitted, and are in the process of validating, an updated near-term carbon reduction target for 2030, in accordance with the latest SBTi Corporate Net-Zero Standard. We expect to have validated targets in 2024.

² For Scope 1 and 2 emissions, other air emissions, energy use, water use and waste where Novartis has operational control, we apply the operational control boundary as per the Greenhouse Gas Protocol. For other environmental, social and governance indicators, we use the same boundary as for the consolidated financial statements presented in our Annual Report 2023.