

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Novartis is reimagining medicine to improve and extend people’s lives with a vision to become the most valued and trusted medicines company in the world. As a leading global medicines company, we use innovative science and digital technologies to create transformative treatments in areas of great medical need. In our quest to find new medicines, Novartis ranks among the world’s top companies investing in research and development. About 106,000 people of more than 140 nationalities work at Novartis around the world. Novartis products reach nearly 800 million people globally and we are finding innovative ways to expand access to our latest treatments. Our products address most major disease areas and are sold in approximately 155 countries around the world. Our manufacturing facilities produced 72 billion treatments in 2020.

Novartis is structured to deliver innovative products, operate on a global scale, and respond to new opportunities and risks. Our divisions - Innovative Medicines and Sandoz - are supported by functional organizations with global scale. Made up of two business units – [Novartis Pharmaceuticals](#) which includes [Novartis Gene Therapies](#), and [Novartis Oncology](#) – our Innovative Medicines Division commercializes innovative patented medicines to enhance health outcomes for patients and healthcare professionals. Sandoz is a global leader in generic pharmaceuticals and Biosimilars that pioneers novel approaches to help people around the world access high-quality medicines.

Novartis is comprised of several organizational units. The Novartis Institutes for BioMedical Research (NIBR) is the research arm of Novartis. NIBR focuses on discovering new drugs that can change the practice of medicine. The Global Drug Development (GDD) organization oversees the development of new medicines discovered by our researchers and partners. Novartis Technical Operations (NTO) is responsible for making our innovative medicines, devices, and Sandoz products and delivering them to our customers across the world. Novartis Business Services (NBS) now known as Customer & Technology Solutions (CTS) consolidates support services across our organization, helping drive innovation, efficiency, simplification, standardization and quality. Other corporate functions support the enterprise in specific areas of expertise, including finance, human resources, legal, and communications.

Our purpose is to reimagine medicine to improve and extend people's lives. Our strategy is to build a leading, focused medicines company powered by advanced therapy platforms and data science. As we implement this strategy, we have five priorities to shape our future and to help us continue to create value for our patients, company, shareholders and society: unleash the power of our people, deliver transformative innovation, embrace operational excellence, go big on data and digital, and build trust with society.

In building this trust, we aim to hold ourselves to high ethical standards, be part of the solution on pricing and access to medicines, tackle complex global health challenges, and be a responsible citizen, addressing complex societal challenges such as water quality, waste and climate change. We aim to be a leader in environmental sustainability and a catalyst for change. We established a new company wide environmental sustainability strategy in 2018, with goals to become carbon neutral in our own operations by 2025, carbon neutral across our supply chain by 2030 and plastic and water neutral by 2030.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

| | Start date | End date | Indicate if you are providing emissions data for past reporting years | Select the number of past reporting years you will be providing emissions data for |
|----------------|----------------|------------------|---|--|
| Reporting year | January 1 2020 | December 31 2020 | No | <Not Applicable> |

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Austria
Bangladesh
Belgium
Brazil
Canada
China
Egypt
France
Germany
India
Ireland
Italy
Japan
Mexico
Poland
Russian Federation
Singapore
Slovenia
South Africa
Spain
Switzerland
Turkey
United Kingdom of Great Britain and Northern Ireland
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

| Position of individual(s) | Please explain |
|------------------------------------|--|
| Board Chair | The Board of Directors is led by the Chairman of the Board and is responsible for setting the strategic direction of the Novartis Group. The Board met 10 times in 2020 with each meeting lasting approximately 5 hours. Environmental sustainability including climate is considered in the 5 company priorities which are set by the Board. In 2017, the Board requested that the company revisit its environmental strategy to see if more ambition was possible. In 2018, the Board reviewed and endorsed our new environmental sustainability strategy, which set ambitious new water sustainability targets, and goals for our business. Our Scope 3 emissions target was updated in 2020. Our climate targets, as per the Board of Directors decision in 2020, now specifically include to become carbon neutral in own operations by 2025. In addition by 2030, we aim to be carbon neutral across our entire value chain, including Scope 1, 2 and 3 emissions. Climate issues were identified as emerging risks and reported to the Board in 2020. Climate is now included as a strategic risk as part of an overall Environment, Social and Governance risk portfolio. |
| Chief Executive Officer (CEO) | The CEO leads the Executive Committee of Novartis (ECN), thus has the ultimate responsibility to approve the environmental sustainability strategy, climate and water targets and goals. The CEO can take action to accelerate implementation to respond to external expectations or business needs. The ECN meets each month. It approves annual budgets and sets business priorities, oversees and approves major capital expenditures, acquisitions and divestitures, and it tracks progress against goals and targets for addressing environmental sustainability which includes climate. Performance is reported annually in our Novartis in Society Report. The Novartis Trust & Reputation Committee (TRC) met six times in 2020. Chaired by our CEO, this sub-committee of the Executive Committee of Novartis (ECN) oversees progress and aims to accelerate decision-making in key ESG areas. Topics discussed in 2020 included potential gaps in our ESG performance, new ESG commitments, the environmental sustainability strategy, and diversity and inclusion. The CEO's involvement enables the Novartis climate strategy to be balanced with other business priorities and ensures that sufficient resources are in place to execute plans in support of the strategy. The CEO can take action to accelerate our responses to external expectations or business needs. An example of a specific climate-related decision made by the CEO was to move forward with a Pan-European Virtual Power Purchase Agreement to eliminate Novartis Scope 2 emissions from procured electricity in Europe, and update our targets in 2020 to commit to carbon neutrality across our entire value chain by 2030. |
| Board-level committee | The Board delegates certain duties and responsibilities to its five committees: The Audit and Compliance committee oversees internal control and compliance processes and procedures. The Compensation Committee, designs, reviews and recommends compensation policies and programs. The Governance, Nomination and Corporate Responsibilities Committee (GNCR) oversees the company's strategy and governance on corporate responsibility. The Science & Technology Committee advice on scientific, technological and R&D matters. The Risk Committee oversees the company's risks across a wide range of possible topics. These committees are responsible for identifying and investigating issues of strategic importance and ensuring that they are appropriately managed. Climate related issues are balanced in these committees with other business priorities as part of the company's 5 priorities. Climate risks are reviewed by the Audit and Compliance Committee and the Risk Committee as part of the Enterprise Risk Management System, and are reviewed by the GNCR as part of the environmental sustainability portfolio. The Audit and Compliance Committee met 8 times in 2020, the Risk Committee met 4 times in 2020 and the Governance, Nomination and Corporate Responsibilities Committee met 4 times in 2020. |
| Chief Sustainability Officer (CSO) | In 2020, Novartis created the position of CSO, who reports to a member of the Executive Committee of Novartis (ECN), to lead the strategy and execution of environmental sustainability across the company. Four strategic objectives were identified and are led by the CSO: 1) To be a leader in environmental sustainability 2) Sustainable products delivered to our patients 3) A mind-set of sustainability embedded in the way we operate 4) A strong voice influencing the sustainability agenda. The CSO also leads the existing governance processes at the Environmental Sustainability Strategy Implementation (ESS) Steering Committee and presents relevant subject matter to the CEO chaired Trust and Reputation Committee (TRC). In 2020, the CSO made decisions to revise Scope 3 methodology for greater accuracy and to expand our natural climate solutions portfolio focused specifically on high quality carbon removals with a focus on co-benefits of health, biodiversity and climate resilience. |

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

| Frequency with which climate-related issues are a scheduled agenda item | Governance mechanisms into which climate-related issues are integrated | Scope of board-level oversight | Please explain |
|---|--|--------------------------------|--|
| Scheduled – all meetings | <ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues | <Not Applicable> | The Board of Directors is responsible for direction, strategy, organization and administration of the company, and holds the ultimate decision-making authority for Novartis, including environmental sustainability strategy, which includes climate-related issues. The Board of Directors met 10 times in 2020 with each meeting lasting approximately 5 hours. The Board has delegated certain duties and responsibilities to its five committees led by a Board-elected Chairman: Audit and Compliance Committee, Compensation Committee, Science & Technology Committee, Risk Committee and Governance, Nomination and Corporate Responsibilities Committee. The committees enable the Board to work in an efficient and effective manner, allowing a thorough review and discussion of issues. The Risk Committee, which met 4 times in 2020 assists the Board in properly assessing and professionally managing risk by overseeing the risk management system and processes and reviewing the risk portfolio and related actions implemented by management. In 2020, the Risk Committee was briefed that climate related risks had specifically been elevated to emerging risks. The Governance, Nomination and Corporate Responsibilities Committee (GNCR), which met 4 times in 2020, ensures that climate related issues are integrated in governance mechanisms across the company by reviewing and guiding the corporate responsibility strategy. The Governance, Nomination and Corporate Responsibilities Committee receives regular scheduled updates on climate risk and opportunities as part of its oversight of environmental, social and governance (ESG) topics. These are scheduled as written updates semi-annually, with verbal updates in alternating quarters. In 2020 changes to the carbon, targets in Scope 3 were updated, reflecting our increased ambition to carbon neutrality across the value chain by 2030. The Board is overseeing the progress against the targets and goals by monitoring the implementation of the new environmental sustainability strategy. The Board gets regular progress performance updates on the environmental sustainability targets, including climate related issues, from Members of the Executive Committee of Novartis such as the Head of Novartis Technical Operations (NTO) and Novartis Business Services (NBS) now known as Customer & Technology Solutions (CTS) and other members of the senior management, which include Regional, Country and Site Managers. |

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

| Name of the position(s) and/or committee(s) | Reporting line | Responsibility | Coverage of responsibility | Frequency of reporting to the board on climate-related issues |
|---|------------------|---|----------------------------|---|
| Chief Executive Officer (CEO) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | Quarterly |
| Other C-Suite Officer, please specify (Global Head of Novartis Technical Ops) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | As important matters arise |
| Other C-Suite Officer, please specify (Head of Novartis Business Services) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | Quarterly |
| Other, please specify (Environmental Sustainability Implementation Steering Committee) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | As important matters arise |
| Other C-Suite Officer, please specify (Chief Ethics, Risk and Compliance Officer) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | Quarterly |
| Other committee, please specify (Trust and Reputation Committee) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | More frequently than quarterly |
| Chief Sustainability Officer (CSO) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | Half-yearly |
| Other committee, please specify (Business Unit Environmental Sustainability Steering Committee) | <Not Applicable> | Both assessing and managing climate-related risks and opportunities | <Not Applicable> | Not reported to the board |

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The CEO chairs the Executive Committee of Novartis (ECN). The Board establishes and maintains good governance practices and issues board level company policies. The ECN is responsible for overseeing the daily implementation of Board policies, which includes climate related issues. The members of the ECN are the CEO of Novartis, Chief People and Organization Officer of Novartis, Chief Ethics, Risk & Compliance Officer of Novartis, Chief Financial Officer of Novartis, President of Novartis Oncology, Chief Digital Officer of Novartis, President of Novartis Institutes for BioMedical Research (NIBR), the President of Novartis Pharmaceuticals, Chief Legal Officer of Novartis, Global Head of Novartis Technical Operations (NTO), Head of Global Drug Development and Chief Medical Officer for Novartis, CEO of Sandoz and Head of Novartis Business Services (NBS) now known as Head of Customer & Technology Services (CTS).

The CEO also chairs the Trust and Reputation Committee (TRC). The TRC is the sub-committee of the ECN with oversight of the Novartis Trust and Reputation strategy. The Committee meets every two months to assess progress on key action points as part of a quarterly Environment, Social and Governance (ESG) scorecard submission process, and updates the wider Executive Committee and the Board on progress and challenges. Permanent members of the committee include the CEO, Chief Legal Officer of Novartis, Head of NBS (now CTS), Chief Ethics, Risk and Compliance Officer, President of the Pharmaceuticals or Oncology Business Units (alternates each year) and permanent guests include the Group Head of Global Health and Corporate Responsibility (GH&CR), Head of Investor Relations, Head of Strategy, Head of Group Internal Audit and Group Head of Communications and Advocacy.

The Chief Ethics, Risk & Compliance Officer, a member of the ECN, is responsible for fully integrating climate-related risks into the Enterprise Risk Management

(ERM) process, including oversight of actions to reduce exposure to risks. He reports quarterly to the risk committee of the Board about relevant risks and issues including climate related physical and transition risks as appropriate.

The Chief Sustainability Officer provides an annual climate scenario analysis update and information on physical risks and transitional risks and opportunities to the ECN and updates the Board in person once per year and in writing once per year.

Novartis does not have a traditional COO but a matrix structure with several persons responsible for the operating units of our company. Two employees are mainly responsible for the management of climate related issues and function as COOs: the Head of Novartis Business Services (NBS) now known as Head of Customer & Technology Solutions (CTS) and the Head of Novartis Technical Operations (NTO). Both roles report directly to the CEO and enable the company to have effective operational and financial procedures in place. Both roles are responsible for the management of environmental risks and reaching the company-wide 2025 and 2030 climate targets and goals in emissions and water consumption reductions.

The Head of NBS (now CTS) is also responsible for the design of the company-wide environmental sustainability strategy implementation (ESSI). The Head of NBS (now CTS) and NTO are members of the Executive Committee of Novartis (ECN) and the ESSI Steering Committee. These committees meet quarterly, steer, and monitor progress towards the company-wide climate targets and goals.

The Environmental Sustainability Strategy Implementation Steering Committee was created to convene at least quarterly to track progress on environmental strategy and resolve issues and barriers in execution of the strategy. Members include the Head of NTO (ECN Member), Head of NBS (now CTS and ECN Member), Chief Sustainability Officer (CSO), Group Head of Communications & Advocacy, Group Head of Global Health & Corporate Responsibility, Head of Technical Research & Development (TRD), Chief Procurement Officer, Head Group Business Planning & Analysis (BPA) & Treasury and the Head of Real Estate and Facility Services (REFS). These roles were selected because the Heads of NTO and NBS (now CTS) have operational responsibility for 100% of our scope 1 and 2 carbon emissions and the majority of our scope 3 carbon footprint.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

| | Provide incentives for the management of climate-related issues | Comment |
|-------|---|---------|
| Row 1 | Yes | NA |

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

| Entitled to incentive | Type of incentive | Activity incentivized | Comment |
|-----------------------|-------------------|-----------------------|---------|
|-----------------------|-------------------|-----------------------|---------|

| Entitled to incentive | Type of incentive | Activity incentivized | Comment |
|---|---------------------|---|--|
| Corporate executive team | Monetary reward | Emissions reduction target Energy reduction target Efficiency project Environmental criteria included in purchases Supply chain engagement | Members of the Executive Committee Novartis (ECN) are rewarded for meeting division specific absolute emission reduction targets on total scope 1, scope 2 and scope 3 greenhouse gas (GHG) in tons CO2e in support of our environmental sustainability strategy which is to become carbon neutral own operations (scope 1 and 2) before the end of 2025 and to achieve carbon neutrality across our value chain (scope 1, 2 and 3) by 2030. Members are rewarded for energy consumption reductions. The CEO has a balanced scorecard focused on his performance, 16% includes non-financial factors related to environmental sustainability. |
| Corporate executive team | Monetary reward | Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Supply chain engagement | The Head of Novartis Business Services (NBS) now known as Head of Customer & Technology Solutions is rewarded for the corporate absolute emission reduction targets on total Scope 1 and Scope 2 GHG (in tons CO2e), CO2 emissions from vehicles fleet (in tons CO2) energy efficiency and energy savings targets (savings from energy projects in USD, GJ and tCO2e). The Head of NBS (now CTS) is also rewarded for ensuring the achievement of our 2030 climate target, which is to achieve carbon neutrality across our value chain (scope 1, 2 and 3) by 2030. Targets also include other environmental, HSE and sustainability targets. |
| Corporate executive team | Monetary reward | Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Supply chain engagement | The Head of Novartis Technical Operations (NTO) is rewarded for the corporate absolute emission reduction targets on total Scope 1 and Scope 2 GHG (in tons CO2e), energy efficiency and energy savings targets (savings from energy projects in USD, GJ and tCO2e). The Head of NTO is also rewarded for ensuring the achievement of our 2030 climate target which is to achieve carbon neutrality across our value chain (scope 1, 2 and 3) by 2030. Targets also include other environmental, HSE and sustainability targets. |
| Other, please specify (REFS Region/Country/Site Managers) | Monetary reward | Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Environmental criteria included in purchases Supply chain engagement | Real Estate and Facilities Services (REFS) and Novartis Technical Operations (NTO) Region/Country/Site Managers are rewarded for meeting group or division specific absolute emission reduction targets on total Scope 1 and Scope 2 GHG (in tons CO2e), CO2 emissions from vehicles fleet (in tons CO2) and energy savings targets (savings from energy projects in USD, GJ and tCO2e). On a group level, targets also include emission reduction and energy efficiency projects, as well as behavior change related projects and related indicators. |
| Other, please specify (Country managers) | Monetary reward | Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Environmental criteria included in purchases Supply chain engagement | Country managers are rewarded for reducing CO2 emissions from the vehicles fleet (which will form part of our Green Fleet Strategy due for roll out in 2021) and for energy efficiency of their commercial buildings. |
| All employees | Non-monetary reward | Behavior change related indicator | All associates are eligible to be nominated for the Better World Awards. The 2020 Better World Awards recognized individuals and teams in six different categories and one award for outstanding individual achievement. Associates and teams could be nominated on projects, best practices or behaviors anywhere. A total of 348 nominations were received by 742 associates in 31 countries. The Group Head of Global Health & Corporate Responsibility (GH&CR) and the Global Head of Real Estate and Facilities Services (REFS) select the winners to recognize significant contributions to the company goals in reducing carbon footprint through efficiency and behaviors, or other sustainability projects such as water footprint, sustainable packaging and waste reductions. Once nominations were submitted, a panel of expert judges reviewed and selected the winners. The 2020 award for Environmental Sustainability actions completed in 2019 was presented to a team of individuals who optimized the frequency of shipments across 21 clinical trials. Their efforts avoided 40,000 unnecessary shipments leading to a 3,200 ton reduction in carbon emissions compared to previous practices. |
| Chief Procurement Officer (CPO) | Monetary reward | Environmental criteria included in purchases Supply chain engagement | The Chief Procurement Officer reports to the Head of Novartis Business Services (NBS) now known as Customer & Technology Solutions (CTS). The CPO is rewarded for the corporate absolute emission reduction targets on total Scope 1 and Scope 2 GHG (in tons CO2e) through energy supply projects (proportion of energy supplied from renewable sources). The CPO is also rewarded for ensuring the achievement of our 2030 climate target, which is to achieve carbon neutrality across our value chain (scope 1, 2 and 3) by 2030. The CPO is also rewarded for inclusion of environmental sustainability criteria in purchases and supplier engagement. |

| Entitled to incentive | Type of incentive | Activity incentivized | Comment |
|------------------------------------|-------------------|---|--|
| All employees | Monetary reward | Emissions reduction target Efficiency project | Environmental sustainability is a key component of one of the 5 strategic pillars for Novartis: Unleash the Power of Our People, Deliver Transformative Innovation, Embrace Operational Excellence, Go Big on Data and Digital, and Build Trust with Society. Monetary compensation for all associates is tied to these 5 categories, and climate and environmental sustainability efforts align most with Operational Excellence and Build Trust with Society, with opportunities to incorporate environmental sustainability in the other three pillars as well. |
| Chief Sustainability Officer (CSO) | Monetary reward | Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Environmental criteria included in purchases Supply chain engagement | In 2020, Novartis created the position of CSO, who reports to a member of the Executive Committee of Novartis (ECN), to lead the strategy and execution of environmental sustainability across the company. Four strategic objectives were identified and are led by the CSO: 1) To be a leader in environmental sustainability 2) Sustainable products delivered to our patients 3) A mind-set of sustainability embedded in the way we operate 4) A strong voice influencing the sustainability agenda. The CSO also leads the existing governance processes at the Environmental Sustainability Strategy Implementation (ESSI) Steering Committee and presents relevant subject matter to the CEO chaired Trust and Reputation Committee (TRC). The CSO is rewarded for ensuring the achievement of our 2030 climate targets which is to achieve carbon neutrality across our value chain (scope 1, 2 and 3) by 2030. In 2020, the CSO made decisions to revise Scope 3 methodology for greater accuracy and to expand our natural climate solutions portfolio focused specifically on high quality carbon removals with a focus on co-benefits of health, biodiversity and climate resilience. |

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

| | From (years) | To (years) | Comment |
|-------------|--------------|------------|--|
| Short-term | 0 | 2 | Short-term horizons include previous and existing goals as well as progress beyond those goals as applicable. |
| Medium-term | 3 | 7 | Medium-term horizon includes goals that are actionable within programming and planning timeframes. There is a heavy focus on increasing the use of renewables, maximizing efficiency and increasing the incorporation of scenario analysis for climate related risks for own operations during the medium-horizon. Our 2025 target of carbon neutrality in own operations aligns with our definition of a medium-term horizon. |
| Long-term | 8 | | Continuing to improve company performance is a focus for the long-term horizon, as is expanding efforts within the supply chain to improve Scope 3 performance by partnering with suppliers and removing barriers to access for low carbon energy and technologies. Our 2030 Target of achieving carbon neutrality across Scopes 1, 2 and 3 aligns with our definition of a long-term horizon. |

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

At Novartis, risk and strategy issues are integrated in a cross-functional risk management process, because both belong together. A holistic view of all risks are consolidated in the Novartis Risk Compass which enables senior management, the Executive Committee of Novartis (ECN) and the Novartis Board of Directors to focus discussion on key risks and to align the company strategy so our risk exposure can be managed across short, medium and long-term time horizons. The Enterprise Risk Management (ERM) process includes a risk assessment both, bottom-up with risk workshops held in a number of selected countries (33 in 2021) and also top-down from all business units as well as the supporting functions. The functions involved in this process include Corporate Finance, Legal, People & Organization, Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, Global Environmental Sustainability, Information Security, Data Privacy, and Quality Assurance, thus covering both our direct operations and supply chain. All these outputs are then consolidated in an enterprise level risk workshop. The purpose of this workshop is to discuss, consolidate, categorize and prioritize the top risks previously identified in the risk workshops held in all the company dimensions – Division/Business Units, Organizational Units, Corporate Functions, and Countries – to agree and produce the Novartis Risk Compass, which is continually monitored by the Risk & Resilience team. The process is repeated annually. The process begins by determining our risk exposure followed by defining the scope of risk management activities, understanding the external and internal context in which Novartis operates, defining the criteria of the potential impact of each risk and the likelihood that each risk will occur. A risk matrix is created where the likelihood of a risk occurring is plotted against the impact on objectives. This gives guidance on prioritization. The matrix consists of five levels for likelihood (rare, unlikely, possible, likely, and almost certain) and five levels for impact (insignificant, minor, moderate, major, and severe). Risks are categorized using the Novartis Risk Compass in strategic, operational and emerging risks and / or as awareness topics, which enables us to focus on the right risks and ensures that the most appropriate mitigation strategy is put in place.

All functions within the company define their threshold of substantive impact on the company's performance. The financial ranges which define substantive impact at the Group level are <1%, 1-2%, >2-4% and >4% loss of annual sales. Other measures are e.g. time of delayed product registration, findings in authority inspections, increased resilience, damage of reputation and / or environment. Impacts are plotted against the likelihood of an impact materializing within 5 years to help guide senior management, and ensures that the ECN and Board of Directors focus on the key risks. Higher operating costs and the issues associated with higher GHG emissions are examples of substantive impacts considered by our organization.

Beyond the classical ERM process, our global Materiality Assessment validates the importance of our impacts on society and the environment through a dialog with internal and external stakeholders. The Novartis Materiality Assessment couples our internal issue management with external stakeholder perceptions. This is not only done at the global level, but we have also started conducting Materiality Assessments at country level, which will inform the risk discussions in our country operations.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

At Novartis, risk and strategy issues are integrated in a cross-functional risk management process, because both belong together. A holistic view of all risks are consolidated in the "Novartis Risk Compass", which enables senior management, the Executive Committee of Novartis (ECN) and the Novartis Board of Directors to focus discussion on key risks and to align the company strategy so our risk exposure can be managed across short, medium and long-term time horizons. The functions involved in this process include Corporate Finance, Legal, People & Organization, Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, Global Environmental Sustainability, Information Security, Data Privacy, Quality Assurance and Third Party Risk Management (TPRM), thus covering both our direct operations and supply chain. The involvement of these different groups ensures that the Novartis Risk Compass covers issues affecting strategic direction, direct operations and supply chain in a holistic manner. The Enterprise Risk Management (ERM) process includes a risk identification top down from all business units as well as the supporting functions that is known as the One Risk Discussion. In addition, the risk identification is bottom up from the countries. All these outputs are then consolidated in the Novartis Risk Compass, which is continually monitored by the Risk & Resilience team. The process is repeated annually. The process begins by determining our risk exposure followed by defining the scope of risk management activities, understanding the external and internal context in which Novartis operates, defining the criteria of the potential impact of each risk and the likelihood that each risk will occur. A risk matrix is created where the likelihood of a risk occurring is plotted against the impact on objectives. This gives guidance on prioritization. The matrix consists of five levels for likelihood (rare, unlikely, possible, likely, and almost certain) and five levels for impact (insignificant, minor, moderate, major, and severe). Risks are categorized using the Novartis Risk Compass in strategic, operational and emerging risks and / or as awareness topics, which enables us to focus on the right risks and ensures that the most appropriate mitigation strategy is put in place. All functions within the company define their threshold of substantive impact on the company's performance. The financial ranges which define substantive impact at the Group level are <1%, 1-2%, >2-4% and >4% loss of annual sales. Other measures are e.g. time of delayed product registration, findings in authority inspections, increased resilience, damage of reputation and / or environment. Impacts are plotted against the likelihood of an impact materializing within 5 years to help guide senior management, and ensures that the ECN and Board of Directors only focus on the key risks. Higher operating costs and the issues associated with higher GHG emissions are examples of substantive impacts considered by our organization. Opportunities for cost avoidance due to carbon pricing are identified as part of ongoing efforts to achieve carbon neutrality across our value chain by 2030, and are collected, prioritized and executed in a phased fashion through the normal capital investment process throughout Novartis. Beyond the classical ERM process, our global Materiality Assessment validates the importance of our impacts on society and the environment through a dialog with internal and external stakeholders. The Novartis Materiality Assessment couples our internal issue management with external stakeholder perceptions. This is not only done at the global level, but we have also started conducting Materiality Assessments at country level, which will inform the risk discussions in our country operations. Novartis provided its first qualitative disclosure for the Taskforce on Climate-related Financial Disclosure in the 2020 Novartis in Society Report, released as part of the annual reporting suite in January 2021. This highlighted our formal commitment to TCFD in 2020, and Novartis also started the procurement process in 2020 to select a commercial provider to deliver annual advanced climate scenario analysis focusing on physical and transition risks based on two scenario outcomes across our global operations and value chain.

Value chain stage(s) covered

Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

At Novartis, risk and strategy issues are integrated in a cross-functional risk management process, because both belong together. A holistic view of all risks are consolidated in a Novartis Risk Compass which enables senior management, the Executive Committee of Novartis (ECN) and the Novartis Board of Directors to focus discussion on key strategic risks and to align the company strategy so our risk exposure can be minimized across short, medium and long term horizons. The functions involved in this process include Corporate Finance, Legal, People & Organization, Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, Global Environmental Sustainability, Information Security, Data Privacy and Quality Assurance and Third Party Risk Management (TPRM), thus covering both our direct operations and supply chain. The involvement of these different groups ensures that the Novartis Risk Compass covers issues affecting strategic direction, direct operations and supply chain in a holistic manner. The Enterprise Risk Management (ERM) process includes a risk identification top down from all business units as well as the supporting functions that is known as the One Risk Discussion. In addition, the risk identification is bottom up from the countries. All these outputs are then consolidated in the Novartis Risk Compass, which is continually monitored by the Risk & Resilience team. The process is repeated annually. The process begins by determining our risk exposure followed by defining the scope of risk management activities, understanding the external and internal context in which Novartis operates, defining the criteria of the potential impact of each risk and the likelihood that each risk will occur. A risk matrix is created where the likelihood of a risk occurring is plotted against the impact on objectives. This gives guidance on prioritization. The matrix consists of five levels for likelihood (rare, unlikely, possible, likely, and almost certain) and five levels for impact (insignificant, minor, moderate, major, and severe). Risks are categorized using the Novartis Risk Compass in strategic, operational and emerging risks and / or as awareness topics, which enables us to focus on the right risks and ensures that the most appropriate mitigation strategy is put in place. All functions within the company define their threshold of substantive impact on the company's performance. The financial ranges which define substantive impact at the Group level are <1%, 1-2%, >2-4% and >4% loss of annual sales. Other measures are e.g. time of delayed product registration, findings in authority inspections, increased resilience, damage of reputation and / or environment. Impacts are plotted against the likelihood of an impact materializing within 5 years to help guide senior management, and ensures that the ECN and Board of Directors only focus on the key risks. Higher operating costs and the issues associated with higher GHG emissions are examples of substantive impacts considered by our organization. Opportunities for cost avoidance in the value chain due to carbon pricing are identified as part of ongoing efforts to achieve carbon neutrality across our value chain by 2030. Scope 3 emissions are being addressed by encouraging suppliers to invest in efficiency and renewables, and Novartis has engaged suppliers who are interested in participating in a power purchase agreement facilitated by Novartis. Novartis has been directly engaging key suppliers out of our Tier 1 suppliers to investigate options to aggregate demand load and remove barriers for our suppliers to access renewable electricity. Beyond the classical ERM process, our global Materiality Assessment validates the importance of our impacts on society and the environment through a dialog with internal and external stakeholders. The Novartis Materiality Assessment couples our internal issue management with external stakeholder perceptions. This is not only done at the global level, but we have also started conducting Materiality Assessments at country level, which will inform the risk discussions in our country operations.

Value chain stage(s) covered

Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Climate risks such as physical risks (heat, water scarcity, sea level rise, flooding from severe weather events) and transition risks (regulatory frameworks, carbon pricing, cost of and access to capital) are incorporated into the existing enterprise risk management framework. At Novartis, risk and strategy issues are integrated in a cross-functional risk management process, because both belong together. A holistic view of all risks are consolidated in a Novartis Risk Compass which enables senior management, the Executive Committee of Novartis (ECN) and the Novartis Board of Directors to focus discussion on key strategic risks and to align the company strategy so our risk exposure can be minimized across short, medium and long term horizons. The functions involved in this process include Corporate Finance, Legal, People & Organization, Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, Global Environmental Sustainability, Information Security, Data Privacy, Quality Assurance and Third Party Risk Management (TPRM), thus covering both our direct operations and supply chain. The involvement of these different groups ensures that the Novartis Risk Compass covers issues affecting strategic direction, direct operations and supply chain in a holistic manner. The Enterprise Risk Management (ERM) process includes a risk identification top down from all business units as well as the supporting functions that is known as the One Risk Discussion. In addition, the risk identification is bottom up from the countries. All these outputs are then consolidated in the Novartis Risk Compass, which is continually monitored by the Risk & Resilience team. The process is repeated annually. The process begins by determining our risk exposure followed by defining the scope of risk management activities, understanding the external and internal context in which Novartis operates, defining the criteria of the potential impact of each risk and the likelihood that each risk will occur. A risk matrix is created where the likelihood of a risk occurring is plotted against the impact on objectives. This gives guidance on prioritization. The matrix consists of five levels for likelihood (rare, unlikely, possible, likely, and almost certain) and five levels for impact (insignificant, minor, moderate, major, and severe). Risks are categorized using the Novartis Risk Compass in strategic, operational and emerging risks and / or as awareness topics, which enables us to focus on the right risks and ensures that the most appropriate mitigation strategy is put in place. All functions within the company define their threshold of substantive impact on the company's performance. The financial ranges which define substantive impact at the Group level are <1%, 1-2%, >2-4% and >4% loss of annual sales. Other measures are e.g. time of delayed product registration, findings in authority inspections, increased resilience, damage of reputation and / or environment. Impacts are plotted against the likelihood of an impact materializing within 5 years to help guide senior management, and ensures that the ECN and Board of Directors only focus on the key risks. Higher operating costs and the issues associated with higher GHG emissions are examples of substantive impacts considered by our organization. Opportunities for cost avoidance in the value chain due to carbon pricing are identified as part of ongoing efforts to achieve carbon neutrality across our value chain by 2030. Scope 3 emissions are being addressed by encouraging suppliers to invest in efficiency and renewables, and Novartis has engaged suppliers who are interested in participating in a power purchase agreement facilitated by Novartis. Novartis has been directly engaging key suppliers out of our Tier 1 suppliers to investigate options to aggregate demand load and remove barriers for our suppliers to access renewable electricity. Beyond the classical ERM process, our global Materiality Assessment validates the importance of our impacts on society and the environment through a dialog with internal and external stakeholders. The Novartis Materiality Assessment couples our internal issue management with external stakeholder perceptions. This is not only done at the global level, but we have also started conducting Materiality Assessments at country level, which will inform the risk discussions in our country operations.

Value chain stage(s) covered

Direct operations

Upstream

Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term

Medium-term

Long-term

Description of process

Climate risks such as physical risks (heat, water scarcity, sea level rise, flooding from severe weather events) and transition risks (regulatory frameworks, carbon pricing, cost of and access to capital) are incorporated into the existing enterprise risk management framework. At Novartis, risk and strategy issues are integrated in a cross-functional risk management process. A holistic view of all risks are consolidated in a Novartis Risk Compass which enables senior management, the Executive Committee of Novartis (ECN) and the Novartis Board of Directors to focus discussion on key strategic risks and to align the company strategy so our risk exposure can be minimized across short, medium and long term horizons. 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In 2020, climate was disclosed in our 2020 filing to the US Securities and Exchange Commission. Novartis is potentially exposed to physical risks from varying extreme weather events such as hurricanes, tornadoes, floods, or any other event that may result from the impact of climate change on the environment. For example, some of our production facilities are located in places that, because of increasingly violent weather events, sea level rise, or both, are increasingly at risk of substantial flooding. Other facilities that depend on the availability of significant water supplies are located in areas where water is increasingly scarce. As a result, we could experience increased costs (production or other), business interruptions, and destruction of facilities, all of which would have a material adverse effect on our business, financial condition, or results of operations. Our distributed supply chains are also vulnerable to these effects. Climate change may also trigger the adoption of new regulatory requirements across the globe. Such legislation could include increased requirements to invest in technology to reduce energy use, water use and greenhouse gas emissions, beyond what we expect to invest in our existing plans. In addition, legislation could include carbon pricing, climate risk disclosure mandates, and changes in zoning or building codes to increase climate resilience. The combined impact of these transition risks could increase our direct operating costs and result in the same impact across our supply chain. In addition to the ERM process, our global materiality assessment evaluates our impact on society and the environment through a dialogue with internal and external stakeholders about value, risks and opportunity. Novartis provided its first qualitative disclosure for the Taskforce on Climate-related Financial Disclosure in the 2020 Novartis in Society Report, released as part of the annual reporting suite in January 2021. This highlighted our formal commitment to TCFD in 2020, and Novartis also started the procurement process in 2020 to select a commercial provider to deliver annual advanced climate scenario analysis focusing on physical and transition risks based on two scenario outcomes across our global operations and value chain.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

| | Relevance & inclusion | Please explain |
|---------------------|---------------------------|--|
| Current regulation | Relevant, always included | Situation: Novartis always considers current regulations from a risk and opportunity perspective. Novartis operates globally and has significant financial exposure to developing carbon pricing mechanisms. 45 national systems exist, and Novartis has operations in 32 of those nations, including the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Ringaskiddy and Grimsby are all subject to EU ETS for Scope 1 emissions. The rapid price increase associated with the EU ETS is an example of the financial risk potentially posed by the carbon footprint from Novartis production facilities and supply chain located in the EU. Slovenia, for instance, is one country where we have significant exposed operations. The rapid price increase in the EU ETS over the last two years is an obvious example of the increasing financial risk posed by our carbon footprint. The benchmark EU Allowance (EUA) price hit EUR 50.05/ton in May 2021, the highest since the carbon market launched in 2005. That matched previous expectations that the EU ETS costs would increase to between EUR 40-EUR 80 by 2021 and further increases confidence in the projections of pricing between EUR50-EUR 100 by 2030. Methods to manage this risk: Novartis is pursuing rapid shifts in procurement of renewable energy that should complement ongoing efficiency projects that will drive demand reduction, including awarding 5 contracts for virtual power purchase agreements that will deliver 100% renewable electricity for procured electricity in our European operations by 2023. Efforts in efficiency and adoption of renewables will be applied to reduce our current and emerging exposure to risk in this area. Carbon pricing is a transition risk that is included in risk discussions because of its financial impact. The relative position in the risk matrix varies by location and by year. |
| Emerging regulation | Relevant, always included | Situation: Novartis always considers emerging regulations from a risk and opportunity perspective. Novartis operates globally, and has significant financial exposure to developing carbon pricing mechanisms. 45 national systems exist, and Novartis has operations in 32 of those nations, including the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Ringaskiddy and Grimsby are all subject to EU ETS for Scope 1 emissions. The rapid price increase associated with the EU ETS is an example of the financial risk potentially posed by the carbon footprint from Novartis production facilities and supply chain located in the EU. Slovenia, for instance, is one country where we have significant exposure on our operations. The rapid price increase in the EU ETS over the last two years is an obvious example of the increasing financial risk posed by our carbon footprint. The benchmark EU Allowance (EUA) price hit EUR 50.05/ton in May 2021, the highest since the carbon market launched in 2005. That matched previous expectations that the EU ETS costs would increase to between EUR40-EUR 80 by 2021 and further increases confidence in the projections of pricing between EUR 50 - EUR 100 by 2030. Methods to manage this risk: Novartis is pursuing rapid shifts in procurement of renewable energy that should complement ongoing efficiency projects that will drive demand reduction, including awarding 5 contracts for virtual power purchase agreements that will deliver 100% renewable electricity for procured electricity in our European operations by 2023. Efforts in efficiency and adoption of renewables will be applied to reduce our current and emerging exposure to risk in this area. Carbon pricing is a transition risk that is included in risk discussions because of its financial impact. The relative position in the risk matrix varies by location and by year. The EU Green Deal, and related legislation changes in European countries that can be foreseen, is a specific example of legal and regulatory risk from emerging regulation that directly impacts Novartis. |
| Technology | Relevant, always included | Situation: Emerging technology for production techniques may introduce more stress in an area impacted by climate change, possibly resulting in a capacity constraint and a risk to the business. Task: Novartis has considered these different types of technology risks that could affect its operations considering where our sites are located. Action: Novartis considers in particular consumption requirements in terms of the supply chain and system of systems as relevant technology risks to include in our assessment. Result: As a result of the assessment, Novartis production in India is an example of a location that may be impacted, but Novartis may face similar risks in other parts of Asia and in Europe. |
| Legal | Relevant, always included | Situation: In many cases, there are legal requirements to be met regarding carbon emissions trading schemes or other emissions. Task: Legal risks are always included as part of the risk identification process. Action: These risks are reviewed at least annually. Increasingly more focus is given to evolving legal risks that might occur related to the financial disclosure of climate related financial risks. Formal financial disclosures can impact investor decisions and should meet rigorous standards for data integrity and review before being included as part of mainstream financial reporting. Failure to do so potentially represents a risk to Novartis. Result: The Task Force on Climate-related Financial Disclosures (TCFD) is a specific example that applies to Novartis in this area. This risk is not limited to any single region that Novartis operates in, although changes are most likely to happen in the EU because mandatory reporting on TCFD is already planned by some governments in the region. |
| Market | Relevant, always included | Situation: Pressure to decarbonize the healthcare sector has been mounting over the last few years. It has been estimated that the carbon footprint from the entire healthcare system including patient transportation, providers and supply chain emissions may amount to as much as 4.4% of global net emissions. In 2020, sales of generics through Sandoz totaled USD9.6Bn. Task: As healthcare networks like Kaiser Permanente, the UK NHS and providers in the Nordics implement carbon neutrality pledges, carbon net zero pledges and environmental sustainability grading criteria in tender offers it becomes clear that environmental sustainability performance is likely to become a competitive differentiator when patient outcomes are equivalent. Even a small shift in sales due to selection criteria involving climate and water performance will impact revenue. Action: Given Novartis' footprint in a globally competitive generics market, minor variations in corporate climate and environmental performance could lead to significant differences in net revenues over time. Result: While not forecasting changes, simply doing the math using our net sales as an industry example shows that a variation of only 5% could result in an impact to net sales of USD480M, potentially resulting in a USD960M swing in net revenues between competing companies. This represents risk to companies that don't take action proactively, and opportunity for companies that have a strong record of environmental sustainability performance. |
| Reputation | Relevant, always included | Situation: Risks related to reputation are always important to consider, and as such are always considered at Novartis. Task: Novartis continues the work of a Third Party Risk Management work stream to manage conduct of suppliers, as well as focusing on reputational risk and opportunity related to climate. New norms in the market require transparency as well as performance. Lack of transparency also represents a reputational risk. Reputation on environmental sustainability can also have both negative and positive impact on talent management. Action: Supplier audits from the Nordic countries and Kaiser Permanente's decision in the US to decarbonize their supply chain are early examples of specific actions that require sustained performance to maintain a reputation that allows for access to these markets. Result: We have identified that there is no regional limitation on this risk given the trends we see. |
| Acute physical | Relevant, always included | Situation: Sudden physical impact of climate change is always included in the consideration of risks most notably in relation to the impact of flooding, severe weather events, heat events and water scarcity. Acute physical risks include flooding from sea level rise, flooding from heavy precipitation events, water scarcity, heat events and changing storm patterns. In the last year, Novartis facilities in the Western US faced potential risk due to wildfires. Task: Such risks need to always be included in our assessments, especially since exposure to such risks is already visible for some of our facilities. Action: Reviewing previous CDP reporting by various companies in the pharmaceuticals sector has demonstrated that this is a sector risk because of its direct impact on operations and the supply chain. Result: Novartis has operations in the US, Europe and Asia that may experience these impacts more than some other regions. |
| Chronic physical | Relevant, always included | Situation: Chronic physical events such as persistent flooding that disrupts transportation and logistics networks needed to support normal business are considered as emerging trends, as well as regional heat profiles that may overwhelm installed cooling capacity. Task: As such, chronic physical risks are considered as relevant, and are to be systematically included in all climate-related risk assessments we undertake. Action: Novartis has assessed such risks as explained in previous answers. Result: Novartis operations in Jakarta (Indonesia) and Cambridge (US) are two examples of regional locations that may face chronic physical impact in the future. These impacts may prevent our associates from reaching their place of work and our buildings because of damage to regional infrastructure (e.g., regional mass transit). |

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

| | |
|--------------------|---------------------------|
| Current regulation | Carbon pricing mechanisms |
|--------------------|---------------------------|

Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Novartis has taken a proactive approach towards existing and forthcoming legal schemes on greenhouse gas (GHG) emissions as set forth in its Corporate Environmental Sustainability Strategy approved in 2018. The strategy aims to achieve carbon neutrality for own operations by 2025 through efficiency, use of nothing but renewable energy and credible offsets. Novartis operates globally, and has significant potential financial exposure to developing carbon pricing mechanisms. 45 national systems exist, and Novartis has operations in 32 of those nations, including across the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Ringaskiddy and Grimsby are all subject to EU ETS for Scope 1 emissions. Specifically Novartis has assessed carbon pricing as a climate related risk associated with its energy procurement strategy.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

14495124

Potential financial impact figure – maximum (currency)

24158541

Explanation of financial impact figure

Estimates are based on the range of expected price increases in trading schemes and proposed carbon taxes. While these are highly variable in projections, the rapid price increase in the EU Emissions Trading Scheme (ETS) is an example of the increasing financial risk posed by our carbon footprint. The rapid price increase in the EU ETS over the last two years is an obvious example of the increasing financial risk posed by our carbon footprint. The benchmark EU Allowance (EUA) price hit EUR 50.05/ton in May 2021, the highest since the carbon market launched in 2005. That matched previous expectations that the EU ETS costs would increase to between EUR 40 - EUR 80 by 2021 and further increases confidence in the projections of pricing between EUR 50 - EUR 100 by 2030. Novartis has operations in Austria, Germany, Ireland, Italy, Slovenia and the UK that are subject to the EU ETS. Combined Scope 1 emissions are over 180,000 tons in those markets. If progress is not made in reducing emissions, then the financial impact could range from EUR 14.5 M (considering a carbon price of EUR 80 per tCO2e) to EUR 24.1M (considering a carbon price of EUR 130 per tCO2e).

Cost of response to risk

200000

Description of response and explanation of cost calculation

Increased costs have led Procurement to rapidly accelerate the procurement of renewable energy. Novartis, with the support of a third party, has started to review its use of energy attributes to reduce emissions. This has resulted in the strategy being revised to put a clear focus on renewable energy supply. This analysis contributed to the Novartis decision to pursue a Pan-European renewable power purchase agreement to mitigate future costs of carbon. Novartis has also endorsed an internal carbon price of USD 100/tCO2e as shadow price, anticipating the increase in real costs of carbon to rise to USD 40-80/ton CO2e by 2025, and to USD 60-100/ton by 2030 as a result of both regulatory and carbon market dynamics. Novartis' decision to pursue a Pan-European Virtual Power Purchase Agreement, which is in the process of selection and award, will reduce exposure to carbon pricing in at least one major market. Efforts in efficiency, adoption of renewables and offsets will be applied to reduce potential exposure to carbon pricing as rapidly as possible. Consolidated tracking of trends in non-energy costs as well as possible exposure to pricing schemes based on energy intensity and physical location are being used by procurement to adjust procurement and hedging strategies to reduce volatility and exposure. While the costs to manage the existing EU ETS scheme within the company are limited, the expansion of schemes into other markets will require additional management focus and efforts. Cost of management includes internal annual costs for three associates (part-time, 3 x USD25K) and consultant support as buyers agents and external legal counsel (aggregated cost of USD125K) for virtual power purchase agreements.

Comment

As EU-ETS moves into Phase IV in 2021, any reduction in free allowances could further increase annual management costs between USD 60 k and USD 2,2M.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

| | |
|----------------|--|
| Acute physical | Increased severity and frequency of extreme weather events such as cyclones and floods |
|----------------|--|

Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Novartis' risk related to climate change exists in three areas: water scarcity, flooding from sea level rise and severe weather events, and heat events. All of these have the ability to create physical, property destruction, interruption to business and impact on our associates and the patient communities that we support. Changes in precipitation patterns, coupled with sea level rise in some locations, likely represent a growing risk to the company and to its supply chain. Previous patterns of flooding will likely no longer be historically accurate, which means that engineering estimates for the built environment will be inadequate, both on site and in the surrounding communities. In addition to normal physical risks, extended heat events may eventually overwhelm installed cooling capacity, resulting in variations in temperature and humidity in research and production operations that are unacceptable. Novartis operations in California have been at risk of disruption due to rolling blackouts as a mitigation measure to reduce the risk of wildfires in heat events.

Time horizon

Long-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

25000000

Potential financial impact figure – maximum (currency)

31000000

Explanation of financial impact figure

Sites may have to invest in the reinforcement of site infrastructure (larger storm water run-off, specific building protection, greater cooling capacity, etc.), which is estimated at USD 25 to 31M overall. Additionally, site engineering might use 5-10% more resources over several years when such flood protection projects must be implemented. These additional engineering costs are assessed to be USD 400 - 500k in total over next 5 years. Detailed risk assessments leveraging outside partners would also require financial resources. Financial estimate of impact is based on the initial assumption of a possible occurrence of 8 events in 12 years having a maximum impact of USD 5M per event in physical damage and disruption to business.

Cost of response to risk

30000000

Description of response and explanation of cost calculation

Actions related to flood protection are aspects of site engineering and facility management. Risks are assessed in the annual risk evaluation process, where natural disasters are a regular part of and are prepared site by site. To avoid such events, specific risk assessment and consequently necessary protection measures might become necessary. This may lead to higher costs to keep such risks within acceptable limits. Initial global risks are being assessed in collaboration with the Massachusetts Institute of Technology, and have been shared with applicable production, research and facilities staff. Externalized consulting to expand frequency and scope of global and site level risk analysis will cost USD 500k annually over the next 5 years, and USD 200k annually thereafter, for a total of USD 3,5M over a 10 year period. Physical adaptations and any decisions to execute a managed retreat may cost USD 30M over a 10 year period.

Comment

NA

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

| | |
|------------------|--|
| Chronic physical | Other, please specify (Loss of biodiversity) |
|------------------|--|

Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Currently Novartis sells multiple products based on natural compounds. Six medicines based on research from biologic sources (Cosentyx, Lucentis, Sandostatin, Afinitor/Votubia, Xolair, Ilaris) generate roughly USD 10,2Bn in net sales globally as part of oncology. Disruption of this supply chain and sources of research due to any reason, including loss of biodiversity, could in theory eliminate or dramatically reduce that in a smaller amount or all the way up to USD 1,6Bn in sales for a single product like Sandostatin. Also, increasing efforts to design biologically based medicines will be impacted by a loss in biodiversity if fewer natural compounds are available for research, development and production of medicines. Various medicines using natural compounds may have different levels of risk.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

1600000000

Potential financial impact figure – maximum (currency)

10200000000

Explanation of financial impact figure

Across the top 20 key products of 2020, 5 products are biologics, generating USD 9,491Bn in Net Sales. Loss of biodiversity, which is anticipated to range from 25%-30%,

will reduce the number of possible starting points to discover and develop biologic life-saving medicines. Current Novartis products based on natural compounds include Sandostatin, which generates roughly USD 1,439Bn in Net Sales. Disruption of this supply chain could dramatically reduce or eliminate that sales figure up to the maximum of USD 1,6Bn in sales.

Cost of response to risk

400000

Description of response and explanation of cost calculation

Novartis has staff that routinely work to enhance supply chain resilience, regardless of the type of potential disruption. Alternative suppliers and sources are implemented where necessary. Significant overall risks are assessed in the annual risk evaluation process, including disruptive events, and are prepared site by site. To avoid such events, specific risk assessment and consequently necessary protection measures might become necessary. Efforts are also being made to ensure that investments in natural climate solutions also deliver increased or sustained biodiversity. Costs of response to risk include USD 400k external consultant costs to design a new offset strategy that emphasizes positive biodiversity impact and internal labor costs for partial labor years of 3 associates based on time devoted to climate scenario analysis and natural climate solutions procurement.

Comment

NA

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

In general, Novartis investments have yielded a 2.6 year payback. Applied against a USD 278M annual spend on energy, this would have significant financial benefit to the company. This could lower the cost of goods sold, improving the bottom line and freeing resources to be spent on research and development efforts for new drugs. Even a 10% improvement each year would deliver USD 27M each year, quickly adding to over USD 100M in 3-4 years of extra cash flow, providing benefit in the short to medium horizon. Some of those benefits may be reduced as greater efficiency makes it more difficult to achieve short term savings and rapid return on investment (ROI), thus projections beyond a medium horizon are not provided.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

93000000

Potential financial impact figure – maximum (currency)

124000000

Explanation of financial impact figure

Based on an annual spend of USD 278M annually, a 10% improvement in efficiency each year would deliver USD 27M each year, quickly adding to over USD 100M in 3-4 years of extra cash flow, providing benefit in the short to medium horizon Reduction in energy use not only reduces expenses, but also results in absolute emissions reductions and reduces the exposure to future carbon pricing schemes globally. Previously, purchased energy costs have exceeded USD 311M annually. Potential future increases in both energy prices and the implementation of carbon costs may have an impact of estimated 20-30% of energy cost in the long-term, i.e. USD 62-93M per year. In the last 12 months, the cost of allowances in the EU ETS has increased to EUR 50. Many institutions expect the costs within the EU ETS alone to increase to between EUR 40 - EUR 80 by 2021 and between EUR 50 - EUR 100 by 2030. The combination of USD 62-93M annually plus USD 31M annually comprise the financial benefit through efficiency and avoided emissions, and that is calculated over a 4 year period as a medium term.

Cost to realize opportunity

33000000

Strategy to realize opportunity and explanation of cost calculation

The internal price of carbon along with carbon footprint reduction goals should drive investments in new technology, upgraded technology as part of equipment maintenance and refresh and incentive programs to drive absolute reductions. Costs to implement and the long term opportunity are still being developed, however, initial estimates suggest that at least USD 33M will be required.

Comment

In the last 12 months, the cost of allowances in the EU ETS has increased to EUR 50. Many institutions expect the costs within the EU ETS alone to increase to between EUR 40 - EUR 80 by 2021 and between EUR 50 - EUR 100 by 2030. The combination of USD 62-93M annually plus USD 31M annually comprise the financial benefit through efficiency and avoided emissions, and that is calculated over a 4 year period as a medium term.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Novartis is exposed to carbon pricing because it has significant operations in Europe. The emerging options for Power Purchase Agreements (PPA's) and expanding renewable generation in Europe mean that Novartis is able to obtain renewable energy for its own operations and potentially facilitate negotiations of PPAs and VPPAs for key supply chain partners that are co-located in Europe. This will help to reduce its scope 3 emissions, in addition to its own scope 2 emissions. Rapid adoption of renewable energy can result in lower carbon, lower costs and greater business continuity depending on the specifics of the project. In some cases, more than one of those benefits may accrue. Novartis prioritizes projects based on those three general opportunities to improve business results. In the US market and European market, specific commercial numbers for our contracted VPPAs will deliver revenue and a positive NPV over the life of the projects, helping to defray other climate investment costs. Pressure to decarbonize the healthcare sector has been mounting over the last few years. It has been estimated that the carbon footprint from the entire healthcare system including patient transportation, providers and supply chain emissions may amount to as much as 4.4% of global net emissions. In 2020, sales of generics through Sandoz totaled UD9.6Bn. As healthcare networks like Kaiser Permanente, the UK NHS and providers in the Nordics implement carbon neutrality pledges, carbon net zero pledges and environmental sustainability grading criteria in tender offers it becomes clear that environmental sustainability performance is likely to become a competitive differentiator when patient outcomes are equivalent. Even a small shift in sales due to selection criteria involving climate and water performance will impact revenue. Given Novartis' footprint in a globally competitive generics market, minor variations in corporate climate and environmental performance could lead to significant differences in net revenues over time. While not forecasting changes, simply doing the math using our net sales as an industry example shows that a variation of only 5% could result in an impact to net sales of USD480M, potentially resulting in a USD960M swing in net revenues between competing companies. This represents risk to companies that don't take action proactively, and opportunity for companies that have a strong record of environmental sustainability performance.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1100000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

Reduction in energy use not only reduces expenses, but also results in absolute emissions reductions. That decrease in emissions also reduces the exposure to future carbon pricing schemes globally as described in the carbon pricing section of this submission. Previously, energy costs have exceeded USD 311M annually. Future increases in both energy prices and the implementation of carbon costs may have a stronger impact of estimated 20-30% of energy cost in the long-term, i.e. USD 62 - 93M per year. Financial impact of loss of sales in the UK NHS market alone would be USD 1.1Bn based on 2020 sales.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Power purchase agreements for access to renewable energy projects that are on-site and offsite will likely be the primary approach. In an effort to integrate these risks into normal business, Novartis has also endorsed an internal carbon price of USD 100/tCO₂e as shadow price, anticipating the increase in real costs of carbon to possibly USD 40 - 80/ton CO₂e by 2025, and to USD 60 - 100/ton by 2030 as a result of both regulatory and carbon market dynamics. Novartis is pursuing rapid shifts in procurement of renewable energy that should complement ongoing efficiency projects that will drive demand reduction. These efforts in efficiency, adoption of renewables and offsets will be applied to reduce potential exposure to carbon pricing as rapidly as possible. Consolidated tracking of trends in non-energy costs as well as exposure to pricing schemes based on energy intensity and physical location are used by procurement to adjust procurement and hedging strategies to reduce volatility and exposure. Costs in many cases are limited to legal fees for power purchase agreements and isolated cases of balance sheet financing of on site generation. Cost does not include existing utility bill costs. VPPAs are in place to deliver 100% renewable electricity in the US and Canadian markets, and are in place to deliver 100% renewable electricity in European operations by 2023.

Comment

Cost of the VPPA is listed at zero due to positive NPVs as part for the required portfolio selection. Financial impact of loss of sales in the UK NHS market alone would be USD 1.1Bn based on 2020 sales.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resilience

Primary climate-related opportunity driver

Participation in renewable energy programs and adoption of energy-efficiency measures

Primary potential financial impact

Reduced direct costs

Company-specific description

More of our sites are being subjected to extended heat events, and water scarcity is becoming more of an issue in markets we operate in like India. Emphasis on recognizing and reacting to changes in our locations will be key to enduring stability and profits in those markets, potentially providing resilience that our competitors may not develop. Climate change could decrease water availability so taking action to reduce water consumption by investing in energy-efficient water systems gives us the opportunity to build a more sustainable business and to continue to meet the needs of our patients by delivering carbon and water benefits. Novartis production of Biosimilars relies on abundant local water supplies so this represents a risk to the company in water scarce areas. The financial benefit of decreased water consumptions varies by location. As a case study, in one of our manufacturing sites in Turkey, the water consumption was reduced and the quality of effluent was increased by the installation of an energy-efficient reverse osmosis-ultrafiltration system which allowed a proportion of the water to be reused within the site. The project cost USD 600 k, but the benefit was a water consumption reduction by 14% and a cost reduction of USD 100 k per year. Energy efficient water systems will be key to reducing carbon emissions and reducing the impact of our water consumption in areas that experience water scarcity as a result of climate change.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

12808000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

We were able to estimate the benefit to the business of reducing its water consumption. If we achieve our 2025 target of a 50% reduction in water consumption we will save around 6+ million m³. Applying an average internal minimum water cost of USD2/m³ x 6'404'000m³, which was determined during the development of our new environmental sustainability strategy and includes the full costs of water, we were able to estimate potential positive financial impact over a four year period that represents medium-term horizon as USD 12.8M.

Cost to realize opportunity

30000000

Strategy to realize opportunity and explanation of cost calculation

In order to realize such opportunity, Novartis intends to conduct global climate risk assessments that will inform more detailed risk assessments including water scarcity and heat events. Once damage curves to include business impact of interruptions are assessed, that information can be shared with applicable associates working on strategy. Global risks are being assessed in partnership with the Massachusetts Institute of Technology, and can be shared with applicable production, research and facilities staff. Use of the MIT Global Earth Systems Model (GESM) should create more accurate information about climate risks. This can be shared with applicable group level business continuity, risk and strategy staff in a coordinated effort to assess and manage risk to our sites and to our integrated supply chain. Details about modeled climate risk that don't involve proprietary data should be shared with the communities where our analysis is taking place. This would allow progress in building resilience across the system of systems that are required to support normal business operations and provide significant reputational benefit as well as practical benefit. To realize the benefits of reduced water consumption we anticipate the need to invest in capital improvements for production and water processing. It is estimated that approximately USD 600k will need to be invested at each of the top 30 Novartis locations and around USD 60k at each of the remaining smaller locations meaning that an overall investment of around USD 30M will be needed.

Comment

NA

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of recycling

Primary potential financial impact

Reduced direct costs

Company-specific description

The production of small molecule drug substance requires both solvents and in several cases the use of precious metal catalysts. In most of our Novartis Technical

Operations manufacturing facilities, end-of-pipe technologies to recover, recycle and re-use solvents and catalysts are already implemented, but additional opportunities do still exist. For two pilot compounds currently in Development (Clinical Phase II), which are requiring Palladium and Rhodium as catalysts, we were able to demonstrate in our Development pilot plants a recovery rate of 75-85% of those precious metals out of the waste streams. On top, major efforts are going on to modify the chemical processes enabling us to significantly reduce the initial load of the precious metal catalysts, or to avoid their use even at all. Published LCA data show the very high GHG impact of those precious metals of 25'000 kg (Palladium) up to 30'000 kg (Rhodium) of CO2e per 1 kg of those precious metals.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

40000000

Potential financial impact figure – maximum (currency)

120000000

Explanation of financial impact figure

While we expect the scale-up of the precious metal recovery and recycling (via Third Parties) from our development pilot plant facility to our commercial production plants to happen already short-term, the most significant financial benefits will be realized only after approval and commercial launch of the current development assets, which is expected around 2025. The average annual savings in the 5 years period 2026-2030 just from these initial two compounds are expected in a magnitude of USD 16M per year, so USD 80M altogether (based on prices per end of 2020). Additional compounds with significant opportunities were recently identified. Given the scarcity of those metals, prices increased in 2020: Rhodium spot price went up from around USD 195k/kg in early January 2020 to USD 548k by December 31st 2020 – and reached peaks of up to USD 948k/kg by April 2021. The Palladium prices increased in the same period from around USD 63k/kg to USD 79k/kg, and up to USD 95k/kg by April 2021. The “minimum potential impact figure” considers 50% probability of success of the current 2 compounds reaching their projected market potential. The “maximum potential financial impact” is considering 100% probability for those 2 compounds, plus a 50% impact for additional smaller compounds and/or a further significant catalyst price increase in future years.

Cost to realize opportunity

3500000

Strategy to realize opportunity and explanation of cost calculation

The yield of 75-85% as well as the ongoing recovery and recycling costs to process the precious metals out of the waste streams into fit for purpose catalyst materials were already considered in the above potential financial impact calculation. Costs to realize opportunity of USD 3,5 M represent the incremental R&D efforts (estimated USD 300k) and the implementation of the recovery process at 4 commercial production plants (estimated at avg. USD 800k/site facility investments). In case special filters or large tanks to capture the waste stream volumes would be required, these costs could however increase to in average USD 1-1,5M per plant.

Comment

NA

Identifier

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Primary potential financial impact

Reduced direct costs

Company-specific description

We have developed and received endorsement in 2020 of our R&D “Roadmap Sustainable Product/ Process Design”, which defines a systematic approach across our Research and Development function to apply environmental sustainability optimizations by design into our processes. It covers all areas of small and large molecule drug substance, drug product, device and packaging development, and starts from the raw material selection via the molecule and production process design, up to consideration of supply chain/ distribution activities until end of life treatment. The Roadmap foresees the close integration of Life Cycle Assessments already during the R&D process, and will be further enhanced over the coming years. Ultimate goal is to ensure that “all new products meet by 2030 sustainable design principles”. Our new process innovation technologies will significantly simplify technical development, scale-up and validation, embed resource efficiencies and remove redundancies, e.g. Precise Drug Processing (which is a single manufacturing process step from the active pharmaceutical ingredient (API) to the final drug product), Continuous Manufacturing (e.g. powder to film-coated tablets), and BioFuture programs (a new high density perfusion batch technology for Biotech APIs manufacturing). These new technologies will significantly contribute to close Circular Economy loops as much as possible, and to reduce resource consumption, waste levels, emissions to the air, and our environmental impacts through waste water or pharmaceuticals in the environment.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

150000000

Potential financial impact figure – maximum (currency)

190000000

Explanation of financial impact figure

Next to opportunities like described in Opp4 (“Use of recycling”), we were able to realize in several pilot compounds significant Environmental Sustainability (ES)-driven improvement potentials, like the reduction of the PMI (Process Mass Intensity, which describes the volume of required input materials to produce 1 kg of Drug Substance). Our Green Chemistry Team in the small molecule Technical R&D Line Function is confident to reach an average of 20% PMI reduction by ES-focused synthesis and process design optimizations. On top, cutting-edge technologies like Surfactant Chemistry, Biocatalysis, Continuous Manufacturing, and in Biologics the High Density Perfusion Batch technology have all the potential to increase yields and reduce required resources by up to multiples. A COGS reduction in a magnitude of 10% on all newly launched products over the coming years, for which sustainable design principles were applied from early development stages onwards (or in future even starting already during early research), seems achievable from today’s perspective. Based on an average assumed 4-5 years payback across yearly investments of avg. USD 756M (see below), the yearly opportunity is estimated at USD 150 - 190M/year.

Cost to realize opportunity

756000000

Strategy to realize opportunity and explanation of cost calculation

The R&D internal incremental resources (indirect operational costs) to implement the Sustainable Product Design Roadmap in R&D are expected in a range of USD 5-8M per year, in total USD 70M until 2030. A COGS reduction in a magnitude of 10% on all newly launched products over the coming years, for which sustainable design principles were applied from early development stages onwards, seems achievable from today’s perspective. Based on an average assumed 4-5 years payback for major new technology investments across yearly commercial production investments of USD 700-800M, the yearly future opportunity is estimated at USD 150 - 190M/year, with growing impact in the years 2025-2030 based on the more sustainable product & process design. CO2 impact is expected to grow much faster, as we are going to implement also more sustainable processes and products in cases when there are no directly linked financial savings.

Comment

NA

Identifier

Opp6

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The implementation of Sustainable Product & Process Design principles for our new Development project will not only reduce our direct costs, but also support the positioning of Novartis as credible leader in environmental sustainability (ES) from a low carbon product perspective. We see more and more countries considering or already implementing ES aspects in their Tender criteria, thus rewarding e.g. more sustainable packaging and green logistics efforts. We see us well positioned to meet such criteria based on our efforts in sustainable packaging (e.g. eliminating PVC from secondary and tertiary packaging in our own production facilities by latest 2022, working on the elimination of PVC in primary packaging, reducing overall packaging sizes and plastic use, collaborating with peers and regulators to shift to electronic Patient Information (e-Leaflets). For both environmental and cost reason we will also shift larger commercial volumes from air freight to sea freight, run pilots with eTrucks and other forms of greener logistics (incl. load and shipment frequency optimizations). The UK NHS (National Health Service) has published in 2020 their “Delivering a ‘Net Zero’ National Health Service” plan to reach net zero in their directly controlled emissions (incl. inhalers) by 2040 (with an -80% by 2028-32), and an overall net zero by 2045 in the emissions they can influence (incl. all type of procurement of medication; with an ambition to reach a 80% reduction by 2036 to 2039). This plan includes a clear guidance and preference of low carbon inhalers, and explicitly mentions the ambition to significantly increase the use of DPIs (Dry Powder Inhalers). The Novartis Innovative Medicines Respiratory Franchise is using solely low emission Dry Powder Inhaler (DPI) devices, which have a significant reduced GHG impact compared to pressurized Meter Dose Inhalers (pMDIs). Comparing the results of our detailed Life Cycle Assessments (LCA) especially of the 2020 newly launched Enerzair and Ateectura Breezhaler products with published external LCA data, our Breezhaler DPI LCA suggests a GHG impact 92-97% lower than standard pMDIs, and still a 27-80% (average >50%) lower GHG impact vs other DPIs. Therefore we believe we are well positioned to gain additional market share based on our low carbon Breezhaler inhaler product family.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

32500000

Potential financial impact figure – maximum (currency)

65000000

Explanation of financial impact figure

Our Breezhaler product family generated in 2020 Sales of almost USD 650M (despite Enerzair and Ateectura inhalers only few months on the market). The potential financial

impact represents a 5-10% Sales increase per year based on the assumption of a higher favourability of low carbon inhaler devices by patients and prescribers.

Cost to realize opportunity

3000000

Strategy to realize opportunity and explanation of cost calculation

Our Breezhaler DPI platform is already developed and commercially launched. Additional costs to realize the opportunity would be seen in marketing, and in the further lifecycle management activities to further reduce the product's environmental footprint. The R&D related costs for a more sustainable product and production process development were included already in the former Opp5.

Comment

NA

Identifier

Opp7

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Other, please specify ('My Green Lab Certification' - Engaging scientists in the Novartis laboratories to become more sustainable through the reduction of waste, energy, and water.)

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Situation: As part of the Novartis Environmental Sustainability Strategy, there is a focus on what laboratory behaviors and actions laboratory members can take to be greener. Task: In 2020, Novartis decided to apply for the 'My Green Lab Certification' to engage our entire Novartis laboratory community in this green movement. The main aim is to bring awareness of the environmental impacts in a laboratory, help scientists and the company in general explore ways to reduce the impact of laboratory operations. Action: Novartis have begun preparations for a pilot which will take place in 2021 following a three step process for success: Assessment, Action, Certification. 24 Novartis labs will take part with over 300 researchers. Certification process takes around 6-8 months and the certification will be valid for 2 years. Result: A 'My Green Lab Certification' pilot will begin in 2021. The program will aim to educate and engage our scientists on laboratory sustainability best practices so they can become active contributors in minimizing the environmental impact during their laboratory operations.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

This project is a pilot. As it becomes more mature we will have better visibility of the financial impact and figure.

Cost to realize opportunity

48000

Strategy to realize opportunity and explanation of cost calculation

For the Pilot we will pay USD 2k/lab for 24 labs totaling USD 48k. We will pay per lab, not per person. A lab is made up of researchers working in the same department or sharing the same lab space/floor. The certification process takes around 6-8 months and the certification is valid for 2 years.

Comment

NA

Identifier

Opp8

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Reduced water usage and consumption

Primary potential financial impact

Other, please specify (Reduce overall printers and in turn water, electricity usage and waste)

Company-specific description

Name: Project SEED. Situation: In line with Novartis environmental sustainability targets, Novartis aims to be carbon, water and waste neutral by 2030. Task: Project SEED

was established to reduce paper consumption, energy, water and our carbon footprint across selected Novartis office sites. Action: In 2020 a baseline exercise was undertaken by Hewlett-Packard (HP) on behalf of Novartis to establish the top 10 printing countries based on annual printing volume. Over 850 printing devices were subsequently removed signaling a significant expected paper reduction for 2021. Result: It is anticipated that operating costs will be lower in addition to a reduction in carbon, raw materials such as wood, energy and solid waste. This project will be rolled out to all Novartis sites within 12-24 months.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

This project is a pilot. As it becomes more mature we will have better visibility of the financial impact and figure.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

There is no initial investment required to complete this opportunity. Novartis are removing existing printers and/or turning off printers which are currently leased from HP. Employees have a variety of alternatives such as DocuSign (electronic signature) instead of printing and adobe to view and update documents. The estimated annual savings will be around 119.7 CO2e (metric tons).

Comment

NA

Identifier

Opp9

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient modes of transport

Primary potential financial impact

Reduced direct costs

Company-specific description

Situation: Novartis must decarbonize its fleet of 26,000 vehicles in order to achieve stated target of our own operations carbon neutrality by 2025 and full value chain carbon neutrality by 2030. Task: Design rapid execution strategy for decarbonization of fleet, leveraging rapid action in more mature markets. Action: New fleet strategy and global car policy was approved by the Executive Committee of Novartis in August 2020. Wave 1 will reduce fleet emissions by 63% by 2025 and over 90% by 2030. Unavoidable emissions will be offset with high quality carbon credits from removals. Results: Wave 1 of implementation includes 27 countries. Regional cluster kick-offs have been held in 3 regions, 24 mobilization workshops have taken place, and over 1,200 cars have already been deployed in the US. Estimated annual savings of 128,000 CO2e (metric tons).

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

This project is a pilot. As it becomes more mature we will have better visibility of the financial impact and figure.

Cost to realize opportunity

304000000

Strategy to realize opportunity and explanation of cost calculation

Wave 1 of implementation includes 27 countries. Regional cluster kick-offs have been held in 3 regions, 24 mobilization workshops have taken place, and over 1,200 cars have already been deployed in the US. Costs to realize the opportunity are the procurement costs in replacing the existing fleet as leases expire, and in some markets shift to a more sustainable vehicle on lease ahead of schedule.

Comment

NA

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization’s strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization’s low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

| | Is your low-carbon transition plan a scheduled resolution item at AGMs? | Comment |
|-------|---|---------|
| Row 1 | No, and we do not intend it to become a scheduled resolution item within the next two years | NA |

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization’s use of climate-related scenario analysis.

| Climate-related scenarios and models applied | Details |
|--|--|
| RCP 6 Nationally determined contributions (NDCs) | Novartis is conducting both sensitivity and stress testing for climate and water in the long term, and is basing many of the variables on a scenario that aligns to RCP 6.0. This scenario is perceived as the most likely future and assumes that climate policy remains constant in the wake of the Paris Accord after 2030, and that significant technology advancements in low-carbon emissions technologies take time to scale. This represents a conservative approach to risk (assuming greater exposure), and does not assume improvements that would require significant policy or technology changes. In partnership with the Massachusetts Institute of Technology (MIT) Joint Program on the Science and Policy of Global Change, Novartis conducted a multi-phase project for detailed climate risk analysis of a key site and an initial global assessment of critical sites for the production and research portions of the company that informed risk discussions that formally designated climate as an emerging risk for the first time in 2019. MIT Joint Program uses an Integrated Global System Model (IGSM), which is a flexible model that joins detailed models of the Earth’s climate system and the human driven economic system through combined use of the MIT Earth System Model (MESM) and the MIT Economic Projection and Policy Analysis (EPPA) model. The flood modeling uses sensitivity analysis to examine a changing set of inputs related to 24 hour precipitation data and combined impact of sea level rise and storm surge. The flood risk assessment is a stress test using multiple Monte Carlo simulations through a set of transfer functions that include precipitation to depth, depth to damage, risk of depth and expected resultant damages. The output of this model was aligned with a tailored Climate Change Vulnerability Index (CCVI) that was co-created by MIT Joint Program and Novartis and was deployed in multiple Monte Carlo simulations globally to bound both probability and uncertainty of climate outcomes. This entire collaboration between Novartis and MIT Joint Program was a first of kind partnership for MIT with a commercial and industrial partner to design a credible, repeatable climate risk methodology for global operations. This forward looking data showing various pathways are then provided to applicable staff in production, procurement, facilities, finance, risk and business continuity staff so it can be considered in the existing integrated risk management process as well as influencing decisions in daily business such as utilities procurement. This integrated process should make Novartis more resilient and enable us to serve our patients even as risks and opportunities in markets and communities change. These initial scenario analysis efforts were used to deliver the first TCFD aligned qualitative disclosure and Novartis has now gone to market for a commercial partner to deliver repeat scenario analysis to provide quantitative physical and transition risks. |

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

| | Have climate-related risks and opportunities influenced your strategy in this area? | Description of influence |
|---------------------------------|---|--|
| Products and services | Yes | The R&D "Roadmap Sustainable Product/ Process Design" (as described below in "Investment in R&D") will support the development of more sustainable production processes, which we want to apply as much as feasible also to our existing product portfolio via Life Cycle Management activities. Even so the flexibility to change materials and production processes for already approved drugs is more limited compared to newly developed drugs, the transfer to already commercial products allows to positively impact substantially higher volumes already in the short- to mid-term. |
| Supply chain and/or value chain | Yes | Climate risks driven by increased carbon emissions led to a commitment in supply chain engagement to reduce emissions. Specific examples of actions taken to reduce supply chain emissions are newly adopted language for procurement contracting actions that require information on environmental sustainability in bid responses, development of Green Expectations for our suppliers and collaborative efforts with our peer companies across our shared value chain to help remove barriers to renewables access and use of 100% renewable energy. Climate related opportunities to significantly reduce the carbon emissions of our Clinical Supply Chain were discovered and realized in 2019 and especially 2020, which led to a substantial reduction of the Drug Product and Patient Kit volume required to run our technical and clinical development programs. On top, opportunities to reduce significantly the number of medication shipments were realized. Based on these success stories, the Clinical Supply and Operations Planning process was formalized to ensure a systematic process and strategy is in place, which allows to realize our climate-related and business opportunities. |
| Investment in R&D | Evaluation in progress | We developed and received endorsement in 2020 of our R&D "Roadmap Sustainable Product/ Process Design", which defines a systematic approach across our Research and Development function to apply environmental sustainability optimizations by design into our processes. It covers all areas of small and large molecule drug substance, drug product, device and packaging development, and starts from the raw material selection via the molecule and production process design, up to consideration of supply chain/ distribution activities until end of life treatment. The Roadmap foresees the close integration of Life Cycle Assessments already during the R&D process, and will be further enhanced over the coming years. Ultimate goal is to ensure that "all new products meet by 2030 sustainable design principles". |
| Operations | Yes | Novartis operates globally, and has significant financial exposure to developing carbon pricing mechanisms. 45 national systems exist, and Novartis has operations in 32 of those nations, including the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Ringaskiddy and Grimsby are all subject to EU ETS for Scope 1 emissions. The rapid price increase associated with the EU ETS is an example of the financial risk potentially posed by the carbon footprint from Novartis production facilities and supply chain located in the EU. Slovenia, for instance, is one country where we have significant exposed operations. The rapid price increase in the EU ETS over the last two years is an obvious example of the increasing financial risk posed by our carbon footprint. The benchmark EU Allowance (EUA) price hit EUR 50.05/ ton in May 2021, the highest since the carbon market launched in 2005. That matched previous expectations that the EU ETS costs would increase to between EUR 40 - EUR 80 by 2021 and further increases confidence in the projections of pricing between EUR 50 - EUR 100 by 2030. Methods to manage this risk: Novartis is pursuing rapid shifts in procurement of renewable energy that should complement ongoing efficiency projects that will drive demand reduction, including awarding 5 contracts for virtual power purchase agreements that will deliver 100% renewable electricity for procured electricity in our European operations by 2023. Efficiency investments will continue to reduce absolute emissions while we continue to aggressively adopt renewables in all markets that can support our demand. Effective use of these tools will provide opportunities to reduce costs related to carbon pricing as well as purchase of renewable energy attributes and carbon credits. |

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

| | Financial planning elements that have been influenced | Description of influence |
|-------|--|--|
| Row 1 | Indirect costs Capital expenditures Capital allocation | Novartis operates globally and has significant financial exposure to developing carbon pricing mechanisms. 45 national systems exist, and Novartis has operations in 32 of those nations, including the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Ringaskiddy and Grimsby are all subject to EU ETS for Scope 1 emissions. The rapid price increase associated with the EU ETS is an example of the financial risk potentially posed by the carbon footprint from Novartis production facilities and supply chain located in the EU. Slovenia, for instance, is one country where we have significant exposed operations. The rapid price increase in the EU ETS over the last two years is an obvious example of the increasing financial risk posed by our carbon footprint. The benchmark EU Allowance (EUA) price hit EUR 50.05/ ton in May 2021, the highest since the carbon market launched in 2005. That matched previous expectations that the EU ETS costs would increase to between EUR 40 - EUR 80 by 2021 and further increases confidence in the projections of pricing between EUR 50-EUR 100 by 2030. Methods to manage this risk: Novartis is pursuing rapid shifts in procurement of renewable energy that should complement ongoing efficiency projects that will drive demand reduction, including awarding 5 contracts for virtual power purchase agreements that will deliver 100% renewable electricity for procured electricity in our European operations by 2023. Efficiency investments will continue to reduce absolute emissions while we continue to aggressively adopt renewables in all markets that can support our demand. Effective use of these tools will provide opportunities to reduce costs related to carbon pricing as well as purchase of renewable energy attributes and carbon credits. Recognition of climate impact has led Novartis to raise transparency about the foreseen carbon impact of new clinical studies during drug development. The "Early Trial Pricer" module of our R&D Artificial Intelligence/ Machine Learning "Nerve Live" platform highlights to the clinical trial teams next to the financial resources required to conduct a trial also the expected carbon footprint of various alternative scenarios, so does allow to pick the least carbon neutral option which still meets costs and business targets. A separate "SONAR CO2 Dashboard" converts external R&D costs (for historic actuals as well as for future years plans) based on our spend-based Scope 3 emission calculation method into the carbon footprint as well as for the overall monetized environmental impact (applying our global USD 100 /t CO2 internal carbon price, but considering also the monetized impacts of other air emissions, waste and water impacts as reported externally in our SEE Impact valuation method). This Dashboard allows the user to drill down into various dimensions to fully understand the environmental impacts of all our activities managed through our R&D Horizon Portfolio Management (PM) software |

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

Recognition of climate impact has led Novartis to raise transparency about the foreseen carbon impact of new clinical studies during drug development. The "Early Trial Pricer" module of our R&D Artificial Intelligence/ Machine Learning "Nerve Live" platform is highlighting to our clinical trial teams next to the financial resources required to conduct a trial also the expected carbon footprint of various alternative scenarios, so does allow to pick the least carbon neutral option which still meets costs and business targets.

A separate "SONAR CO2 Dashboard" converts external R&D costs (for historic actuals as well as for future years plans) based on our spend-based Scope 3 emission calculation method into the carbon footprint as well as for the overall monetized environmental impact (applying our global USD 100/t CO2 internal carbon price, but considering also the monetized impacts of other air emissions, waste and water impacts as reported externally in our SEE Impact valuation method). This Dashboard allows to drill down into various dimensions to fully understand the environmental impacts of all our activities managed through our R&D Horizon Portfolio Management software.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2018

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2016

Covered emissions in base year (metric tons CO2e)

973200

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2025

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

708304

% of target achieved [auto-calculated]

27.2190711056309

Target status in reporting year

Underway

Is this a science-based target?

Yes, and this target has been approved by the Science-Based Targets initiative

Target ambition

1.5°C aligned

Please explain (including target coverage)

The Novartis target is to reduce combined Scope1 and Scope2 (market-based) GHG emissions by 100% by 2025 based on 2016 emissions. The -100% by 2025 Scope 1 + 2 targets have been confirmed to be science-based by response from the SBT initiative as part of a larger corporate target of 35% absolute emissions reductions across the entire value chain (Scopes 1, 2 and 3) by 2030. The status achieved in 2020 is a 21% reduction over previous year of emission from our industrial operations.

Target reference number

Abs 2

Year target was set

2018

Target coverage

Other, please specify (Value Chain)

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based) +3 (upstream & downstream)

Base year

2016

Covered emissions in base year (metric tons CO2e)

6626800

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

7691952

% of target achieved [auto-calculated]

-16.0733989255749

Target status in reporting year

Revised

Is this a science-based target?

Yes, and this target has been approved by the Science-Based Targets initiative

Target ambition

1.5°C aligned

Please explain (including target coverage)

Novartis received approval for Science Based Targets to achieve a 35% reduction in Scope 1, 2 and 3 emissions by 2030. This is part of a larger overall environmental sustainability strategy that includes water and waste goals as well. The focus in the company is to reduce absolute emissions by 35% through efficiency and aggressive adoption of renewables, and was then modified in 2020 to achieve carbon neutrality across our value chain (Scope 1, 2 and 3) by 2030 by leveraging absolute emissions reductions and credible, transparent offsets against own operations and supply chain where needed for unavoidable emissions. Note: With regard to the '% of target achieved' scope 1 & 2 have decreased however scope 3 has increased compared to the baseline and 2019. When comparing with last year's and previous submissions scope 3 'purchased goods and services' altogether covered just over 2/3 of the carbon footprint in line with the SBTi requirements, and now covers an expanded scope of our business activities. We have also started collecting supplier specific data and are exploring ways to use the data in the next reporting round.

Target reference number

Abs 3

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based) +3 (upstream & downstream)

Base year

2020

Covered emissions in base year (metric tons CO2e)

7691953

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

100

Covered emissions in target year (metric tons CO2e) [auto-calculated]

0

Covered emissions in reporting year (metric tons CO2e)

7691953

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this a science-based target?

No, but we are reporting another target that is science-based

Target ambition

<Not Applicable>

Please explain (including target coverage)

In 2020, Novartis increased its ambitions regarding environmental sustainability in line with our objective to be a global leader in the field and our understanding of the close interrelationship between planetary and human health. We committed to being carbon neutral across all our operations, incl. the value chain by 2030. This follows up on our Science-Based Target adopted in 2018 and covered under Abs2. In addition to Abs2, our focus will be to drive efficiency through innovation, and substantial adoption of renewables in our value chain, particularly Tier 1 suppliers, and then to reduce our footprint to achieve carbon neutrality by leveraging credible, transparent offsets as needed.

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2018

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Consumption

Target type: energy source

Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)

Percentage

Target denominator (intensity targets only)

<Not Applicable>

Base year

2016

Figure or percentage in base year

27

Target year

2025

Figure or percentage in target year

100

Figure or percentage in reporting year

36

% of target achieved [auto-calculated]

12.3287671232877

Target status in reporting year

Revised

Is this target part of an emissions target?

Yes, it represents the portion of Scope 2 emissions generated through procured electricity. Please see 8.2a where it highlights MWh 770,059 Renewable electricity divided by MWh 2,116,289.

Is this target part of an overarching initiative?

RE100

Please explain (including target coverage)

As part of Novartis' overall approved science based target of 35% reduction in emissions across the entire value chain by 2030, Novartis has pledged to use only renewable electricity by 2025 in own operations, eliminating carbon footprint from procured electricity. This will be accomplished through investments in efficiency to reduce baseload demand and adoptions of renewable energy options.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

| | Number of initiatives | Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *) |
|---------------------------|-----------------------|--|
| Under investigation | 193 | 58771 |
| To be implemented* | 168 | 78924 |
| Implementation commenced* | 130 | 37263 |
| Implemented* | 10 | 214007 |
| Not to be implemented | 1 | 2.7 |

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

| | |
|--------------------------------|----------|
| Energy efficiency in buildings | Lighting |
|--------------------------------|----------|

Estimated annual CO2e savings (metric tonnes CO2e)

300

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

191000

Investment required (unit currency – as specified in C0.4)

950000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Situation: We identified further opportunities to improve energy efficiency in our buildings' lighting. Task: The 250MA LED Lighting and Controls Project Cambridge USA upgraded 4,641 light fixtures to LED fixtures, drivers, and controls. Action: All interior lighting were upgraded while meeting or exceeding IES Standard light levels and existing building lighting codes. Results: The carbon savings attained equaled 300 tons CO2e or 4% of the overall carbon footprint. Electrical savings exceeded 940 MWh per year. The payback period was under a 5-year simple ROI. Local utility rebates of USD 430k kept the payback lower while enhancing the viability of the project. The reduced energy demand from lighting reductions lessened the strain on the overall electrical system in the building. Energy savings were calculated by comparing the wattage of existing equipment to the proposed retrofit equipment. Hours of operation were based on standard business hours for the site. Existing utility rates were used to calculate the cost savings with no year over year escalators. Carbon savings were based on the EPA E-Grid carbon factors for the area applied to the kwh savings total.

Initiative category & Initiative type

| | |
|--------------------------------|--|
| Energy efficiency in buildings | Heating, Ventilation and Air Conditioning (HVAC) |
|--------------------------------|--|

Estimated annual CO2e savings (metric tonnes CO2e)

373

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

189000

Investment required (unit currency – as specified in C0.4)

371000

Payback period

1-3 years

Estimated lifetime of the initiative

11-15 years

Comment

The 100TS Chiller Optimization Project: Cambridge USA chiller optimization project included the installation of two Adaptive Frequency Drives on 910 and 1100 ton chillers. Situation: Not all pumps are currently controllable by a variable-frequency drive (VFD). Task: Purge units for all three Trane centrifugal chillers and new Trane color display Adaptiview control panels for all three Trane centrifugal chillers. New variable-frequency drive's (VFD) for all pumps not currently controllable by a VFD including three chilled water pumps and three condenser water pumps. Action: Trane chiller plant manager and programming – first year building performance monitoring. Results: Carbon savings of 373 tons CO2e with an 8% reduction in carbon for the site. Electrical savings exceeded 1160 MWh per year. The payback period was under a 3-year simple ROI. Local utility rebates of USD 425k kept the payback lower while enhancing the viability of the project. Energy savings were calculated using engineering analysis of the existing equipment operations parameters compared to the new equipment load profiles. Hours of operation were based on standard business hours for the site. Existing

utility rates were used to calculate the cost savings with no year over year escalators. Carbon savings were based on the EPA E-Grid carbon factors for the area applied to the kwh savings total.

Initiative category & Initiative type

| | |
|--------------------------------|--|
| Energy efficiency in buildings | Heating, Ventilation and Air Conditioning (HVAC) |
|--------------------------------|--|

Estimated annual CO2e savings (metric tonnes CO2e)

1330

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

354835

Investment required (unit currency – as specified in C0.4)

0

Payback period

1-3 years

Estimated lifetime of the initiative

1-2 years

Comment

Global Energy Optimization Programme. Situation: 26 locations globally account for over 80% of the electricity consumption within the Novartis commercial real estate portfolio. There was a distinct lack of common practice in terms of the operational standards across these sites. Task: In 2020 a project was implemented to introduce a set of 17 globally consistent energy and water efficiency measures that could be adopted at all sites without the need for any investment. The project was expected to deliver a 2% pa reduction in energy consumption across the sites. The initiatives were made up of BMS interventions (time/temp/strategy), Heating, ventilation and air conditioning (HVAC) adjustments and site baseload assessments. Action: Every location was provided with a clear set of instructions detailing each initiative and what was expected in terms of making the changes. These were also translated into Spanish for the South American sites. Progress was tracked centrally with the local teams feeding progress back on a monthly basis. Results: The annualized electricity and thermal (gas & steam) energy savings of the programme were calculated to be 2.2% and 2% respectively.

Initiative category & Initiative type

| | |
|------------------------------|------|
| Low-carbon energy generation | Wind |
|------------------------------|------|

Estimated annual CO2e savings (metric tonnes CO2e)

204000

Scope(s)

Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Situation: Novartis has to decarbonize its electricity consumption in order to meet corporate targets of carbon neutrality by 2025 in our own operations. Task: In 2020 Novartis decided to address this requirement by sourcing 100% renewable energy to contribute to this target. Action: Novartis signed five virtual power purchase agreements (VPPAs) in 2020, which are expected to collectively add more than 275 megawatts of clean power to the electrical grid in Spain. Results: This move makes Novartis the first pharmaceutical company set to achieve 100% renewable electricity in its European operations through VPPAs. Under the agreements, wind and solar electricity will be generated from six renewable energy projects being developed by three different providers – Acciona, EDP Renewables and Enel Green Power. All projects will be located in Spain. The projects are expected to be online by 2023 and aim to address the company’s carbon footprint across its European operations over a period of 10 years from the start of operations. This is equivalent to removing approximately 113, 000 passenger vehicles from the road each year. These European agreements follow the VPPA recently implemented with the Santa Rita East Wind Farm in Texas, US, which currently addresses 100% of the electricity used in our operations in the US and Canada.

Initiative category & Initiative type

| | |
|--------------------------------|-------------------|
| Energy efficiency in buildings | Motors and drives |
|--------------------------------|-------------------|

Estimated annual CO2e savings (metric tonnes CO2e)

4

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

42400

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Situation: The building management team conducted a review of a mixed-use building on the Basel Campus, primarily set up to deliver staff catering and office space. Task: During the review, the team identified equipment, including large air handling units, that were running unnecessarily out of hours. Action: The identification of this potential saving enabled the building management team to review the BMS settings, equipment run times, required air supply and extract volumes, and re-program the building's systems accordingly. Results: The adjustments resulted in significant annual cost and electricity use savings of CHF 38 k and 329 MWh / annum savings, respectively, with no investment required.

Initiative category & Initiative type

| | |
|------------------------------|------|
| Low-carbon energy generation | Wind |
|------------------------------|------|

Estimated annual CO2e savings (metric tonnes CO2e)

2700

Scope(s)

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Project: Onsite wind turbine – Puurs Situation: Puurs site currently purchases all of its energy from external providers, most of which is conventional fossil fuel based Task: In order to reduce the CO2 emissions at Puurs site, an alternative energy source needed to be explored Action: Puurs site has commissioned Luminus to build and operate an onsite wind turbine, of a slow rotating type with three-blades of 63m in length each. Results: This turbine is expected to produce 7,000,000 kWh of green energy per year, equivalent to that consumed by 2,000 typical households. This green energy will eliminate 2,700 tons of CO2 emissions each year. Puurs site expects to use about 85 percent of the green energy produced onsite, with the rest injected into the grid.

Initiative category & Initiative type

| | |
|----------------|---|
| Transportation | Other, please specify (Clinical trial shipment) |
|----------------|---|

Estimated annual CO2e savings (metric tonnes CO2e)

1400

Scope(s)

Scope 3

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3400000

Investment required (unit currency – as specified in C0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Situation: The medication shipment frequency to the clinical sites participating in our clinical trials had not been reviewed for optimization. Task: An internal team in our Global Clinical Supply line function identified an opportunity to significantly optimize the medication shipment frequency to the clinical sites participating in our clinical trials.

Action: Through adjustments in the shipment algorithm they were able to optimize shipments associated with 40 different clinical trials. Results: These actions reduced in 2020 more than 25,000 medication shipments and resulted in more than 2,000 fewer tons of carbon emissions. For the coming years, we assume an average of 18,000 avoided medication shipments, leading to avg. USD 3.4M annual savings. There was no incremental investment required, only a partial dedication of internal colleagues to implement new operating procedures and trainings. The team was recognized with the 2020 Novartis "Better World Award" in the category Environmental Sustainability. We plan to apply the same method in 2021 also to the shipments of bioanalytical samples to further scale-up the impact.

Initiative category & Initiative type

| | |
|--|----------------------------------|
| Waste reduction and material circularity | Product/component/material reuse |
|--|----------------------------------|

Estimated annual CO2e savings (metric tonnes CO2e)
1000

Scope(s)
Scope 3

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
950000

Investment required (unit currency – as specified in C0.4)
50000

Payback period
<1 year

Estimated lifetime of the initiative
11-15 years

Comment

Situation: A successful pilot was conducted in 2019 to replace one-time use shipper boxes for medication shipments required for our clinical studies. Task: The concept was significantly scaled-up in the year 2020 following this pilot. Action: More than 13,700 shipments were already switched to the re-usable shipper boxes, contributing to estimated 790 tons of CO2 reduction. Results: Based on a wider rollout to more vendors, regions and studies, we expect for 2021 a 30-40% increase in volumes, which will lead to min. 1000 tons of annual CO2 reduction and estimated USD 0.9-1.0M annual savings. There was no incremental investment required, only a partial dedication of internal colleagues to implement new operating procedures and trainings.

Initiative category & Initiative type

| | |
|--|-----------------|
| Waste reduction and material circularity | Waste reduction |
|--|-----------------|

Estimated annual CO2e savings (metric tonnes CO2e)
1500

Scope(s)
Scope 3

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
4250000

Investment required (unit currency – as specified in C0.4)
100000

Payback period
<1 year

Estimated lifetime of the initiative
11-15 years

Comment

Situation: Significant coverage of technical and clinical Drug Product and Patient Kit demand. Task: With Technical R&D, the teams were working to reduce the overage of technical and clinical Drug Product and Patient Kit demand in our Development projects. Action: The operational waste was reduced in 2020 by 15 tons of hazardous Drug Substance, Drug Product and Patient Kit waste. Results: The avoided material waste is estimated at a value of USD4,25M and an equivalent to 1,500 tons of CO2. There was no incremental investment required, only a partial dedication of internal colleagues to implement new operating procedures and trainings.

Initiative category & Initiative type

| | |
|----------------|--|
| Transportation | Other, please specify (Logistics and transportation) |
|----------------|--|

Estimated annual CO2e savings (metric tonnes CO2e)
1400

Scope(s)
Scope 3

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

4940000

Investment required (unit currency – as specified in C0.4)

100000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

In the past, Novartis used to make more than 80'000 medication shipments for clinical trials to the clinical sites every year. During early recruitment phases of clinical trials, it makes sense to ship more frequent a rather small number of patient kits to clinical sites to avoid wastage. The medication demand is however much more predictable after achievement of full patient recruitment, which allows to significantly reduce the frequency of medication shipments, while sending a higher number of patient kits per shipment. A systematic process was introduced to capture this opportunity in time across the overall study portfolio. Through smart adjustments in the shipment algorithms starting in 2019, the TRD Global Clinical Supply team was able to optimize shipment parameters across more than 40 clinical trials, which avoids over the lifetime of those trials more than 50'000 medication shipments. The team was recognized with the 2020 Novartis "Better World Award" in the category Environmental Sustainability. 2020 was the last year of very large clinical trials with high optimization potential, so the future benefits are expected to stabilize at a normal level of clinical trial activities from 2021 onwards. From 2021 onwards, we plan to avoid an average of 18'000 medication shipments per year and intend to apply these learnings also to other types of shipments within the R&D organization.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

| Method | Comment |
|--|---|
| Internal price on carbon | Novartis uses an internal shadow price of carbon of USD 100 per metric ton of carbon equivalent to influence decisions on capital investments. As described elsewhere in this submission in more detail, this is meant to show a more holistic approach to long term financial impact of investments that yield a sustainability improvement. |
| Lower return on investment (ROI) specification | Novartis financial guidance specifies that investments specifically focused on energy efficiency shall have return on investment calculated for the life of the asset as opposed to a shorter period of time for other investments, resulting in a lower hurdle rate for those investments. |
| Internal incentives/recognition programs | Internal award programs exist to recognize Novartis associate's efforts to reduce the carbon footprint of the company. These programs are sponsored by Global Health and Corporate Responsibility and Real Estate and Facility Services. |
| Employee engagement | Employee engagement programs were increased in 2020 to raise awareness of the need to speed implementation of the corporate target for carbon neutrality in own operations by 2025 and carbon neutrality in value chain carbon emissions by 2030. CEO and ECN members repeatedly engaged personally to stress support and spur action. Engagements included internal global town halls, site level town halls, global social media posts, environmental network community calls, and projects at multiple sites using external consultants to inform development and execution of more comprehensive employee engagement campaigns. |
| Internal finance mechanisms | The CFO has directed that all CAPEX investments greater than USD 20 M should have a sustainability assessment performed to ensure that progress was being made towards the corporate targets in carbon, water and waste reductions. If the investment does not improve performance in at least one of those areas, the request for funding will not be forwarded for approval. |
| Dedicated budget for low-carbon product R&D | In 2020, the CFO of Global Drug Development (GDD) has endorsed a new internal finance mechanism called the "GDD Environmental Sustainability (ES) Self-funding model". This model allows to ring-fence 50% of the GDD financial savings derived from GDD ES initiatives for a period of 3 years, and to re-invest these savings directly into new incremental GDD ES projects (which are e.g. more explorative by nature, or require some seed funding to scale up resources for ES). The large majority of those additional positions and funds will be invested starting 2021 into the Sustainable Product and Process Design, thus scaling up especially low carbon product R&D. |
| Please select | |

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Sandoz, the generic products Division of Novartis, is a leading producer of anti-infective Active Pharmaceutical Ingredients (AI APIs). Our manufacturing portfolio of AI APIs is predominantly located in Europe (Austria, Germany, Italy, Slovenia and Spain). Sandoz/Novartis is one of the few pharma companies that produces AI APIs outside of China and India. We put high efforts in the energy efficiency of our manufacturing processes for AI APIs and achieved up to 30% energy efficiency improvement of these processes over the last 10 years. Furthermore, the carbon intensity of the energy used at our locations in Europe is by far lower compared the carbon intensities in China and India. Carbon Footprint LCA assessments of our AI API products have demonstrated that the per ton carbon impact of our products is in the order of magnitude of 16 kg CO2e/kg API compared to 35 to 48 kg CO2e/kg API when produced in China or India. They have a 2 to 3 times lower carbon footprint compared to most other AI APIs. Therefore, we consider the Sandoz AI APIs as low-carbon products.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Estimating and Reporting the Comparative Emissions Impacts of Products (WRI)

% revenue from low carbon product(s) in the reporting year

4

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

NA

Level of aggregation

Group of products

Description of product/Group of products

Metered Dose Inhalers (MDIs) are one of the two main types of inhalers for the delivery of respiratory drugs, for the treatment of asthma and chronic obstructive pulmonary disease (COPD); the other is Dry Powder Inhalers. MDIs are also known as pressurised metered dose inhalers (pMDIs). The Novartis Innovative Medicines Respiratory Franchise is using solely low emission Dry Powder Inhaler (DPI) devices, which have a significant reduced GHG impact compared to pMDIs in particular HFC-134a. The Breezhaler DPI LCA estimates a GHG impact 92-97% lower than standard pMDIs and a 27-80% (average >50%) lower GHG impact vs other DPIs.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (Life Cycle Assessment as per ISO14040/44)

% revenue from low carbon product(s) in the reporting year

1

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

The Breezhaler dry powder inhaler (DPI) has a low carbon footprint, which is consistent with the literature on other DPIs. The 2020 life-cycle assessment conducted in France, Germany, UK and Japan used a "cradle-to-grave" technique to evaluate six environmental impact categories (global warming potential; acidification; ozone depletion; resource use, minerals, and metals; eco-toxicity; and freshwater use) associated with the use of Breezhaler. Three versions of Breezhaler (30-day pack with and without digital companion, 90-day pack without digital companion) were evaluated to identify major hotspots in the device life cycle and provide realistic solutions to reduce environmental impact. While no single life-cycle stage dominated the climate change impact of the 30-day device with digital companion, inhaler raw materials and packaging contributed to 96% of the resource depletion impact for the 30-day device without digital companion. For the 90-day device without digital companion, packaging contributed between 42% and 62% of the impact across all categories. Overall, due to its extended life and a supply of 90 days of capsules, the Breezhaler inhaler device with the 90-day pack was found to have the lowest environmental impact. The Breezhaler carbon footprint case study can be found here <https://www.novartis.com/our-company/corporate-responsibility/environmental-sustainability/climate/case-study-breezhaler-carbon-footprint>

Level of aggregation

Group of products

Description of product/Group of products

Hospital healthcare generates large quantities of greenhouse gas emissions (estimated to be around 4 to 5% of national carbon footprints). Novartis through its extensive research within the cell and gene therapy division created and continues to develop a technology which represents a major leap in personalized medicine and a turning point in the ability to treat and potentially even cure many serious illnesses. Conventional medicines need to be taken for weeks, months or even years incurring many trips for the patient to see their doctor, hospital and pharmacy thereby increasing their carbon footprint. Due to the fact that cell and gene therapies are designed to be one time treatment with lasting results aimed at transforming people's lives it therefore also reduces the patients and associated stakeholder's carbon footprint.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Estimating and Reporting the Comparative Emissions Impacts of Products (WRI)

% revenue from low carbon product(s) in the reporting year

0

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Three different methods are used 1. Chimeric, Antigen, Receptive, Therapy (Car-T cell therapy) which trains T cells to recognize and fight certain cancers, 2. Clustered, Regularly, Interspaced, Short, Palindromic, Repeats (CRISPR) a molecular scissors used to make changes to certain diseases and cancers and finally Adeno Associated Virus (AAV) based therapy, uses a deactivated virus cell to deliver genetic material and repair them inside the body.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

464500

Comment

In 2018, Novartis approved a new environmental sustainability strategy to become carbon neutral in own operations by 2025. The Novartis target is to reduce combined Scope 1 and Scope 2 (market-based) GHG emissions by 100% by 2025 based on 2016 emissions.

Scope 2 (location-based)

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

726000

Comment

In 2018, Novartis approved a new environmental sustainability strategy to become carbon neutral in own operations by 2025. The Novartis target is to reduce combined Scope 1 and Scope 2 (market-based) GHG emissions by 100% by 2025 based on 2016 emissions.

Scope 2 (market-based)

Base year start

January 1 2016

Base year end

December 31 2016

Base year emissions (metric tons CO2e)

508700

Comment

In 2018, Novartis approved a new environmental sustainability strategy to become carbon neutral in our own operations by 2025. The Novartis target is to reduce combined Scope 1 and Scope 2 (market-based) GHG emissions by 100% by 2025 based on 2016 emissions.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

387656

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

Data includes Scope 1 emissions for all of Novartis for 2020 reporting year. Individual countries listed in C0.3 represent 95% of Novartis's Scope 1 emissions. All data included in 6.1 and 7.2.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

According to the GHG Protocol Scope 2 Guidance.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

490516

Scope 2, market-based (if applicable)

330137

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

Data includes Scope 2 emissions for all of Novartis for 2020 reporting year. Individual countries listed in C0.3 represent 97% of Novartis's Scope 2 emissions. All data included in 6.3 and 7.5.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

5753952

Emissions calculation methodology

The emissions were calculated based on Novartis spend using a Global Environmentally Extended Input-Output Model (EEIO). Based on our internal accounting system, spend categories have been identified that fall under the Purchased Goods and Services category and cover the commercial, manufacturing, and research and development operations (same categories are covered as under Capital Goods). Emissions resulting from the Operational Expenditure (OPEX) share of that spend are reported under this category. In comparison with last year's and previous submissions that altogether covered slightly over 2/3 of the carbon footprint in line with the SBTi requirements, this category now covers all business activities not specifically falling under the other categories. The EEIO model is run by the WifOR Institute and has been used for this purpose, while being continuously improved, since 2015. The model is fed with spend mapped to 57 specific industrial sectors and 188 countries. Applying the technique of IO-Analysis, it is possible to trace the inputs of production along the entire supply chain. The hybrid model delivers emissions based on modelling sectoral inter-relationships, regional trade flows and applying average emission intensities by industry sector. The EEIO model uses the World Input-Output Database (WIOD) supplemented by several additional databases like EORA, EXIOBASE and most recent OECD and Eurostat data. The model includes emissions for all tiers of suppliers in the value chain (our Suppliers as well as Suppliers of Suppliers).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

We are using the Global EEIO model as it currently delivers the most reliable emissions data related to the Purchased Goods and Services category. We have in parallel started collecting data from suppliers. In 2020, we received environmental data from key 75 suppliers of APIs (Active Pharmaceutical Ingredients) and FDFs (Finished Dosage Form). The lack of granularity of that data and the methodological inconsistency of its calculation however still impede its use for CDP reporting purposes. We are exploring potential improvements in this area and will provide further insights in the next reporting round.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

278667

Emissions calculation methodology

The emissions were calculated based on Novartis spend using a Global Environmentally Extended Input-Output Model (EEIO). Based on our internal accounting system, spend categories have been identified that fall under the Capital Goods category and cover the commercial, manufacturing, and research and development operations (same categories are covered as under Purchased Goods and Services). Emissions resulting from the Capital Expenditure (CAPEX) share of that spend are reported under this category. The spend occurs especially in Production design and construction, Production equipment, machinery and supplies, Laboratory equipment & supplies, and IT & Digital. In comparison with last year's and previous submissions that altogether covered slightly over 2/3 of the carbon footprint in line with the SBTi requirements, this category now covers all CAPEX activities not specifically falling under the other categories. The EEIO model is run by the WifOR Institute and continuously improved since 2015. The model is fed with spend mapped to 57 specific industrial sectors and 188 countries. Applying the technique of IO-Analysis, it is possible to trace the inputs of production along the entire supply chain. The hybrid model delivers emissions based on modelling sectoral inter-relationships, regional trade flows and applying average emission intensities by industry sector. The EEIO model uses the World Input-Output Database (WIOD) supplemented by several additional databases like EORA, EXIOBASE and most recent OECD and Eurostat data. The model includes emissions for all tiers of suppliers in the value chain (our Suppliers as well as Suppliers of Suppliers).

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

We are using the Global EEIO model as it currently delivers the most reliable emissions data related to the Capital Goods category. Previously, we had used the Global EEIO model developed by PwC (ESCHER - Efficient Supply Chain Emissions Reporting) for this category. As of this year, we have started using the Global EEIO model developed by the WifOR Institute to achieve greater consistency of results across reported categories. As for Cat 1, we have now started collecting supplier specific data and are exploring ways to use the data in the next reporting round.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

282270

Emissions calculation methodology

The emissions were calculated based on the amount of fuel for vehicles, primary energy for combustion, and electricity purchased by Novartis in 2020. The emission factors applied reflect the upstream part of the respective Life Cycle Emissions Factors. In addition, transmission and distribution losses in the electricity networks attributable to our consumption (based on IEA Statistics for T&D Losses) are considered here. The full Life Cycle Emissions Factor is applicable in that case. The calculation does not include the upstream emissions of purchased steam. Life Cycle Emissions Factors follow the IPCC Guidelines and, for electricity, the ELCD European Reference Life Cycle Database 2.0.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

94

Please explain

The method of calculation was chosen based on primary data availability, i.e. the average-data method was used in combination with the emission factors from recommended databases.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

319896

Emissions calculation methodology

The emissions were calculated based on Novartis spend using a Global Environmentally Extended Input-Output Model (EEIO). Based on our internal accounting system, spend categories have been identified that fall under the Upstream Transportation and Distribution category and cover both In- and Out-bound services purchased by Novartis for transportation and distribution. Emissions resulting from both the Operational Expenditure (OPEX) and Capital Expenditure (CAPEX) shares of that spend are reported under this category, though the CAPEX share is only about 6%. The EEIO model is run by the WifOR Institute and has been used for this purpose, while being continuously improved, since 2015. The model is fed with spend mapped to 57 specific industrial sectors and 188 countries. Applying the technique of IO-Analysis, it is possible to trace the inputs of production along the entire supply chain. The hybrid model delivers emissions based on modelling sectoral inter-relationships, regional trade flows and applying average emission intensities by industry sector. The EEIO model uses the World Input-Output Database (WIOD) supplemented by several additional databases like EORA, EXIOBASE and most recent OECD and Eurostat data. The model includes emissions for all tiers of suppliers in the value chain (our Suppliers as well as Suppliers of Suppliers). In that respect it covers also indirect emissions related to Upstream Transportation and Distribution.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

We are using the Global EEIO model as it currently delivers the most reliable emissions data related to the Upstream Transportation and Distribution category. In parallel, we have been collecting data from suppliers since 2018. The continuing lack of granularity of that data and the methodological inconsistency of its calculation still impedes the use thereof for CDP reporting purposes, we are however working on employing the GLEC (Global Logistics Emissions Council Framework) framework for the next reporting round.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

27949

Emissions calculation methodology

The emissions were calculated based on the analysis of the amount and type of operational waste produced across the whole organisation. All types of hazardous and non-hazardous waste related to the business operations (i.e. excluding construction debris) are considered. The emission factors reflect the waste output-route model developed by an external consultancy. The following disposal methods were considered – Recycling, Treatment, Incineration (with and without energy recovery) and Landfill. Notes: 1. Emissions related to on-site incineration of Fossil Waste are considered in Scope 1 emissions (on-site energy generation). 2. Treatment of wastewater generated in operations is not covered as the associated emissions are considered not material to the final emissions figure for this category. 3. Due to the waste reduction program and the pandemic situation, the total amount of waste generated decreased by 23% y-o-y. The reason for the y-o-y increase in emissions is due to an error discovered in the calculation methodology which was remedied.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

The method of calculation follows best practices thanks to the availability of primary data. Emissions factors applied use the insights of the model developed by an external consultancy. Data obtained from our service suppliers (waste management companies) are reviewed by us to verify data correctness.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

21990

Emissions calculation methodology

The emissions were calculated by and obtained from our business travel solutions partner. They cover all air travel undertaken by Novartis employees as well as service providers on their trips for Novartis. Only air travel is considered in this category as a company-wide assessment showed that this represents over 90% of all emissions from business travel serviced by third parties. The calculations are based on the guidelines provided by DEFRA/DECC's GHG Conversion Factors, including factoring of actual distance flown, uplift-factor and class of flight.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Please explain

The method of calculation follows the type of primary data currently available to us. We are working on further enhancing the method of calculation in cooperation with an external travel-tech company.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

98867

Emissions calculation methodology

The emissions were calculated using a composite 'per-capita' emission factor applied to the number of Novartis' employees in 2020. The respective emission factor was derived from the employee regional commuting model developed by an external consultancy in 2009. The model reflected commuting patterns using both private and public transport and applied respective GHG emission factors in each major geographic region. The commuting patterns were mapped to average distances. The following major geographic regions were considered: Europe / North America & Australia / Asia, Africa & South America. The resulting figure was reduced in line with the assumptions on homeworking (as follows) and the associated reduction of commuting. This category now also includes an assessment of homeworking-related carbon footprint and covers energy consumed by the workstation, and for heating and cooling the home office room. Assumptions were made on the number of employees working from home while taking into account those engaged in the continuing operation of manufacturing sites and labs. Homeworking was assumed as of mid-March 2020 to reflect the wide adoption of Covid-related restrictions. Heating and cooling needs were differentiated based on countries and their climate and economic situation (altogether over 70 countries). Respective emission factors reflect energy mix of the countries where available, regional proxies are used where data was not available. Key data sources were: IEA, IRENA, Eurostat

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The development of an employee regional commuting model was considered a suitable hybrid approach that balances the desirability of employing primary data and the difficulty of collecting such data on annual basis for dozens of thousands of employees. Accounting for the model's year of inception, we are planning to review the model for next year's submission.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

The emissions associated with leased assets (including leased cars) are under operational control of Novartis and are included under Scope 1 and Scope 2. Hence, this Scope 3 category is not considered relevant.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

30417

Emissions calculation methodology

The emissions were calculated using a distance-based product transportation model developed by an external consultancy in 2009. The model takes the assessed distance which is multiplied by the weight of goods sold and the respective emission factors that reflect the mode of transport, average fuel consumption, average utilization, average size and mass or volume of the goods and the vehicles. The gross global production output is considered here, i.e. both finished and non-finished goods/ (intermediary) products (excluding packaging) are covered. The transportation model is based on the following patterns derived from regional production types and volumes: 1) All products are transported over 500km by train or 40t lorry (50% each). 2) 10% of all products are transported by ship for 5000 km. 3) 3% of all products are transported by airplane for 5000 km. 4) All products are transported by small lorries on the last 25km. 5) Products delivered to internal and external destinations are treated equally. Novartis doesn't have any key over-the-counter drugs, hence patient travel associated with medical products pick-up was not considered.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The development of a distance-based product transportation model was considered a suitable approach that reflects the lack of data regarding the actual fuel consumption from downstream transport vehicles/ craft/ vessels, and the actual utilization rate. Accounting for the model's year of inception, we are planning to review the model for next year's submission.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

This Scope 3 category is not considered relevant as only a few Novartis products (Pharmaceutical Finished Drugs) are processed further after they are sold. Our business model does not build on the sale of intermediate products.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

169640

Emissions calculation methodology

The emissions were calculated based on the quantity of HFC used for our production of the propellant based inhalers. The emission factor for HFC-134a as published in the IPCC Guidelines was applied on the total amount of HFC used. No other Novartis products (Pharmaceutical Finished Drugs) have been identified as producing GHG emissions while in use.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The method of calculation follows best practices thanks to the availability of primary data directly from the manufacturing operations. The emission factor applied reflects the global standard.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

This Scope 3 category is not considered relevant as Novartis' pharmaceutical products (tablets, injectables, etc.) are consumed by patients and no GHG emissions associated with the end of life treatment occur there. Novartis has only a few medical device products (e.g. inhalers, auto-injectors) of which the Scope 3 emissions from inhalers (a major source) are already considered in Category 11 'Use of sold products'. For the product remainders, it was assessed that GHG emissions are not relevant.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Based on the screening of leased assets, it was concluded that leased-out buildings are less than 1% of the overall buildings inventory and emissions from them are not relevant.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

This category is not relevant as Novartis's business model does not use franchises.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

GHG emissions associated with Novartis's investments in other companies are not considered relevant. Novartis has limited potential to influence their emissions. This category is relevant for companies that provide financial services.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

No 'Other (upstream)' emissions were identified during our screening of relevant Scope 3 activities.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

No 'Other (downstream)' emissions were identified during our screening of relevant Scope 3 activities.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00001456

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

708304

Metric denominator

unit total revenue

Metric denominator: Unit total

48659000000

Scope 2 figure used

Market-based

% change from previous year

23

Direction of change

Decreased

Reason for change

23% reduction in emissions in alignment with a 15% decrease in production tonnage due to site closures related to COVID, along with decreases attributed to energy savings projects.

Intensity figure

8.42

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

703304

Metric denominator

unit of production

Metric denominator: Unit total

84095

Scope 2 figure used

Market-based

% change from previous year

6.6

Direction of change

Decreased

Reason for change

6.6% reduction in emissions in alignment with a 15% decrease in production tonnage due to site closures related to COVID, along with decreases attributed to energy savings projects.

Intensity figure

7.1

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

708304

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

99661

Scope 2 figure used

Market-based

% change from previous year

19.4

Direction of change

Decreased

Reason for change

19.4% reduction in emissions in alignment with a 15% decrease in production tonnage due to site closures related to COVID, along with decreases attributed to energy savings projects. The decrease in the FTE count was marginal at 2%.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

| Greenhouse gas | Scope 1 emissions (metric tons of CO2e) | GWP Reference |
|----------------|---|---|
| CO2 | 368679 | IPCC Fifth Assessment Report (AR5 – 100 year) |
| HFCs | 9488 | IPCC Fifth Assessment Report (AR5 – 100 year) |

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

| Country/Region | Scope 1 emissions (metric tons CO2e) |
|--|--------------------------------------|
| United States of America | 66391 |
| Austria | 66381 |
| Italy | 9753 |
| Slovenia | 37793 |
| United Kingdom of Great Britain and Northern Ireland | 33695 |
| Germany | 27353 |
| Spain | 23970 |
| Turkey | 10844 |
| France | 10822 |
| Poland | 9102 |
| Japan | 5856 |
| Ireland | 7413 |
| Belgium | 8764 |
| Egypt | 2393 |
| Singapore | 9282 |
| China | 5711 |
| Russian Federation | 5761 |
| Switzerland | 2159 |
| India | 2605 |
| Mexico | 2480 |
| South Africa | 778 |
| Brazil | 1164 |
| Bangladesh | 618 |
| Other, please specify (Rest of World) <i>Rest of world accounts for 5% of the Novartis total emissions reported by 48 additional countries including Romania, Taiwan, Argentina, Indonesia, Pakistan, Czech Republic, Ukraine, Algeria, Philippines, Greece, Bulgaria, Hungary, Portugal, Netherlands, Belarus, Croatia, Finland, Australia, Kazakstan, Malaysia, Sweden, Slovakia, United Arab Emirates, Saudi Arabia, Peru, Israel, Denmark, Uzbekistan, Macedonia, Serbia, Morocco, Korea Rep., Colombia, Chile, Lithuania, Guatemala, Norway, Latvia, Estonia, Bosnia-Herzegovina, Hong Kong, New Zealand, Venezuela, Thailand, Ecuador, Vietnam, Malta, and Nigeria.</i> | 22464 |
| Canada | 4551 |

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

| Activity | Scope 1 emissions (metric tons CO2e) |
|--|--------------------------------------|
| Manufacturing (onsite combustion and processes) | 241873 |
| Administration (onsite combustion and processes) | 25488 |
| Research and Development (onsite combustion and processes) | 19494 |
| Sales (vehicle emissions) | 91312 |

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

| Country/Region | Scope 2, location-based (metric tons CO2e) | Scope 2, market-based (metric tons CO2e) | Purchased and consumed electricity, heat, steam or cooling (MWh) | Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh) |
|--|--|--|--|--|
| United States of America | 72656 | 0 | 234730 | 202600 |
| Switzerland | 66421 | 51814 | 369587 | 41196 |
| Austria | 45063 | 0 | 273312 | 273312 |
| Slovenia | 65302 | 115358 | 218712 | 22492 |
| Italy | 9164 | 2162 | 25908 | 20347 |
| Germany | 31396 | 26293 | 71381 | 20057 |
| China | 20466 | 21273 | 34616 | 5362 |
| India | 37907 | 37901 | 41253 | 111 |
| Singapore | 16260 | 15603 | 37236 | 0 |
| Spain | 21124 | 0 | 71733 | 71726 |
| Turkey | 15880 | 15880 | 35891 | 3692 |
| Ireland | 18104 | 221 | 43470 | 41665 |
| United Kingdom of Great Britain and Northern Ireland | 4291 | 5006 | 21439 | 0 |
| Poland | 16349 | 409 | 22543 | 21726 |
| France | 1438 | 759 | 25478 | 4864 |
| Egypt | 7660 | 7660 | 16181 | 0 |
| Belgium | 4075 | 2451 | 17912 | 0 |
| Japan | 5281 | 4086 | 9741 | 0 |
| Russian Federation | 3207 | 3208 | 9344 | 0 |
| South Africa | 4149 | 4149 | 4168 | 0 |
| Other, please specify (Rest of World) | 14123 | 10123 | 29305 | 3221 |
| Bangladesh | 2739 | 2739 | 17912 | 0 |
| Mexico | 734 | 734 | 1592 | 0 |
| Brazil | 2654 | 2309 | 16906 | 11255 |
| Canada | 4070 | 0 | 26765 | 26435 |

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By activity

C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

| Activity | Scope 2, location-based (metric tons CO2e) | Scope 2, market-based (metric tons CO2e) |
|--------------------------|--|--|
| Manufacturing | 366146 | 239604 |
| Administration | 82791 | 52870 |
| Research and Development | 41578 | 37663 |

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

| | Change in emissions (metric tons CO2e) | Direction of change | Emissions value (percentage) | Please explain calculation |
|---|--|---------------------|------------------------------|--|
| Change in renewable energy consumption | 14622 | Increased | 2 | The proportion of renewable energy input increased by 2% between 2019 and 2020 equivalent to an absolute decrease of 14.6 ktCO2e or 2% (14.6 / 898.1 *100) ktCO2e of the gross global emissions in 2019 (898.1 ktCO2e for Scope 1 and 2 combined). |
| Other emissions reduction activities | 37524 | Decreased | 4 | The emissions reduction projects undertaken in 2020 will achieve emission reductions of 37.5 ktCO2e annually, equivalent to 4% reduction (37.5 / 898.8*100) of the gross global emissions 2019 (898.1 ktCO2e for scope 1 and 2 combined). |
| Divestment | 2948 | Decreased | 0.3 | The divestment of multiple sites in 2020 resulted in an emission reduction of 2.9 ktCO2e for 2019, equivalent to a 0.3 % reduction (2.9 / 898.1 *100) of the gross global emissions 2019 (898.1 ktCO2e for scope 1 and 2 combined). |
| Acquisitions | 0 | No change | 0 | No restatement linked to acquisitions in 2020. |
| Mergers | 0 | No change | 0 | No involvement in mergers |
| Change in output | 134717 | Decreased | 15 | Impacts due to temporary site closures due to COVID, related to the 15% decrease in production tonnage. |
| Change in methodology | 0 | No change | 0 | No change in methodology |
| Change in boundary | 0 | No change | 0 | No change in boundary |
| Change in physical operating conditions | 0 | No change | 0 | No change in physical operating conditions |
| Unidentified | 0 | No change | 0 | No unidentified changes |
| Other | 0 | No change | 0 | No other changes |

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

| | Indicate whether your organization undertook this energy-related activity in the reporting year |
|--|---|
| Consumption of fuel (excluding feedstocks) | Yes |
| Consumption of purchased or acquired electricity | Yes |
| Consumption of purchased or acquired heat | Yes |
| Consumption of purchased or acquired steam | Yes |
| Consumption of purchased or acquired cooling | No |
| Generation of electricity, heat, steam, or cooling | Yes |

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

| | Heating value | MWh from renewable sources | MWh from non-renewable sources | Total (renewable and non-renewable) MWh |
|---|---------------------------|----------------------------|--------------------------------|---|
| Consumption of fuel (excluding feedstock) | LHV (lower heating value) | 12543 | 1366908 | 1379451 |
| Consumption of purchased or acquired electricity | <Not Applicable> | 770059 | 1346230 | 2116289 |
| Consumption of purchased or acquired heat | <Not Applicable> | 0 | 61805 | 61805 |
| Consumption of purchased or acquired steam | <Not Applicable> | 0 | 255986 | 255986 |
| Consumption of purchased or acquired cooling | <Not Applicable> | <Not Applicable> | <Not Applicable> | <Not Applicable> |
| Consumption of self-generated non-fuel renewable energy | <Not Applicable> | 1376 | <Not Applicable> | 1376 |
| Total energy consumption | <Not Applicable> | 783978 | 3030929 | 3814907 |

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

| | Indicate whether your organization undertakes this fuel application |
|---|---|
| Consumption of fuel for the generation of electricity | No |
| Consumption of fuel for the generation of heat | No |
| Consumption of fuel for the generation of steam | Yes |
| Consumption of fuel for the generation of cooling | No |
| Consumption of fuel for co-generation or tri-generation | Yes |

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

1299812

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

1147041

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

152771

Emission factor

0.055

Unit

metric tons CO2e per GJ

Emissions factor source

International Energy Agency

Comment

NA

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

21556

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

21556

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.056

Unit

metric tons CO2e per GJ

Emissions factor source

International Energy Agency

Comment

NA

Fuels (excluding feedstocks)

Alternative Kiln Fuel (Wastes)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

45541

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

45541

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

0

Emission factor

0.0911

Unit

metric tons CO2e per GJ

Emissions factor source

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment

Company average 2020 based on organic waste solvents mixture

C8.2d**(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

| | Total Gross generation (MWh) | Generation that is consumed by the organization (MWh) | Gross generation from renewable sources (MWh) | Generation from renewable sources that is consumed by the organization (MWh) |
|-------------|------------------------------|---|---|--|
| Electricity | 74427 | 73730 | 1376 | 1376 |
| Heat | 0 | 0 | 0 | 0 |
| Steam | 1306400 | 1275846 | 12543 | 12543 |
| Cooling | 0 | 0 | 0 | 0 |

C8.2e**(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.****Sourcing method**

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Mainly PV and geothermal)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

United States of America

MWh consumed accounted for at a zero emission factor

202600

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from other renewable energy sources (mainly PV and geothermal). Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Canada

MWh consumed accounted for at a zero emission factor

26435

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Mainly hydro, and wind)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Austria

MWh consumed accounted for at a zero emission factor

273312

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated mainly from hydro (>80%), and wind energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

France

MWh consumed accounted for at a zero emission factor

4864

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Germany

MWh consumed accounted for at a zero emission factor

20057

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Ireland

MWh consumed accounted for at a zero emission factor

41665

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Italy

MWh consumed accounted for at a zero emission factor

20347

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from

renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Poland

MWh consumed accounted for at a zero emission factor

21726

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind, hydro and biomass)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Spain

MWh consumed accounted for at a zero emission factor

71726

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind, hydro and biomass energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

Sourcing method

Other, please specify (Contract with suppliers or utilities (e.g. green tariff), supported by energy attribute certificates)

Low-carbon technology type

Other, please specify (Solar, wind and hydro)

Country/area of consumption of low-carbon electricity, heat, steam or cooling

Switzerland

MWh consumed accounted for at a zero emission factor

41196

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased that is generated from renewable solar, wind and hydro energy sources. Our reporting guideline stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

| | Verification/assurance status |
|--|--|
| Scope 1 | Third-party verification or assurance process in place |
| Scope 2 (location-based or market-based) | Third-party verification or assurance process in place |
| Scope 3 | Third-party verification or assurance process in place |

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Novartis in Society ESG Report 2020.pdf

Novartis in Society HSE Update April 2021.pdf

Page/ section reference

Pages 65 and 73 of the 2020 Novartis in Society Report contain the GHG Scope 1 emissions (combustion and process, and vehicles). Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. Please note data reported in the Novartis in Society Report is reporting to the 9+3 methodology for sustainability data. An update with final data was issued in April 2021 and is attached.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Novartis in Society ESG Report 2020.pdf

Novartis in Society HSE Update April 2021.pdf

Page/ section reference

Pages 65 and 73 of the 2020 Novartis in Society Report contain the GHG Scope 2 emissions (purchased energy). Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. Please note data reported in the Novartis in Society Report is reporting to the 9+3 methodology for sustainability data. An update with final data was issued in April 2021 and is attached.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Business travel

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Novartis in Society ESG Report 2020.pdf

Novartis in Society HSE Update April 2021.pdf

Page/section reference

Pages 65 and 73 of the 2020 Novartis in Society Report contain the GHG Scope 3 emissions (business travel). Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. Please note data reported in the Novartis in Society Report is reporting to the 9+3 methodology for sustainability data. An update with final data was issued in April 2021 and is attached.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

| Disclosure module verification relates to | Data verified | Verification standard | Please explain |
|---|--|-----------------------|---|
| C5. Emissions performance | Year on year change in emissions (Scope 1) | ISAE3000 | Page 65 of the Novartis in Society Report 2020 contains the total GHG emissions Scope 1 and Scope 2 data from the previous year, that is also verified during the assurance provision process. Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. |
| C5. Emissions performance | Year on year change in emissions (Scope 2) | ISAE3000 | Page 65 of the Novartis in Society Report 2020 contains the total GHG emissions Scope 1 and Scope 2 data from the previous year (market -based), that is also verified during the assurance provision process. Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. |
| C5. Emissions performance | Year on year change in emissions (Scope 1 and 2) | ISAE3000 | Page 65 of the Novartis in Society Report 2020 contains the total GHG emissions Scope 1 and Scope 2 data from the previous year, that is also verified during the assurance provision process. Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. |
| C5. Emissions performance | Year on year emissions intensity figure | ISAE3000 | Page 65 of the Novartis in Society Report 2020 contains GHG emissions (Scope 1 and Scope 2) intensity data per sales and per associates, that is also verified during the assurance provision process. Page 90 and 91 of the document provide the independent assurance report of the Novartis in Society Report. |

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

72

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2020

Period end date

December 31 2020

Allowances allocated

83339

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

115038

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Sites covered: - Kundl -Lendava -Menges -Ringaskiddy -Grimsby Please note: Sites did not purchase any allowances in 2020, the gap between Verified Scope 1 emissions and allowances allocated in 2020 was covered by CER certificates.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Novartis' target is to be carbon neutral in own operations by 2025, thus eliminating the need to comply with EU ETS. Novartis is aggressively pursuing absolute emissions reductions in order to position most effectively in markets with carbon pricing in place, and to proactively reduce exposure in markets that may adopt carbon pricing. Reductions through efficiency are the preferred approach, along with an aggressive shift to renewable energy supply in markets that can support it through generation capacity, financial and contractual structures. Where necessary, Novartis may purchase renewable attributes in order to comply with existing frameworks and emerging frameworks.

Novartis has signed contracts for 5 Virtual Power Purchase Agreements in Europe that will provide 100% renewable electricity for European operations by 2023, thus eliminating all Scope 2 emissions. Where applicable, investments in direct generation on site are happening to further reduce Scope 1 emissions and Scope 2 emissions.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations
Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Stress test investments
Identify and seize low-carbon opportunities

GHG Scope

Scope 1
Scope 2

Application

Carbon price is applied to capital investments coming for review at the investment committees for the Real Estate and Facilities Services and for Novartis Technical Operations. These projects are then reviewed by the Executive Committee of Novartis, with the shadow price of carbon added into the net present value calculations so the decision makers can understand the long-term impact of choices related to carbon footprint. Starting in 2019, the CFO directed that all CAPEX projects above USD 20m are required to have a full environmental sustainability review and endorsement that the project will contribute to carbon, water or waste targets before it can proceed to the Executive Committee of Novartis (ECN) for approval, and the internal shadow carbon price of USD 100 per ton is part of this review calculation.

Actual price(s) used (Currency /metric ton)

100

Variance of price(s) used

Standard application of the USD 100 per ton (t) price is used to show impact on net present value when considering the increasing real costs of carbon. Costs can accrue through developing carbon tax schemes, carbon pricing schemes and the financial impact of climate change on physical operations and distributed supply chains.

Type of internal carbon price

Shadow price

Impact & implication

Novartis leadership has endorsed a carbon price of USD 100 per ton (t) of carbon dioxide equivalents, in line with revised estimates of the real cost of carbon over the next decade. This is designed to match the time frame most traditionally aligned with return on investment and net present value calculations. Building a carbon price into investment decisions is important as it helps identify projects that will most cost-effectively reduce GHG emissions. This shadow price of carbon informed consideration and approval of long-term renewable power purchase agreements and efficiency investments being processed internally.

Objective for implementing an internal carbon price

Change internal behavior
Drive low-carbon investment
Identify and seize low-carbon opportunities

GHG Scope

Scope 3

Application

The Novartis Global Drug Development (GDD) division is applying our internal carbon price to raise transparency about the foreseen carbon impact when designing and simulating new clinical studies. Associates of both GDD and our Novartis Institutes of Biomedical Research (NIBR) can see the carbon impact of our total external R&D activities through our 2020 launched "SONAR CO2 Dashboard".

Actual price(s) used (Currency /metric ton)

100

Variance of price(s) used

Standard application of the USD 100 per ton (t) price is used to show the environmental impact of business decisions. Costs can accrue through developing carbon tax schemes, carbon pricing schemes and the financial impact of climate change on physical operations and distributed supply chains.

Type of internal carbon price

Shadow price

Impact & implication

Novartis leadership has endorsed a carbon price of USD 100 per ton (t) of carbon dioxide equivalents, in line with revised estimates of the real cost of carbon over this decade. Building a carbon price into investment decisions and business cases is important as it helps identify projects that will most cost-effectively reduce GHG emissions. The Global Drug Development (GDD) division is applying our internal carbon price to raise transparency about the foreseen carbon impact of new clinical studies during drug development. The "Early Trial Pricing" module of our R&D AI/ML "Nerve Live" platform is highlighting the expected carbon footprint of various alternative trial scenarios, so does allow to pick the least carbon intense option which still meets costs and business targets. Across the study lifetime of the first 8 optimized clinical trials, costs of roughly USD 30M as well as carbon emission of roughly 6400 tons CO2 were avoided. The GDD "SONAR CO2 Dashboard" converts external R&D costs (for historic actuals as well as for future years plans) into the carbon footprint as well as for the overall monetized environmental impact (applying our global USD100/t CO2 internal carbon price, but considering on top the monetized impacts of other air emissions, waste and water impacts as reported externally in our SEE Impact valuation method). This Dashboard allows Business Users to drill down into various dimensions of the R&D external activities (e.g. by Line Function, Country, Development Project, Vendor, Spend type, ...). These data can be easily used by both Business Users and members of the Environmental Sustainability team in NIBR and GDD to demonstrate environmental impacts and embed them into various Business Cases to drive multiple carbon reduction projects.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Compliance & onboarding

Details of engagement

Included climate change in supplier selection / management mechanism
Climate change is integrated into supplier evaluation processes

% of suppliers by number

100

% total procurement spend (direct and indirect)

100

% of supplier-related Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

The category 1 'Purchased Goods and Services', category 2 'Capital Goods' and category 4 'Upstream Transportation and Distribution' constitute about 90% of our Scope 3 emissions, one fifth of which can be attributed to our direct suppliers (Tier 1). Considering the significant climate change impact of these categories and the potential to influence suppliers to drive emissions reduction in the value chain, it is important to assess our suppliers' capability to meet environmental sustainability criteria right from the beginning and introduce environmental sustainability provisions also in the contractual framework.

Impact of engagement, including measures of success

The supplier onboarding and compliance are enforced through various tools such as Health, Safety and Environment Policies, and Novartis Third Party Code. In November 2020, we launched a revised version of our Third Party Code to strengthen the environmental sustainability language and outline requirements for third parties regarding environmental targets and managing environmental performance, incl. in their supply chain. In 2020, we also established a dedicated in-house team of global HSE risk experts within our HSE Supplier and Assurance and Risk function to perform supplier audits and assessments, covering all regions. The team has been leveraging the Third-Party Risk Management program to identify, assess and manage risk, promoting ethical behaviors and fostering sustainability in our supply chain. The audit criteria include requirements on suppliers as per Pharmaceutical Supply Chain Initiative. As a PSCI member, Novartis actively participates in regular revisions of the assessment methodology and tools used, aiming at continuously improving the pertinence and impact of the assessments performed. One impact of this focused approach is the enhanced capability to better identify and monitor risks in our supply chain. Novartis also actively engages with key suppliers in capability building. In 2020, Novartis helped 13 suppliers based in China to identify 23 areas (CAPAs) to be improved in terms of environmental sustainability. 11 out of 23 CAPAs have been remediated or improved. One supplier implemented regular monitoring to ensure all air emissions meet the regulatory requirements. Another supplier installed online monitoring devices at the wastewater discharging point and an air emission point to ensure wastewater and waste gas are treated prior to discharging and emitting. In India, multiple suppliers initiated environmental monitoring (air quality and ambient noise) in line with local regulations. Overall, there were over 20 observations related to environment ranging from improvement in waste water-treatment, environment monitoring, containment, storm water management etc. which were identified and closed by the suppliers. Our measures of success are represented by the Performance Indicators related to the percentage of audited suppliers out of the identified suppliers at risk, and the Scope 3 emissions intensity reduction rate.

Comment

The details and figures are publicly available in 'Novartis in Society ESG Report 2020', attached in C10.1b

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

1

% total procurement spend (direct and indirect)

11

% of supplier-related Scope 3 emissions as reported in C6.5

19

Rationale for the coverage of your engagement

Both the internal assessments as well as the external assessments by consultancies (such as the WifOR Institute) underpin that Scope 3 emissions can be managed more efficiently by working with suppliers who share a similar vision for environmental sustainability. It was hence deemed necessary to continue collecting environmental sustainability data from selected suppliers to better understand their environmental sustainability maturity, assess their progress towards emission reduction and identify potential opportunities for collaboration. This mode of engagement also helped raise awareness among those suppliers that had not really started their journey yet. Key suppliers of raw materials such as chemicals, intermediates and active pharmaceutical ingredients were included in the data collection. In addition, a specific data questionnaire was also addressed to major logistics providers. As Novartis has about 6,000 vendors (when assessed at the vendor-forest level used for supplier engagement prioritization) in its global network, this engagement targeted suppliers with major influence on procurement spend and carbon footprint (as calculated per supplier via the Environmentally Extended Input Output Model (EEIO) described in 6.5). The targeted group may however change from year to year reflecting the changing supplier portfolio as well as the long-term enterprise strategy.

Impact of engagement, including measures of success

The contents of the questionnaire, covering climate, water, waste and supplier engagement, sent a clear message to our suppliers regarding our focus on environmental sustainability and readiness to collaborate with the suppliers in this area. We gained a lot of insights on what projects and initiatives our suppliers have already implemented as well as what they were planning for the near future. Different ideas were proposed for joint efforts towards carbon reduction, incl. product shipment consolidation, production campaigns prolongation, joint PPAs and also best practices exchange. Based on the responses, scores were awarded in function of environmental sustainability maturity reflecting the understanding of own carbon footprint, level of commitment to reduce emissions and environmental footprint in general, progress on respective

action. The final scores highlighted significant differences among suppliers which confirmed the important role of applicable regulatory framework but also suggested that suppliers can and do go beyond compliance driven by their purpose and respect for environmental sustainability. The measure of success was in particular represented by the Response Rate which reached 86%, while providing good coverage of all geographies. An additional indicator of success was the number and variety of ideas for collaborative projects. Even though many ideas were formulated in a general way, there were also very concrete proposals targeting emissions and waste reduction. Altogether, the responses showed high commitment and support of our suppliers for environmental sustainability which we plan to build on in our future engagements. Additionally, the data revealed that following our energy efficiency and renewables workshop in India in 2019, progress was made in a positive direction by some of our key suppliers in India who adopted energy efficient and renewable energy options.

Comment

NA

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Other, please specify (Research and manufacture of low carbon DPI inhalers for patients affected by asthma. The Breezhaler® device (Novartis Pharmaceuticals) is a breath-actuated DPI that is used to deliver medications for chronic obstructive pulmonary disease and asthma.)

% of customers by number

0.01

% of customer - related Scope 3 emissions as reported in C6.5

0.01

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

The second strategic objective of the Novartis environmental sustainability strategy is to ensure sustainable products are delivered to our patients. Novartis has undertaken the research and manufacture of low carbon dry powder inhaler (DPI) inhalers for patients affected by asthma namely the Breezhaler® DPI. Situation: The healthcare sector represents around 1664.8 Mt CO2 eq per year. Asthma is a chronic respiratory disease that affects around 339 million people worldwide. Air pollution and climate change can seriously exacerbate the disease. Respiratory inhalers are an integral part of the management of respiratory diseases. However, these inhalers contribute significantly to the environmental impact of healthcare, accounting for 3% of the carbon footprint (CFP), as reported by the National Health Service in the UK and a further 20% associated supply chain carbon emissions. Among respiratory inhalers, pressurized metered-dose inhalers (pMDIs) have a much larger carbon footprint than dry powder inhalers (DPIs). A study by Wilkinson et al. demonstrated that changing from a pMDI device to a DPI could save 150–400 kg CO2 equivalent (eq) annually; this is roughly equivalent to installing wall insulation at home, and recycling or cutting out meat. Task: Novartis committed to undertake a Life Cycle Assessment (LCA) for its respiratory Dry Powder Inhaler devices (DPI) across six environmental categories in accordance with the GHG Protocol's Sector Guidance for Pharmaceuticals and Medical Devices to fully understand the product footprint and to share this information with Novartis stakeholders and on the company website. See: <https://www.novartis.com/our-company/corporate-responsibility/environmental-sustainability/climate/case-study-breezhaler-carbon-footprint#:~:text=Case%20study%2A%3A%20Breezhaler%C2%AE%20Carbon%20Footprint%20Life%20cycle%20assessment,other%20uses%20IND%2C%20MF%20and%20glycopyrronium%20bromide%20%28GLY%29>. Action: A streamlined LCA was conducted for the Active Pharmaceutical Ingredients (API) and the optional sensor. Result: The study suggested that the Novartis DPIs have on average a carbon footprint of less than half compared to other published DPI LCAs. Classical pressurized metered dose inhalers (pMDIs) using HFC-134a as propellant gas can have on average a carbon footprint of up to 50 times higher than the Novartis DPI.

Impact of engagement, including measures of success

Impact can be seen as outlined below and the measure of success can be seen by the publication of a sustainability paper in 2021 and a request from the NHS for further environmental product information. 1- It has informed physicians and in turn prescribed patients concerning the product and environmental credentials. 2- Lower global warming potential compared with some pressurized meter dose inhalers. 3- In 2020 preparation work took place with TerraCycle (recycling company) to launch an inhaler take back scheme pilot for all in Switzerland for all inhaler types and brands. This was delivered in Q2 2021.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Novartis considers other value-chain partners as crucial stakeholders of the business ecosystem and continues to engage with a wide range of them via collaborative projects, workshops, and trainings. Below a brief description of such engagements, which, in 2020, were impacted by Covid-related restrictions:

1. **Situation:** Taking a macro-societal perspective on the business contribution to society is becoming vitally important. **Task:** We believe that tools such as impact valuation can support us and the wider business community in focusing and contributing to international objectives and frameworks, most notably the UN SDGs. **Action:** Novartis became the founding member of the Impact Valuation Alliance (VBA) in 2019 and has been actively participating in developing the impact valuation framework and raising awareness thereof. In that respect and in cooperation with partners, in particular the WifOR research institute, we have developed and keep improving the Global Novartis Financial, Environmental and Social (FES) impact valuation that is now renamed Social, Environmental and Economic (SEE) impact valuation to better reflect the significance of social impact to our business while keeping the environment at the center. This change was announced at the 3rd annual flagship Co-Creating Impact Summit held in December 2020. The event brought together internal and external thought leaders in the area of ESG and impact valuation to discuss and debate on the status, external insights, future perspectives and ways Novartis could be best prepared for the future. It was attended by over 1,000 participants and was accompanied by a Virtual Exhibition structured along the four building blocks of the Co-Creating Impact roadmap – Create Awareness & Context, Evolve Science & Methodology, Build Capabilities, and Shape Standards.

Result: The results of the SEE impact valuation 2020 show that our gross global Climate Change impact due to own operational activities as well as to indirect (value-chain related) and induced activities amounted to USD -7.6Bn, 65% of which was attributable to induced effects. The overall SEE impact was valued at USD 278.3Bn. In addition to monitoring year-on-year evolution and gaining insights for future, several countries are using this tool to engage with suppliers and other value-chain partners, and communicate results through different channels, including brochures, fact sheets and stakeholder events.

2. **Situation:** The complexity of supply chains and the difficulties associated with implementing change in them at global scale represent a challenge for companies pursuing sustainable practices towards net zero carbon future. **Task:** Initiatives promoting industry-wide partnerships are hence key for facilitating success at scale and speed.

Action: Novartis is a member of the Pharmaceutical Supply Chain Initiative (PSCI) whose focus is on establishing and promoting responsible practices targeting continuous improvement of social, health, safety and environmentally sustainable outcomes for supply chains. In 2020, we continued supporting the application of Pharmaceutical Industry Principles for Responsible Supply Chain Management set by the PSCI. We were engaged in conferences, webinars, workshops, peer learning and resource library set-up to build capability and competencies on the part of suppliers. We have also been engaged in the PSCI India and China groups that aim to enhance the supply chain collaboration and increase regional best practices sharing on sustainability. In 2020, in response to COVID-19, we supported the virtual format of the PSCI supplier conferences in the regions, which attracted high level of attendance. During the regional conference for China, we introduced the good management systems that meet requirement of PSCI assessment while also covering the gaps PSCI members had identified, and presented actual examples of operational practices covering the scale of minimum through to best practices. For the India conference, we presented a case study with common pit falls in risk assessment and expectations on the right risk assessment. In addition, Novartis also participated in the development of a toolkit for suppliers in the area of renewable energy; the toolkit was launched through the PSCI platform. **Result:** We raised sustainable practices awareness while enabling greater accessibility for suppliers. In addition, suppliers have now better access to tools facilitating concrete action.

3. In November 2020, Novartis also co-organized a dedicated workshop on the future of sustainability with CBRE and other industry leaders. It addressed the questions of how to re-imagine the business for a sustainable future, exploring in particular the circular economy principles and how they disrupt the current business models while unlocking new opportunities, increasing resilience, responding to shifting customer demand, and bringing along wider society and environment benefits.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations
- Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

| Focus of legislation | Corporate position | Details of engagement | Proposed legislative solution |
|----------------------------|--------------------|--|--|
| Adaptation or resilience | Support | Novartis worked with various organizations throughout 2020 to advance the discussion on collaborative climate resilience. Continued collaboration with the Cambridge Compact for A Sustainable Future and A Better City are focused on building resilience in Boston and Cambridge, which directly impact our global headquarters for Novartis Institute for Biomedical Research. Work with the World Business Council for Sustainable Development focuses on policy discussions related to climate adaptation and resilience. | New approaches to zoning and building codes, as well as updated models for flooding that take future changes into account as well as historical trends, must be put in place at city, state and municipal levels of government globally. Without strong support and guidance from elected leaders, communities will continue to build to the lowest acceptable standard, creating socio-economic crises and triggering climate justice challenges in the decades to come. |
| Clean energy generation | Support | Novartis continued to be engaged with the World Business Council for Sustainable Development (WBCSD), Ceres and the Environmental League of Massachusetts in drafting climate policy asks that will be the basis for engagement between private sector and public sector leadership in an effort to remove regulatory barriers for mobilization of private capital for deep penetration of renewables and energy storage in existing grids globally. In 2020, Novartis continued to speak in partnership with WBCSD, Ceres and ELM during a series of webinars, public events and lawmaker education sessions. | Revised national and state regulatory structures that allow use of power purchase agreements and other contractual and financial arrangements to increase renewables and storage technology is critical to decarbonizing the grid, and potentially decarbonizing segments of the transportation sector. |
| Clean energy generation | Support | We continue to increase our portion of purchasing carbon-free or non-fossil based renewable electricity as a measure to further reduce our GHG emissions. Thereby, we give renewable based electricity a better market acceptance and higher chance to penetrate the electricity market. Novartis spoke on panels in partnership with WBCSD, Ceres and the Environmental League of Massachusetts on these issues at multiple events. In 2020 Novartis awarded 5 contracts to three developers for a Pan-European Power Purchase Agreement (PPA) that will make our procured electricity 100% renewable by 2023. | Renewables based electricity can only gain broader acceptance if accepted by consumers. Increased renewable portfolio standards will allow us to more rapidly achieve our carbon reduction goals in bounded markets. |
| Energy efficiency | Support | We have implemented a comprehensive energy management and energy efficiency program, including energy audits, energy reporting and challenging energy use in capital projects. We have then used our experience to engage with peers in the pharmaceutical industry and other sectors to driver greater market pressure for delivery of new energy efficiency technologies. Throughout 2020, Novartis conducted multiple environmental sustainability site workshops to identify new opportunities for emissions reductions. | We consider energy efficiency and effective management measures on energy efficiency as a feasible tool for decision making and improvements. Legislative systems on energy efficiency and energy storage may additionally help to spread such best practice |
| Carbon tax | Support | We have voluntarily set an internal carbon price of USD 100/ton CO2e as a shadow price for more effective and better aligned decision making on GHG emission reduction. We work with organizations such as the WBCSD, UN-Global Compact, Ceres, C2ES and others to support spreading the concept of carbon pricing. This includes private discussions in drafting communication to legislators as well as more public engagements at WBCSD conferences. In 2020, Novartis spoke on multiple panels, webinars and at lawmaker education sessions on these issues. | We support the position of various advocacy organizations (e.g. the WBCSD) that allocating a true price to carbon will be effective in mitigating climate change. We have set and implemented our own shadow price on carbon of 100 USD/ton CO2e, sufficiently high to represent the true cost of climate change and to have a relevant influence on energy costs. A price of carbon in national markets will also increase the adoption of efficiency and renewables, scaling those assets in the local markets and making it more affordable to implement while also providing benefit through lower carbon intensity in the grid. |
| Mandatory carbon reporting | Support | We participate and contribute to initiatives conducted by the World Business Council for Sustainable Development (WBCSD), Global Reporting Initiative (GRI) and corporate sustainability reporting such as The GHG Protocol, Natural Capital / True Value Reporting that advocate for mandatory reporting frameworks. In 2020, Novartis spoke on panels in partnership with WBCSD on these issues at the Global Climate Action Summit and the Conference of the Parties. | We consider standardized Corporate Reporting and carbon reporting an effective tool for disclosure to and engagement with stakeholders as well as internal decision making. If practical and in line with existing globally accepted approaches legislative systems on mandatory corporate reporting could be additionally beneficial to further increase the best practice corporate reporting to additional companies. |
| Cap and trade | Support | We report GHG emissions from 6 sites in the European Union as part of the EU-Emission Trading System (EU-ETS). We consider carbon emission trading an effective tool for supporting targets achievement of emission reductions. | We support the development of the EU-ETS to make it more effective and more practical. We also support the spreading of emission trading in other countries outside the EU. |
| Adaptation or resilience | Support | We support Task Force on Climate-related Financial Disclosures as a prudent planning tool for companies to understand the risk and benefit posed to the company. We are partnered with MIT Joint Program in designing, piloting and expanding a rigorous scientific approach to assessment and monetization of risk. We formally committed to full conformance to TCFD recommendations in 2020, and are procuring additional climate scenario analysis capacity. In 2020, Novartis continued to speak in partnership with WBCSD, Ceres and ELM during a series of webinars, public events and lawmaker education sessions. | In order to be truly effective, and to provide a level playing field, climate financial risk disclosure should be part of a regulatory framework that provides clarity and equal footing to all reporting companies in assessing and disclosing materiality. |

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Cambridge Compact for a Sustainable Future. The City of Cambridge, MA, Harvard University, and Massachusetts Institute of Technology originally founded the Cambridge Compact for a Sustainable Future in 2013. They viewed the Compact as a community partnership and encouraged non-profits and businesses to join. Now, the Compact is at almost 20 members with the goal to keep growing. Compact members want to make larger, more meaningful contributions to the challenges global climate change presents. Every member signs the Compact and agrees to "work to create broader collaboration among themselves and with other community partners in order to leverage the combined capacities in research, teaching, innovation, entrepreneurship, and program development" to "create a more healthy, liveable, and sustainable Cambridge, MA."

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Compact supports strong regulatory pressures on climate mitigation to reduce greenhouse gas emissions, including carbon taxes and efficiencies.

How have you influenced, or are you attempting to influence their position?

We are using our Board position to influence broader discussions about collaborative climate resilience achieved through assessments of the vulnerability of interdependent systems of systems in Cambridge, MA. With greater knowledge, the city can then put appropriate zoning and building codes in place to build resilience while investing in infrastructure resilience efforts.

Trade association

A Better City. A Better City is a diverse group of business leaders united around a common goal — to enhance Boston, MA and the region's economic health, competitiveness, vibrancy, sustainability and quality of life. With 130 member companies across multiple sectors, A Better City operates between the private and public sectors using technical expertise and research capabilities to shape key policies, projects and initiatives. By amplifying the voice of the business community through collaboration and consensus across a broad range of stakeholders, A Better City develops solutions and influences policy in three critical areas central to the Boston region's economic competitiveness and growth — transportation and infrastructure, land use and development, and environment and energy.

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

A Better City supports strong regulatory pressures on climate mitigation to reduce greenhouse gas emissions, to include carbon taxes and incentives for efficiency. They are focused on clean, effective transportation development that will spur economic growth in Boston, and also on infrastructure investment that can build resilience across market sectors. They are key participants in Climate Ready Boston in partnership with the City of Boston.

How have you influenced, or are you attempting to influence their position?

We are using our Board position to influence broader discussions about collaborative climate resilience achieved through assessments of the vulnerability of interdependent systems of systems in Boston. With greater knowledge, the city can then put appropriate zoning and building codes in place to build resilience while investing in infrastructure resilience efforts.

Trade association

The Environmental League of Massachusetts (ELM) is a nonprofit educational and advocacy organization, supported by a combination of individual and foundation philanthropy, dues from citizens and organization members, and proceeds from special events. They focus resources on the state level, where they believe that their knowledge, expertise and reputation allow them to have the strongest impact. They also network and collaborate with a variety of leaders in business and government as well as with other environmental nonprofits to achieve effective results.

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

The Environmental League of Massachusetts supports strong regulatory pressures on climate mitigation to reduce greenhouse gas emissions, to include carbon taxes and incentives for efficiency. They are focused on clean, effective transportation development that will spur economic growth in Boston, and also on infrastructure investment that can build resilience across market sectors.

How have you influenced, or are you attempting to influence their position?

We are leveraging our position on the Corporate Council of ELM to advocate for strong environmental sustainability legislation and policies in the Commonwealth of Massachusetts. Our global headquarters for the Novartis Institute for Biomedical Research is located in Massachusetts, which is consistently a leader in environmental sustainability policy in the United States. This means that our efforts to drive more ambitious policy in the state has the chance to drive more ambitious policy across other states in the US as well as federal policy.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

No

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

1) World Business Council for Sustainable Development (WBCSD): Novartis primary method of engagement is being an active member of the WBCSD since its foundation in 1997, contributing to the work-streams of the WBCSD's focus areas and projects. Novartis actively contributes to work-streams on Power Purchase Agreements (PPAs), country deep dives for PPAs in India and China, Climate Policy Working Group, Low Carbon Technologies Partnership Initiative (LCTPI), and Natural Climate Solutions (NCSs). Novartis experts provide case studies and example to strengthen WBCSD's work towards international negotiations on Climate Policy with feedback on proposals and own contributions. We have also participated in WBCSD events to share our experiences and help provide benchmarking data and practical advice to attendees at multiple WBCSD events in 2018. This dialogue continues to provide motivation as well as new strategies to move forward with our ambitious sustainability goals. In 2019, Novartis continued to speak in partnership with WBCSD during a series of webinars and public events. Novartis will continue to work with WBCSD to promote the use of PPAs and NCSs as a large portion of corporate portfolios for greenhouse gas emissions reductions.

2) National Association of Environmental Managers (NAEM): Novartis is a member of the Board of Regents for NAEM and helps shape the educational and advocacy agenda nationally for the group. We engage on environmental sustainability best practices to include Science Based Targets, carbon pricing, power purchase agreements, use of renewables and adoption of low/zero emission vehicles. Novartis influences agendas by sitting on the Board of Regents, and participates as plenary speakers or panel speakers at regional and national level NAEM events to share our experience in Science Based Targets, adoption of renewables and experiences in revisiting corporate environmental sustainability strategies. Novartis advocates for use of PPAs, deep penetration of renewables in regional grids, carbon pricing structures and a collaborative approach to developing climate resilience across interdependent systems of systems.

3) Pharmaceutical Supply Chain Initiative (PSCI). Novartis attends meetings and participates in work stream efforts as a partner with leading pharmaceutical companies seeking to improve sustainability across all levels of the extended supply chain. Pharma companies engaged in benchmarking and coordination to share best practices across wide range of sustainability and Third Party Risk Management issues. Novartis supports benchmarking with responses to questionnaires, participation in discussions, input to case studies and sharing best practices. Development of go/no-go vendor selection criteria on a range of sustainability issues will allow for more consistent engagement with reputable firms that share our focus on values based behavior that supports the communities that we work in.

4) Novartis has funded the Massachusetts Institute of Technology (MIT) Clean Energy Prize four years in a row now. Novartis has also provided a judge in 2020, helping to identify promising start-ups that can transform clean tech industries.

5) Novartis formally joined the Environmental League of Massachusetts (ELM) in late 2018, and was involved through 2020 in lawmaker education sessions with the Massachusetts state legislature on environmental sustainability issues to include climate mitigation and climate adaptation as well as public speaking events in Boston to advocate for stronger environmental sustainability policies.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

In 2020, the Global Environmental Sustainability Office was created as part of the general management structure of what was at the time Novartis Business Services, which is now Customer and Technical Solutions. The Chief Sustainability Officer heads that office and is a direct report to a member of the Executive Committee of Novartis.

The Chief Sustainability Officer works to ensure alignment on these issues through participation with the Novartis ESG Council and various other committees that span the full scope of global activities. All external engagements with media, NGOs and policy makers are coordinated through Global Health and Corporate Responsibility communications, government affairs and public affairs as well as appropriate leadership by topic in Customer Technical Solutions. High visibility issues are also coordinated through the CEO's office. This multi-stakeholder coordination ensures that the range of activities and advocacy related to own operations, supplier operations and government policy are in full alignment for consistency and maximum effect to achieve corporate goals.

At Novartis, our purpose is to reimagine medicine to improve and extend people's lives. Through our business, we make an important contribution to society: we discover and develop innovative healthcare products, targeting unmet medical needs. We collaborate with others to help address some of the world's greatest health challenges and focus our corporate responsibility work on two areas that underscore our mission: expanding access to healthcare and doing business responsibly. The Novartis Global Health and Corporate Responsibility Leadership Team (GHCRLT) comprised of leaders from each division and across multiple functions of the company, have guided this work. The GHCRLT was tasked with facilitating information-sharing between other CR-related governance bodies, such as the HSE Steering Committee, the Compliance Steering Committee and Corporate Affairs. In 2021, the GHCRLT will be replaced by the ESG Council. For external advocacy, Corporate Affairs has developed a document describing eight advocacy principles as guidance for efforts regarding Corporate Responsibility (CR). The advocacy principles are based on and reflect the Novartis CR strategy, including doing business responsibly and addressing our ambitious environmental sustainability targets to limit the company's environmental impact. Advocacy principles are rooted in the business strategy, and thus are consistent. Both, advocacy principles and business strategy, evolve over time in line with the business and the external environment.

Additionally, active members and participants in the WBCSD policy and industry activities are members of either top management or corporate functional managers of the Company and are aligned to corporate policy. The World Business Council for Sustainable Development (WBCSD): The CEO is a Council member and the Global Head HSE&BCM and the Global Head of Environment are liaison delegates to the WBCSD. The Group Head Global Health & Corporate Responsibility and the Global Head HSE&BCM participate in Council meetings representing the CEO when not available. The Global Head of Environment, Head of Climate, and other experts in the global function participated in dedicated meetings and actively contribute to projects and work-group activities. Novartis signed the manifesto for Energy Efficient Buildings of the WBCSD; we are applying our GHG reporting to the GHG Protocol, developed by WBCSD and WRI, and we use the Global Water Tool for setting water efficiency targets and tailoring our water efficiency program.

These efforts and engagements are coordinated and shared through the responsible corporate governance structure as previously described that is involved with Novartis' environmental sustainability strategy, and is relayed into the strategy, risk, finance, production, procurement and Health, Safety and Environment (HSE) communities as well as corporate responsibility and communications.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports, incorporating the TCFD recommendations

Status

Complete

Attach the document

Novartis in Society ESG Report 2020.pdf

Novartis in Society HSE Update April 2021.pdf

Page/Section reference

Pages 79-83 of the Novartis in Society Report and page 22 of the 2020 Novartis Annual Report.

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Comment

NA

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

Patient health is tied directly to planetary health. Climate change is driving a climate health crisis which is already impacting research, development, operations and our patient populations. As a global health company, Novartis has a responsibility to anticipate the future needs of our patients, while also acting urgently to reduce our own impact on our patient population, associates and communities due to our footprint.

While Novartis has been focused on climate issues for many years, 2020 was a year that demonstrated our continued commitment to move more rapidly and holistically from ambition to action, even in the face of a global pandemic.

During 2020 Novartis expanded its carbon targets to include full carbon neutrality across its value chain by 2030, awarded contracts that will deliver 100% renewable electricity to our European operations by 2023, committed formally to implement recommendations of the taskforce on Climate-related Financial Disclosure, created the role of the Chief Sustainability Officer, moved environmental sustainability into a more prominent management function, prepared its first TCFD qualitative disclosure, approved the transformation of our vehicle fleet and started the procurement process for expanded commercial support for climate scenario analysis. Novartis also issued a Sustainability Bond focused on access to healthcare, which will be an issue exacerbated by climate change impact on healthcare systems and infrastructure.

Based on planning and engagements that started in 2020, we increased our supplier engagement, created new 'Green Expectations' for our suppliers, changed our approach in Scope 3 methodology to develop more granular emissions data that can be assigned to specific suppliers, joined the World Economic Forum Alliance of CEO Climate Leaders, accepted an invitation for our CEO to participate in the Advisory Council of the B20, joined the Race to Zero and increased our emphasis on external advocacy. We have also undertaken preparatory work for the establishment of a new ESG Council in 2021. The purpose of the council is to co-create the cross-functional ESG strategy and to ensure ESG activities are integrated into operations. This group will make recommendations and raise relevant topics to the Trust & Reputation Committee (TRC), the Executive Committee of Novartis (ECN) sub-committee overseeing the 'Build Trust with Society' pillar of the company's strategy.

Our efforts in updating governance, targets and enterprise risk management procedures related to climate issues are driving rapid changes in internal policies, long term discussions about R&D needed to meet future patient population needs and shift to more sustainable products. We are working together to not only Reimagine Medicine, but to Reimagine Sustainable Medicine. Our commitment is to be transparent, proactive and act as a catalyst for change. Much has been done, but much more remains to be done and we cannot delay.

* In 2021, Novartis Business Services (NBS) became known as Customer & Technology Solutions (CTS). As this submission focuses on 2020 data, we have used the business unit name 'NBS' as it was known during that time but clarified throughout that it is now referred to as 'CTS'.

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

| | Job title | Corresponding job category |
|-------|--|-------------------------------|
| Row 1 | Until 2020 Head of Novartis Business Services (NBS), since 2021 Head of Customer & Technology Solution (CTS). Corresponding job category is Chief Operating Officer (COO). | Chief Operating Officer (COO) |

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

Novartis is responding to the CDP Supply Chain Survey for the 10th consecutive time in order to support the ongoing goal of helping our customers understand the environmental impact of our products. It is important to note that given the high complexity of Novartis' manufacturing and materials supply chains and the need to ensure consistency with the wider framework of Scope 1, Scope 2 and Scope 3 methods of calculation, the Greenhouse Gas emissions data attributed to products sold are calculated at the enterprise level at this moment. The requesting customer's spend with Novartis (as a percentage of Novartis net sales for the year) determines the carbon footprint attributed to products sold to the requesting customer. We are planning to introduce a more dedicated approach to carbon footprint allocation in the future and will report on our progress in our next submission.

We also note that similar to our customers we recognize that the environmental impact of our business extends beyond our internal operations, as also demonstrated by our Scope 3 disclosure. We are therefore working to expand our focus beyond our own facilities to assess and improve our broader supply chain, incl. through process efficiency and focus on sustainable materials. Toward this end, we are working on the following aspects of our supply chain: Product Design (e.g. improvements in packaging), Mobility and logistics (e.g. greening our fleet), Product and services sourcing (e.g. sustainability annexes in our supplier contracts), and Manufacturing (e.g. re-engineering of manufacturing processes to increase efficiency).

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

| | Annual Revenue |
|-------|----------------|
| Row 1 | 48659000000 |

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

| | ISIN country code (2 letters) | ISIN numeric identifier and single check digit (10 numbers overall) |
|-------|-------------------------------|---|
| Row 1 | CH | 0012005267 |

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

NHS England and NHS Improvement

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

195

Uncertainty (±%)

25

Major sources of emissions

Scope 1 emissions cover emissions from vehicles, stationary combustion installations and process sources. Stationary combustion installations take the largest share (72%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

NHS England and NHS Improvement

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

170

Uncertainty (±%)

25

Major sources of emissions

Scope 2 emissions used for the allocation are market-based. They thus reflect Virtual Power Purchase agreements for renewable electricity that we have in place.

Purchased electricity is the dominant driver of our Scope 2 emissions.

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

NHS England and NHS Improvement

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

3596

Uncertainty (±%)

25

Major sources of emissions

Major sources of emissions under Scope 3 are 'Purchased goods and services' (82%), followed by 'Upstream transportation and distribution' (5%), 'Fuel and energy related activities' (4%) and 'Waste generated in operations' (4%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary. The calculation of Scope 3 emissions remains a challenge due to a lower visibility of the whole value chain and the lack of reliable and sufficiently granular primary data. The 'Purchased goods and services' category, the key driver of our Scope 3 emissions, is hence calculated using an Environmentally Extended Input-Output Model (see also the calculation methodology description under 6.5).

Requesting member

CVS Health

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

876

Uncertainty (±%)

25

Major sources of emissions

Scope 1 emissions cover emissions from vehicles, stationary combustion installations and process sources. Stationary combustion installations take the largest share (72%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

CVS Health

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

765

Uncertainty (±%)

25

Major sources of emissions

Scope 2 emissions used for the allocation are market-based. They thus reflect Virtual Power Purchase agreements for renewable electricity that we have in place. Purchased electricity is the dominant driver of our Scope 2 emissions.

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

CVS Health

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

16183

Uncertainty (±%)

25

Major sources of emissions

Major sources of emissions under Scope 3 are 'Purchased goods and services' (82%), followed by 'Upstream transportation and distribution' (5%), 'Fuel and energy related activities' (4%) and 'Waste generated in operations' (4%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary. The calculation of Scope 3 emissions remains a challenge due to a lower visibility of the whole value chain and the lack of reliable and sufficiently granular primary data. The 'Purchased goods and services' category, the key driver of our Scope 3 emissions, is hence calculated using an Environmentally Extended Input-Output Model (see also the calculation methodology description under 6.5).

Requesting member

Santa Catarina

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

761

Uncertainty (±%)

25

Major sources of emissions

Scope 1 emissions cover emissions from vehicles, stationary combustion installations and process sources. Stationary combustion installations take the largest share (72%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

Santa Catarina

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

664

Uncertainty (±%)

25

Major sources of emissions

Scope 2 emissions used for the allocation are market-based. They thus reflect Virtual Power Purchase agreements for renewable electricity that we have in place. Purchased electricity is the dominant driver of our Scope 2 emissions.

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary.

Requesting member

Santa Catarina

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

14056

Uncertainty (±%)

25

Major sources of emissions

Major sources of emissions under Scope 3 are 'Purchased goods and services' (82%), followed by 'Upstream transportation and distribution' (5%), 'Fuel and energy related activities' (4%) and 'Waste generated in operations' (4%).

Verified

No

Allocation method

Allocation based on mass of products purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Activity data and calculation methods follow the Green House Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) using the Operational Control organizational boundary. The calculation of Scope 3 emissions remains a challenge due to a lower visibility of the whole value chain and the lack of reliable and sufficiently granular primary data. The 'Purchased goods and services' category, the key driver of our Scope 3 emissions, is hence calculated using an Environmentally Extended Input-Output Model (see also the calculation methodology description under 6.5).

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

| Allocation challenges | Please explain what would help you overcome these challenges |
|---|---|
| Diversity of product lines makes accurately accounting for each product/product line cost ineffective | Novartis' manufacturing structures are very complex, in the sense that a wide variety of individual products are manufactured at a number of chemical, pharmaceutical, packaging and/or assembly facilities. Additionally, this is the case for our raw materials supply chain. Product-specific carbon and other environmental footprint data have been determined based on Life Cycle Analysis (LCA) methodologies for a limited number of selected products and environmental aspects (e.g., packaging material, volume). Due to the scale, diversity and complexity of Novartis product lines and customer pool, it is currently not feasible or practicable to allocate to individual customers. GHG emissions allocated to requesting customers are therefore based on the GHG intensity of all Novartis operations and are a function of the spend of the requesting customer with Novartis. |
| Customer base is too large and diverse to accurately track emissions to the customer level | Novartis produces a variety of different products and product versions to a large number of diverse customers worldwide and the portfolio sold to these customers is complex. Therefore, the exact set of products sold to customers asking for input cannot be determined at this point. For these reasons, GHG emissions allocated to requesting customers are therefore based on the GHG intensity of all Novartis operations and are a function of the spend of the requesting customer with Novartis. |

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

We are planning to develop capabilities to be able to allocate emissions to our customers based on divisional split. In addition, as our knowledge of LCA emissions of our products will grow in the future, we hope we will be able to start applying product-specific allocations.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

| | I am submitting to | Public or Non-Public Submission | Are you ready to submit the additional Supply Chain questions? |
|-----------------------------|------------------------|---------------------------------|--|
| I am submitting my response | Investors Customers | Public | Yes, I will submit the Supply Chain questions now |

Please confirm below

I have read and accept the applicable Terms