

C0. Introduction

C0.1

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

Novartis is a global healthcare company employing approximately 109,000 associates. We use innovative science and technology to address some of society's most challenging healthcare issues and produce medicines to improve and extend people's lives. In 2019 we manufactured 72 billion doses of medicine and our medicines treated 799 million patients around the world.

The company is comprised of two main divisions, Innovative Medicines and Sandoz. Our Innovative Medicines Division researches, develops, manufactures, distributes and sells patented prescription medicines to enhance health outcomes for patients and healthcare providers. Innovative Medicines is organized into two global business units: Novartis Oncology and Novartis Pharmaceuticals. Novartis Pharmaceuticals consists of the following global business franchises: Ophthalmology; Neuroscience; Immunology, Hepatology and Dermatology; Respiratory; Cardiovascular, Renal and Metabolism; and Established Medicines. Our Sandoz Division develops, manufactures, distributes and sells prescription medicines as well as pharmaceutical active substances that are not protected by third-party patents. Sandoz is organized globally into three franchises: Retail Generics; Anti-Infectives and Biopharmaceuticals.

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) consolidates support services across our organization, helping drive efficiency, simplification, standardization and quality. Health, Safety, and Environment (HSE) is a function within NBS. 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 vision is to become the most valued and trusted medicines company in the world. Our strategy is to build a leading, focused medicines company powered by advanced therapy platforms and data science. As we implement our strategy, we have five priorities to shape our future and to help us continue to create value for our company, our 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 trust with society, we aim to hold ourselves to the highest 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 like 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 by 2025 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 2019	December 31 2019	No	<Not Applicable>

C0.3

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

Austria
Bangladesh
Belgium
Brazil
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 8 times in 2019 with each meeting lasting approximately 8 hours. Environmental sustainability including climate is considered in the 5 company priorities set by the board. In 2017 the Board requested that the company revisit its environmental strategy to see if more ambition is possible and in 2018 the Board reviewed and endorsed our new environmental sustainability strategy which set ambitious new water sustainability targets and goals for our business. These are specifically to become carbon neutral in own operations by 2025. By 2030, we aim to reduce our carbon footprint by 50% across our entire value chain, to include Scope 1, 2 and 3 emissions. Climate related issues were identified as emerging risks and reported out to the Board in 2019.
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's involvement enables the Novartis water 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 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 to specifically include climate. Performance is reported annually in our Novartis in Society Report. 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 reduce Novartis Scope 2 emissions in Europe.
Board-level committee	The Board delegates certain of its 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 (GNCRC) oversees the company's strategy and governance on corporate responsibility. The Science & Technology Committee advise 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.

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	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 Other, please specify (Overseeing against goals and targets)	<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 8 times in 2019 with each meeting lasting approximately 8 hours. The Board has delegated certain of its 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 2019 assists the Board in properly assessing and professionally managing risk by overseeing the risk management system and processes, as well as by reviewing the risk portfolio and related actions implemented by management. In 2019, the Risk Committee was briefed that climate related risks had specifically been elevated to emerging risks. The Governance, Nomination and Corporate Responsibilities Committee, which met 4 times in 2019, ensures that climate related issues are integrated in governance mechanisms across the company by reviewing and guiding the corporate responsibility strategy. The climate strategy including the scope and ambition of Novartis is discussed periodically and any recommendations are subject to final Board approval. In 2017 it was decided to review Novartis environmental sustainability strategy and in May 2018, the new environmental sustainability strategy, including targets and goals for climate, were approved. 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 heads of Novartis Technical Operations (NTO) and Novartis Business Services (NBS) as well as other members of the senior management, such as, Region, Country and Site Managers. The Board is overseeing and 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 heads of Novartis Technical Operations (NTO) and Novartis Business Services (NBS) as well as other members of the senior management, such as, Region, 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>	Quarterly

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 is establishing and maintaining good governance practices and issuing 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).

The CEO chairs the Trust and Reputation (T&R) Committee. The T&R Committee 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 then 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 Novartis Business Services, 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 and Compliance Officer reports directly to the CEO, is a member of the ECN and is responsible for Enterprise Risk Management across Novartis. 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 Health, Safety and Environment (HSE) Governance Board is responsible for ensuring all HSE risks and issues including climate are managed appropriately. ECN members (The Head of NTO, the Chief People & Organization Officer and the Head of NBS) are standing members of the HSE Governance Board meetings. The HSE Governance Board also includes the Global Head of Health & Corporate Responsibility for Novartis, the Head of Real Estate and Facilities Services, the Global Head of HSE, and the Global Environment Head. The Global Environment Head is responsible for identifying climate related risks and issues, making recommendations for how they should be managed, developing metrics so progress against targets can be monitored, and seeking endorsement for implementation from the HSE Governance Board.

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) 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 is also responsible for the design of the company-wide environmental sustainability strategy (ESS).

The Head of NBS and NTO are members of the Executive Committee of Novartis (ECN), HSE Governance Board, ESS Steering Committee and Trust&Reputation Committee. All these committees meet quarterly and 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 NTO(ECN Member) , Head NBS (ECN Member), Global Head of Environmental Sustainability, 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 have operational responsibility for 100% of our scope 1 and 2 carbon emissions and more than 50% 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	

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
Corporate executive team	Monetary reward	Emissions reduction target Energy reduction target Environmental criteria included in purchases	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 are to be carbon neutral own operations (scope 1 and 2) before the end of 2025 and to reduce our overall carbon footprint (scope 1, 2 and 3) by half before the end of 2030 from a 2016 baseline. They are also rewarded for energy consumption reductions. The CEO specifically has a balanced scorecard focused on his performance, 40% of which are non-financial factors to include environmental sustainability.
Corporate executive team	Monetary reward	Please select	The Head of Novartis Business Services (NBS) 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 is also rewarded for ensuring the achievement of our 2030 climate target which is to reduce our overall carbon footprint (scope 1, 2 and 3) by half by 2030. Targets also include other environmental, HSE and sustainability targets.
Corporate executive team	Monetary reward	Please select	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 reduce our overall carbon footprint (scope 1, 2 and 3) by half by 2030. Targets also include other environmental, HSE and sustainability targets.
Other, please specify (REFS Region/Country/Site Managers)	Monetary reward	Please select	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	Please select	Country managers are rewarded for reducing CO2 emissions from the vehicles fleet and for energy efficiency of their commercial buildings.
All employees	Non-monetary reward	Please select	All associates are eligible to be nominated for awards through REFS, HSE and GH&CR 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. 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. 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	Please select	The Chief Procurement Officer reports to the Head of NBS. 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 reduce our overall carbon footprint (scope 1, 2 and 3) by half by 2030. The Chief Procurement Officer is also rewarded for inclusion of environmental sustainability criteria in purchases.

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 and 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 reducing emissions by 50% 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 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. The functions involved in this process include Corporate Finance, Legal, People & Organization (formerly Human Resources), Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, 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.

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 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 or long term. The functions involved in this process include Corporate Finance, Legal, People & Organization (formerly Human Resources), Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, 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 reduce our absolute emissions by 35% 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.

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

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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. The functions involved in this process include Corporate Finance, Legal, People & Organization (formerly Human Resources), Business Continuity and Novartis Emergency Management, Ethics, Risk and Compliance, Health Safety and Environment (HSE), Global Health & Corporate Responsibility, 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 reduce our Scope 1, 2 and 3 emissions by 50% 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. One specific example was a workshop that Novartis hosted in Hyderabad, India in 2019 to educate our suppliers on opportunities and methods to adopt renewable energy in their own operations. 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

In 2019, the enterprise risk management process formally designated climate risk as an emerging risk that was reported out to the Board of Directors. As a result, scheduling and coordination commenced in 2019 for a workshop facilitated by the World Business Council on Sustainable Development to elevate ESG issues in the enterprise risk management process. Due to the pandemic, this in person workshop did not happen. However, planning has been completed to pivot to virtual delivery for that workshop as well as conducting an internal workshop with Ethics, Risk and Compliance staff to specifically formalize how climate risks and opportunities will be further analyzed on a recurring basis and incorporated more completely into risk and resilience planning that spans across own operations and supply 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	Novartis always considers current regulations from a risk and opportunity perspective. Novartis operates globally, and has significant financial exposure to developing carbon pricing mechanisms. 46 national systems exist, and Novartis has operations in 27 of those nations as well as across the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Rovereto, 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 increasing 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. Within the past year, allowances have traded for as much as €29 . Multiple institutions expect the EU ETS costs to increase to between €40-€80 by 2021 and between €50-€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 a released RFP for a specific Pan-European Virtual Power Purchase Agreement that will decarbonize procured electricity for Novartis in Europe . Efforts in efficiency and adoption of renewables will be applied to reduce our current and emerging exposure to risk in this area. Previous CDP reporting has shown that other major pharma sector participants also have a consistent view that this is a sector risk. 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. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Emerging regulation	Relevant, always included	Novartis always considers emerging regulations from a risk and opportunity perspective, such as carbon pricing and climate-related financial disclosure. Novartis operates globally, and has significant financial exposure to developing carbon pricing mechanisms. 46 national systems exist, and Novartis has operations in 27 of those nations as well as across the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Rovereto, 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 increasing 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. Within the past year, allowances have traded for as much as €29 . Multiple institutions expect the EU ETS costs to increase to between €40-€80 by 2021 and between €50-€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 a released RFP for a specific Pan-European Virtual Power Purchase Agreement that will decarbonize procured electricity for Novartis in Europe . Efforts in efficiency and adoption of renewables will be applied to reduce our current and emerging exposure to risk in this area. Previous CDP reporting has shown that the pharma sector participants also have a consistent view that this is a sector risk. 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. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Technology	Relevant, always included	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, so Novartis considers consumption requirements in terms of the supply chain and system of systems. Water intensive production processes in an area impacted by water scarcity are a perfect example. 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. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Legal	Relevant, always included	In many cases, there are legal requirements to be met regarding carbon emissions trading schemes or other emissions. Regulatory risks are always included as part of the risk identification process. 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 as such 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 the company. The Task Force on Climate-related Financial Disclosures (TCFD) is a specific example that applies to Novartis in this area. In recent years CDP reporting has shown that major pharmaceutical companies including Novartis view this as a sector risk. This risk is not limited to any single region that Novartis operates in, although changes are most likely to happen in the EU because this is already being discussed by some governments in the region. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Market	Relevant, sometimes included	Within the pharmaceutical sector clinical needs determine which products are ultimately used. However, where patient outcomes are equivalent more companies such as Kaiser Permanente are giving preference to medicines and products that have a lower carbon footprint. It is therefore critical that Novartis includes market considerations as part of its risk assessment process in order to maintain sales. Market risks driven by interruption to supply chains are also considered. This has happened in the past due to climate and carbon related issues in multiple markets. For example some suppliers to Novartis that are located in China have been required to shut down because of concerns about poor air quality related to the consumption of energy and the associated emissions, including impacting the Pharma sector supply chain. Previous CDP reporting and discussions with peer companies has shown that the pharma sector has a consistent view that this is a sector risk. Market considerations are included in risk discussions because of their financial impact. The relative position in the risk matrix varies by location and by year. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Reputation	Relevant, always included	Risks related to reputation are always considered. 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. 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. Previous CDP reporting and conversation with peer companies has shown that the pharma sector has a consistent view that this is a sector risk. There is no regional limitation on this risk. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Acute physical	Relevant, always included	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. Previous CDP reporting by various companies in the pharmaceuticals sector have demonstrated that this is a sector risk because of its direct impact on operations and the supply chain. Novartis has operations in the US, Europe and Asia that may experience these impacts more than some other regions. As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.
Chronic physical	Relevant, always included	Chronic physical events such as persistent flooding that disrupts transportation and logistics networks needed to support normal business are considered, as are emerging trends in regional heat profiles that may overwhelm installed cooling capacity. 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). As a result of internal processes and scenario analysis conducted with the MIT Joint Program on the Science and Policy of Global Change, climate change was classified as an emerging risk and included in the formal brief to the Board.

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 electricity and credible offsets. Novartis operates globally, and has significant potential financial exposure to developing carbon pricing mechanisms. 46 national systems exist, and Novartis has operations in 27 of those nations, including across the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Rovereto, 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. This has resulted in the strategy being revised to put a clear focus on renewable energy supply. 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.

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)

62000000

Potential financial impact figure – maximum (currency)

93000000

Explanation of financial impact figure

Previously, purchased energy costs have exceeded USD 311 million annually. Potential 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 62-93 million per year. 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.

Cost of response to risk

1000000

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 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. 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. As EU-ETS moves into Phase IV in 2021, any reduction in free allowances could further increase annual management costs between USD 0.6 million and USD 2.2 million. Cost of management includes internal annual costs for three associates (part-time) and consultant support as buyers agents and external legal counsel for virtual power purchase agreements.

Comment

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. As EU-ETS moves into Phase IV in 2021, any reduction in free allowances could further increase annual management costs between USD 0.6 million and USD 2.2 million.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Please select

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 the recent past, Novartis associates at Novartis Institute for Biomedical Research (NIBR) in Cambridge, MA both saw extended disruptions in their communities (flooding, power outages, disruption in transportation networks) as a result of unusual storm events and patterns. Extended heat events may eventually overwhelm installed cooling capacity, resulting in variations in temperature and humidity in research and production operations that are unacceptable.

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)

65000000

Potential financial impact figure – maximum (currency)

71000000

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 31 million 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 0.4-0.5 million 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 5 million per event in physical damage and disruption to business.

Cost of response to risk

33500000

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 \$500K annually over the next 5 years, and \$200K annually thereafter, for a total of \$3.5M over a 10 year period. Physical adaptations and any decisions to execute a managed retreat may cost \$30M over a 10 year period.

Comment

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)
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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 10.2 billion 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 1.6 billion 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)

1600000

Potential financial impact figure – maximum (currency)

10200000

Explanation of financial impact figure

Across the top 20 key products of 2019, 6 products are biologics, generating \$10.2B in annual revenue. 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 1.6 billion in net sales. Disruption of this supply chain could dramatically reduce or eliminate that sales figure up to the maximum of USD 1.6 billion in sales. Additionally, prices for agricultural commodities may increase by 20-30% over the next 10 years, which could have potential impact on products using natural compounds. This could potentially drive cost of goods sold up in that sector of our business and reduce margins for the portion of our USD 51 billion annual net sales that are dependent on agricultural commodities.

Cost of response to risk

1000000

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 \$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**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 311 million 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 31 million each year, quickly adding to over USD 100 million 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)

372000000

Potential financial impact figure – maximum (currency)

868000000

Explanation of financial impact figure

Based on an annual spend of USD311M annually, a 10% improvement in efficiency each year would deliver USD 31 million each year, quickly adding to over USD 100 million 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 311 million 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 62-93 million per year. In the last 12 months, the cost of allowances in the EU ETS has increased to €29. Many institutions expect the costs within the EU ETS alone to increase to between €40-€80 by 2021 and between €50-€100 by 2030. The combination of USD 62-93 million annually plus USD 31 million 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 true long term opportunity are still being developed, however, initial estimates suggest that at least USD 33 million will be required.

Comment

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 to negotiate PPA's for key supply chain partners that are co-located in Europe. This will help to reduce its scope 3 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 can prioritize projects based on those three general opportunities to improve business results. In markets like China, reducing carbon footprint may create opportunities as the nation develops carbon pricing schemes. In markets like India, reducing consumption and shifting to renewables can control variability in costs. In all other markets, rising costs of energy, both in production costs and non-energy costs, can be limited by efficiency and investment in renewable generation. Decarbonizing our products may also make them more attractive to companies like Kaiser Permanente, who have pledged to decarbonize their supply chain.

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)

62000000

Potential financial impact figure – maximum (currency)

93000000

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 311 million 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 62-93 million per year.

Cost to realize opportunity

3300000

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 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 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.

Comment

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

Please select

Company-specific description

More of our sites are being subjected to extended heat events like Basel in 2019, 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. However, 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 600,000, but the benefit was a water consumption reduction by 14% and a cost reduction of USD 100,000 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)

21960000

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 the Novartis internal water costs of USD 3.66 / m3, 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 21,960,000.

Cost to realize opportunity

30000000

Strategy to realize opportunity and explanation of cost calculation

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 0.6 million will need to be invested at each of the top 30 Novartis locations and around USD 60 thousand at each of the remaining smaller locations meaning that an overall investment of around USD 30 million will be needed.

Comment

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) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
Nationally determined contributions (NDCs)	Novartis is conducting both sensitivity and stress testing for climate and water in a long term horizon, 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. Results from the analysis were provided to leadership and resulted in climate risk being newly classified as an emerging risk in the 2019 enterprise risk management cycle.

C3.1d

(C3.1d) 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	Recognition of climate impact has led Novartis to develop a pilot program that would incorporate carbon impact into early trial pricing of new products during drug development, which would then be applied to the Novartis social impact valuation program. Specifically including carbon pricing and impact into early stage development of drugs will drive optimization and investments to reduce carbon emissions during scale up of new products.
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, a workshop organized in India to educate our suppliers on ways to adopt renewable energy and the start of an engagement process so Novartis can create an umbrella framework for an aggregated virtual power purchase agreement in both the US and Europe for suppliers that are interested in decarbonizing their electricity.
Investment in R&D	Evaluation in progress	Recognition of climate risks resulted in creation of a group to consider specifically how to best assess and realign investments in new research and development as well as conducting adaptive research for existing products so Novartis will be positioned to fulfill patient needs as a result of climate health impacts. The effort is being organized and will be led by scientists at the Novartis Institute of Biomedical Research global headquarters in Cambridge, Massachusetts with support from staff globally as required.
Operations	Yes	Novartis operates in 27 of the 46 nations that have national and sub-national carbon pricing in effect or being proposed. Footprint in those markets over the next ten years, taking anticipated increases in cost of carbon, could expose Novartis to as much as USD 86M in potential carbon tax. As a result, Novartis is proceeding with rapid adoption of renewables in major markets, and is in the process of selecting a developer for a virtual power purchase agreement to decarbonize our procured electricity in Europe as we did in the US. Efficiency investments will continue to reduce absolute emissions while we continue to aggressively adopt renewables in all markets that can support our demand.

C3.1e

(C3.1e) 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	Capital expenditures Capital allocation	Novartis recognizes that continued carbon emissions will contribute to climate change related health crises in the future, as well as exposing the company to carbon taxes in multiple markets. Novartis operates globally, and has significant financial exposure to developing carbon pricing mechanisms. 46 national systems exist, and Novartis has operations in 27 of those nations as well as across the EU where an ETS is already in place. Our production facilities in Kundl, Lendava, Menges, Rovereto, 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 increasing 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. Within the past year, allowances have traded for as much as €29 . Multiple institutions expect the EU ETS costs to increase to between €40-€80 by 2021 and between €50-€100 by 2030. As a result, in 2019, the CFO formally required that all capital expense requests for projects over USD 20M require a sustainability assessment that shows the project will contribute to corporate targets in carbon, water or waste before the project can progress to the Executive Committee of Novartis for approval. This supplements the previous guidance setting an internal shadow price of carbon at USD 100 per ton to inform capital investment decisions.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

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)

867236

% of target achieved [auto-calculated]

10.888203863543

Target status in reporting year

Underway

Is this a science-based target?

Yes, this target has been approved as science-based by the Science-Based Targets initiative

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. The status achieved in 2019 is a 10.9% reduction of emission from our industrial operations. The 2019 values reported here take into account our GHG forestry offsets.

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 (%)

50

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

3313400

Covered emissions in reporting year (metric tons CO2e)

6917855

% of target achieved [auto-calculated]

-8.78417939276876

Target status in reporting year

Underway

Is this a science-based target?

Yes, this target has been approved as science-based by the Science-Based Targets initiative

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 then to reduce our footprint even further for a minimum of a 50% value chain footprint reduction by leveraging credible, transparent offsets against own operations and supply chain where needed. The 2019 values reported here take into account our GHG forestry offsets.

C4.2

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

No other climate-related targets

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	103	590000
To be implemented*	20	10000
Implementation commenced*	8	4500
Implemented*	6	3500
Not to be implemented	3	15000

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	Other, please specify (Waste Heat Recovery)
--------------------------------	---

Estimated annual CO2e savings (metric tonnes CO2e)

2486

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

243000

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

2000000

Payback period

4-10 years

Estimated lifetime of the initiative

11-15 years

Comment

Investments were made at a production site in Kundl, Austria to improve waste heat recovery. With incentives in the local market, payback period was reduced to 6 years and will deliver energy savings of 12,432 MWh per year, carbon savings of 2,486 tons of CO2e per year. This project is being considered as a model for export to other production sites globally as appropriate.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

300

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

120000

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

120000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

The production site at Ljubljana, Slovenia is currently purchasing steam from an external supplier. Average steam consumption on location is 4.6 tons per hour. 40% of the steam is evaporated for humidification purposes and the other 60% of the steam is converted to condensation due to energy consumption. Condensate is collected in 3 large storage tanks, cooled with soft water to 30 degrees Celsius and then drained into a drain system. Under an agreement with the provider, Novartis will return the steam condensate to the district heating system. In addition to avoiding carbon emissions for heat, it also eliminates the consumption of soft water for cooling and eliminates the payment of waste water tax.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

3200

Scope(s)

Scope 3

Voluntary/Mandatory

Voluntary

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

1500000

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

200000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

An internal team identified an opportunity to change how shipments were coordinated for clinical trials. Through relatively simple adjustments, they were able to optimize shipments associated with 21 clinical trials. Their actions reduced 40,000 unnecessary shipments and resulted in 3,200 fewer tons of carbon emissions. Investment required was only labor from a team of 8 to design and then promulgate new operating procedures that will be replicated across future clinical trials.

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 2019 to raise awareness of the need to speed implementation of the corporate target for carbon neutrality in own operations and a 50% reduction in value chain carbon emissions. 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	In 2019, the CFO directed that all CAPEX investments greater than \$20M 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.

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 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**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 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)**

484529

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

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

565460

Scope 2, market-based (if applicable)

412498

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

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

4527169

Emissions calculation methodology

The Scope 3 GHG emissions values for Purchased Goods and Services reported here is the result of an analysis of the Novartis's Global Third Party Procurement spend on all relevant categories e.g. Packaging, Raw Materials, Services like Business Development and Media, Office Supplies across all Business Units in 2019. The emission is calculated using EnScan (Environmental Supply chain accounting Novartis) which is based on Global Environmental Extended Input-Output Model (EEIO). Novartis initiated this EEIO analysis in 2015 and since then Novartis performed the assessment on a yearly basis and refined the approach and the level of detail over time. The analysis considers average emission intensities by industry sector and incorporates regional trade flows and inter-relationships to calculate emissions from spend data. EEIO Model primarily use the World Input-Output Database (WIOD) supplemented by most recent OECD and Eurostat data. The Model includes emissions for all tiers of suppliers in the material's value chain (Our Suppliers and Suppliers of Suppliers). The environmental impacts are valued using damage-cost-based shadow prices. Annually, the shadow prices are determined by an inflation adjustment of the previous year's values.

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

10

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

418073

Emissions calculation methodology

The emission is calculated using average spend-based method, wherein capital purchases of 2019 that constitutes over 90% of Novartis's gross global capital expenditure on goods across are considered. Top categories identified are Construction, IT Hardware and Software, Production Equipment and Laboratory Supplies & Equipment. The emission factors for spend under these categories was obtained from PwC ESCHER (Efficient Supply Chain Emissions Reporting) model. In 2017, PwC did an analysis of Novartis' Environmental impacts associated with global supply chain using Environmental Extended Input-Output Model. This model was developed and maintained by PwC using data from the Global Trade and Analysis Project. Though spend on Capital Goods may significantly fluctuate from year to year as Novartis is committed to R&D. Our efforts cut across the company resulted in 35% of reduction in emissions per unit of sales in this category compared to 2016 (our baseline year for emission targets), as Novartis teams continue to find new ways to improve the effectiveness and efficiency of our operations.

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

0

Please explain

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

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

247674

Emissions calculation methodology

Fuel and energy-related activities emissions reported here are derived from the data on upstream gross fuel consumption and energy purchased across Novartis in 2019. Emission are calculated using emission factors per unit of consumption wherein emission factors are obtained by excluding Combustion Emission Factor from Life Cycle Emission Factor. Novartis considers emission losses associated with grid transmission and distribution of electricity as well into emission in this category. Novartis used 2018 UK Government's Greenhouse Gas Conversion Factors and IEA Statistics for T&D Losses, IPCC Guidelines for emission factors. Notes: 1. Novartis already had significant improvement in this category by resorting to use only clean energy. For On-Site Energy Generation, coal is completely avoided while fossil waste fuels contributes mere 2% of On-Site Energy Generation. 2. Novartis achieved 6.5% decrease in Energy Consumption per interior gross floor area as well as 5.5% decrease in Energy Consumption per employee headcount from 2016 (Base line year for emission targets) 3. Decreasing emission trend since 2016, 7% decrease in emissions from 2018

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

0

Please explain

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

315557

Emissions calculation methodology

The Scope 3 GHG emissions values for this category is the result of an analysis of the Novartis's Global Third Party spend on Warehousing and Transportation across all Business Units in 2019. This Spend includes both In- and Out-bound services purchased by Novartis for transportation and distribution. The emission is calculated using EnScan (Environmental Supply chain accounting Novartis) which is based on Global Environmental Extended Input-Output Model (EEIO). The model provides transport emission values at the level of mode of transport like Air/Water/Land. Note: Since 2018, Novartis initiated and engaged in keen analysis of its Warehousing, Distribution and Transportation activities from emission and carbon footprint point of view. Novartis includes these insights into its decision making and is taking actionable steps to decrease its environmental footprint. In addition, Novartis is working on projects to improve the data needed for this category and analyzing upstream supply chain of each site/plant separately.

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

7

Please explain

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

23894

Emissions calculation methodology

The Scope 3 GHG emissions for this category is the result of data analysed around amount and type of operational waste produced across all Business Units in 2019. All types of hazardous and non-hazardous waste related to the sites business operations (excluding construction debris) are considered. The emission factors are mapped using waste output-route based model assessed by external consultancy where disposal methods considered are – Recycling, Treatment, Incineration (with or without energy) and Landfill. Finally, the emission values obtained for each category are aggregated and reported. Notes: 1. On-site incineration of Fossil Waste is considered in Scope 1 emissions (on-site energy generation). Thus excluded from Scope 3. 2. Treatment of wastewater generated in operations is not considered in reporting emissions since these are not material to the final emissions figure for this category. A previous study showed that this is less than 20% of emissions in this category. 3. Recycling/Reuse of Total Operation Waste is going up year-on year and stood at 68.5% 4. The solvent waste is the largest contributor to the GHG emissions for this category (34%)

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

100

Please explain

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

191293

Emissions calculation methodology

The Scope 3 GHG emissions for this category are obtained from our logistics solution partner. The data considers all aircraft travel related data for Novartis employees plus service providers on their trips for Novartis in 2019. 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. A company-wide assessment showed that most significant emissions from transportation of employees for Business-related activities by third-party relates to air travel, for this reason it was decided to include only air travel in this category.

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

100

Please explain

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

148472

Emissions calculation methodology

The Scope 3 GHG emissions for this category are derived using average-data model. The "per capita emission" factor used for this model is based on the assessment performed by an external consultancy in 2009. In this assessment, region wise commuting patterns of employees using private and public transport were studied and modeled. The average employee headcount for 2019 was multiplied with per capita emission to obtain the emission in this category.

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

0

Please explain

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 already part of Scope 1 and 2 emissions. Hence, this Scope 3 category is not considered to be relevant.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

35993

Emissions calculation methodology

The emission is calculated using Distance-based method. The assessed distance is multiplied by weight of goods sold and concerned emission factors that incorporate mode of transport, average fuel consumption, average utilization, average size and mass or volume of the goods and the vehicles, and their associated GHG emissions. Gross global production amount considers both finished and non-finished goods (intermediary) products (excluding packaging). The distance is based on the product transportation model obtained from an assessment performed by external consultancy in 2009. Note: 1> Above method is chosen as Novartis doesn't have access to fuel records from downstream transport vehicles and/or shipments do not consume entire vehicle/vessel. 2> Novartis doesn't have key Over-The-Counter drugs, hence we have not considered Patient travel data for pick-up of medical products. {R&D piece}

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

0

Please explain

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 to be relevant as only a few Novartis products (Pharmaceutical Finished Drugs) are processed further after they are sold. To sell intermediate products is not our business model.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

142494

Emissions calculation methodology

The use of Novartis products (Pharmaceutical Finished Drugs) does not generally result in GHG emissions, with the exception of a propellant based inhaler. All quantities of HFC used for its production in 2019 are measured and reported here. Life cycle GHG emissions are calculated using the IPCC emissions factor for HFC-134a.

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

100

Please explain

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 to be relevant as Novartis' pharmaceutical products (tablets, injectables, etc.) are consumed by patients and therefore no GHG emissions associated with the end of life treatment of sold Novartis products occur by that. Novartis has only a few medical device products (e.g. inhalers, auto-injectors, surgery tools and contact lenses) of which the Scope 3 emissions from inhalers (major source) are already considered in category 11 "Use of sold products". For the remaining products, it was assessed that GHG emissions are not material.

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

Novartis screened the leased assets to conclude that leased out buildings are less than 1% of overall building inventory and emissions from them would not material to the overall category.

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 is not in the franchise business.

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 investment in other companies are not considered relevant. Novartis has limited potential to influence their emissions. This category is material to companies that provide financial services. Hence, this category is not significant to Novartis.

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

0.00001889

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

897027

Metric denominator

unit total revenue

Metric denominator: Unit total

4744500000

Scope 2 figure used

Market-based

% change from previous year

9.3

Direction of change

Decreased

Reason for change

Nominal total Scope 1 and Scope 2 GHG emissions have decreased between 2018 and 2019, from 933 kt CO2e in 2018 to 897 kt CO2e in 2019 thanks to the implementation of energy savings projects combined with increased sales, from USD 44445 million in 2018 to USD 47751 million in 2019.

Intensity figure

8.81187148

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

897027

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

101693

Scope 2 figure used

Market-based

% change from previous year

0.8

Direction of change

Increased

Reason for change

Nominal total Scope 1 and Scope 2 GHG emissions have decreased between 2018 and 2019, from 933 kt CO2e in 2018 to 897 kt CO2e in 2019 thanks to the implementation of energy savings projects while the number of employees has decreased from 106637 Full Time Equivalents (FTE) in 2018 to 101693 FTE in 2019 due to transfer in the context of the Alcon spin-off.

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	474385	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	10144	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	79833
Austria	70542
Italy	51963
Slovenia	39855
United Kingdom of Great Britain and Northern Ireland	34622
Germany	31664
Spain	23744
Turkey	14642
France	13015
Poland	11681
Japan	10719
Ireland	10418
Belgium	10149
Egypt	9618
Singapore	8901
China	8889
Russian Federation	7339
Switzerland	6221
Romania	3071
India	3033
Mexico	2677
South Africa	1446
Brazil	1385
Bangladesh	1119
Other, please specify (Rest of World)	27953

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)	310515
Administration (onsite combustion and processes)	26718
Research and Development (onsite combustion and processes)	21955
Sales (vehicle emissions)	125342

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	89926	9022	274185	31022
Switzerland	79441	78095	417987	5525
Austria	47460	0	287847	287847
Slovenia	67593	118971	225990	25924
Italy	14056	2479	48370	33629
Germany	30807	24971	76996	22462
China	39100	43518	71930	2946
India	46931	46924	52428	26216
Singapore	14895	14881	35513	0
Spain	22210	0	75423	75423
Turkey	21002	21002	47569	6868
Ireland	17104	181	41287	38968
United Kingdom of Great Britain and Northern Ireland	4739	5529	23678	0
Poland	15810	584	21854	20753
France	1273	587	25109	4909
Egypt	7027	7027	14843	0
Belgium	4302	2601	18907	0
Japan	6899	5414	12725	0
Russian Federation	3908	3908	11315	0
South Africa	6509	6509	6539	0
Other, please specify (Rest of World)	14820	11421	33120	7242
Romania	1991	1624	5829	1966
Bangladesh	2982	2982	5249	0
Mexico	1608	1608	3487	0
Brazil	3067	2661	19540	8490

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	394634	308665
Administration	78276	54543
Research and Development	92550	49289

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	3189	Increased	0.3	The proportion of renewable energy input slightly decreased by 0.3% between 2018 and 2019 equivalent to an absolute increase of 3.2 ktCO2e or 0.3% (3.2 / 933.2 *100) of the gross global emissions 2018 (933.2 ktCO2e for scope 1 and 2 combined).
Other emissions reduction activities	17165	Decreased	1.8	The emissions reduction projects undertaken in 2019 will achieve emission reductions of 17.2 ktCO2e annually, equivalent to 1.8% reduction (17.2 / 933.2 *100) of the gross global emissions 2018 (933.2 ktCO2e for scope 1 and 2 combined).
Divestment	22179	Decreased	2.4	The divestment of a site in April resulted in an emission reduction of 22.2 ktCO2e for 2019, equivalent to a 2.4 % reduction (22.2 / 933.2 *100) of the gross global emissions 2018 (933.2 ktCO2e for scope 1 and 2 combined).
Acquisitions	0	No change	0	No restatement linked to acquisitions in 2019
Mergers	0	No change	0	No involvement in mergers
Change in output	0	No change	0	No major change in output at Novartis facilities
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)	19666	1693816	1713482
Consumption of purchased or acquired electricity	<Not Applicable>	600189	895813	1496002
Consumption of purchased or acquired heat	<Not Applicable>	0	59208	59208
Consumption of purchased or acquired steam	<Not Applicable>	0	302509	302509
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	6353	<Not Applicable>	6353
Total energy consumption	<Not Applicable>	626208	2951346	3577554

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

1629241

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

1464754

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

164487

Emission factor

0.055

Unit

metric tons CO2e per GJ

Emissions factor source

International Energy Agency

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

23353

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

23353

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

Fuels (excluding feedstocks)

Other, please specify (Waste, fossil in nature)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

41222

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

41222

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 2019 based on organic waste solvents mixture

Fuels (excluding feedstocks)

Wood

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

19666

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

19666

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

Unit

metric tons CO2e per GJ

Emissions factor source

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

Comment

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	87792	82046	6353	6353
Heat	0	0	0	0
Steam	1633044	1602825	19666	19666
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

Hydropower

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

Other, please specify (Worldwide)

MWh consumed accounted for at a zero emission factor

344393

Comment

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

Wind

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

Other, please specify (Worldwide)

MWh consumed accounted for at a zero emission factor

132806

Comment

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

Biomass

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

Other, please specify (Worldwide)

MWh consumed accounted for at a zero emission factor

23234

Comment

Many of our sites are purchasing green energy from renewable energy sources. The figure reported here is the total amount of energy purchased worldwide, that is generated from renewable 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 (Mainly PV and geothermal)

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

Other, please specify (Worldwide)

MWh consumed accounted for at a zero emission factor

99755

Comment

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

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 2019 - PwC assurance statement.pdf

Page/ section reference

Page 48 of the Novartis in Society Report 2019 contains the GHG Scope 1, combustion and process, and vehicles. Page 66 and 67 of the document provide the independent assurance report of the Novartis in Society Report.

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-report-2019.pdf

Page/ section reference

Page 48 of the Novartis in Society Report 2019 contains the GHG Scope 2, market based. Page 66 and 67 of the document provide the independent assurance report of the Novartis in Society Report.

Relevant standard

ASAE3000

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 2019 - PwC assurance statement.pdf

Page/section reference

Please refer to the Independent Assurance Report (pages 66-67) on the 2019 Novartis in Society ESG report. PwC was engaged to perform assurance procedures to provide limited assurance under ISAE3000 (revised) on "health, safety and environmental performance indicators" (page 54). In the indicator table, we have KPI – "GHG Emissions, Scope 3, business travel". Note that the emission values mentioned are according to the 9+3 months methodology for sustainability data (bullet note 8 in footnotes)

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 and 2)	ISAE3000	Page 54 of the Novartis in Society Report 2019 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 66 and 67 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)	ISAE3000	Page 54 of the Novartis in Society Report 2019 contains the total GHG emissions Scope 1 data from the previous year, that is also verified during the assurance provision process. Page 66 and 67 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 54 of the Novartis in Society Report 2019 contains the total GHG emissions Scope 2 data from the previous year (market-based), that is also verified during the assurance provision process. Page 66 and 67 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 54 of the Novartis in Society Report 2019 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 66 and 67 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

50

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2019

Period end date

December 31 2019

Allowances allocated

112805

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

156010

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

Emissions covered: 23% Gross global Scope 1 emissions: 484,529 tons CO2e Facilities we own and operate: Kundl Lendava Menges Rovereto Ringaskiddy Grimsby

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 operates in 27 of the 46 nations that have national and sub-national carbon pricing in effect or being proposed. Footprint in those markets over the next ten years, taking anticipated increases in cost of carbon, could expose Novartis to as much as USD 86M in potential carbon tax. As a result, Novartis is proceeding with rapid adoption of renewables in major markets, and in 2019 began the process of selecting a developer for a virtual power purchase agreement to decarbonize our procured electricity in Europe as we did in the US. Emphasis was placed in diversifying technology and geography, and ensuring that the selected projects delivered additionality and maximum carbon benefit. As a result, all of Novartis procured Scope 2 electricity will be decarbonized once the project is built. Final project selection is in process.

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.

C12. Engagement

C12.1

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

Yes, our suppliers
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

Rationale for the coverage of your engagement

The category 1 "Purchased Goods and Services" and the category 4 "Upstream Transportation and Distribution" constitutes about 80% of our Scope 3 emissions, half of which can be attributed to our direct suppliers (Tier 1). These are the most significant categories for Novartis in terms of size, reduction opportunities and potential to influence. Thus, it is important to assess our suppliers on their capability to meet environment sustainability criteria right from the beginning.

Impact of engagement, including measures of success

The supplier onboarding and compliance are enforced through various policies like Health, Safety and Environment (HSE) Policies, Novartis Third Party Code (formerly Supplier Code), Responsible Procurement (RP). In addition, Novartis started to implement further enhancements related to IT systems and processes for the Third Party Risk Management (TPRM) Programs. One impact of TPRM Program is the enhanced capability to better identify and monitor risks in our supply chain: Sharing example for the impact of these programs. In 2019, Novartis helped 24 suppliers based in China to identify 57 areas (CAPAs) to be improved in terms of environmental sustainability. 28 of these areas have been remediated or improved. • One supplier started monitoring for Air emission level from the production solvent recovery system and silica gel regeneration system. Thus, potential air pollution can be made known to the site to take timely action. One other supplier established the detailed air emission monitoring plan (incl. monthly, quarterly & yearly) to ensure all air emission factors were considered according to the regulatory requirement. • A key supplier has taken measures to reduce and dispose the pharmaceutical waste as per good practiced and thus reduced impact to the environment. One other supplier installed the secondary containment for two mother liquor tanks and one crude methanol tank, reducing the risk of chemical contamination to the environment due to chemical tank spills. • There are over 60 observations related to environment ranging from improvement in wastewater treatment monitoring, containment, storm water management etc. that are identified and closed by Suppliers. The audit criteria includes requirements from suppliers as per Pharmaceutical Supply Chain Initiative (PSCI). Our measures of success are the Performance Indicators, which tell us the percentage of suppliers we audit out of the identified suppliers at risk and the percentage of reduction in Scope 3 emission per revenue (million USD) we could achieve from last year. Note: The details and figures are publicly available in "Novartis in Society ESG Report 2019", attached in C10.1c.

Comment

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

2

% total procurement spend (direct and indirect)

10

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

Rationale for the coverage of your engagement

Both the internal assessments as well as the external assessments by consultancies underpin that Scope 3 emissions could be controlled by working with suppliers who share the similar vision for environmental sustainability. Thus, it was deemed necessary to understand and gauge the suppliers from environment sustainability point of view. This mode of engagement not only helps us to understand the awareness level among suppliers but also has been successful to identify collaboration opportunities. For information collection, key suppliers of raw materials such as chemicals, intermediates, active pharmaceutical ingredients, and packaging materials are considered. In addition, major logistics providers are part of the engagement. As Novartis has more than 100,000 suppliers in its global network, ongoing engagement targets key suppliers having major influence on procurement spend. With the frequent movement of suppliers in and out of our network, we may miss 100% engagement, but we are confident that we will accomplish most of our required impact by focusing on key portions of the supply chain, and achieve our ambitious target on Scope 3 emissions.

Impact of engagement, including measures of success

In-line with our annual process of capturing climate related data, Novartis continued to transparently measure the performance and efforts of our suppliers. Novartis scores the suppliers based on their past, current and planned efforts towards reduction in GHG emissions, and derive insights from this data and shares the information back with supplier to complete the loop. The measure of success is the Response Rate of suppliers on Climate Survey and number of collaborative projects identified in this domain. These indicators shows high commitment and support of our suppliers. One instance of impact from information collection was identification of following engagement opportunity with suppliers. The annual sustainability survey unveiled that some of our key Indian suppliers face challenges regarding the implementation of energy efficiency projects, adoption of renewable energy or low emission vehicles. Therefore, in June 2019, in collaboration with the World Business Council for Sustainable Development, Novartis organized a workshop with our suppliers in India to develop an integrated energy strategy that considers all energy uses across our value chain, and help remove barriers to renewable energy.

Comment

The data is used to complement the Scope 3 inventory. In addition, the data supports our efforts to measure the reduction of our environmental footprint more accurately in the mid to long-term. The quality of all responses is assessed through comparison with industry intensity emission values.

C12.1d

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

Novartis continues to engage with a wide range of value-chain via collaborative projects, workshops, trainings. Sharing below a brief description about such engagements:

1. Novartis is a Member of the "Impact Valuation Roundtable (IVR)". By taking a macro-societal perspective on the business contribution to society, we believe that Impact Valuation can support us in our contribution to international objectives and frameworks such as the United Nation's Sustainable Development Goals. We have developed the Global Novartis financial, environmental and social (FES) impact valuation tool.

The success indicators of this engagement were that, with this approach, we were able to analyse that our gross global Climate Impact due to own operational activities, indirect and induced was USD 4.6 billion. In addition to gaining these insights and comparing year on year data, several countries are using this tool to engage with suppliers, other value-chain and communicate results through different channels, including brochures, fact sheets and stakeholder events.

2.Support for the Pharmaceutical Industry Principles for Responsible Supply Chain Management set by the Pharmaceutical Supply Chain Initiative (PSCI). With PSCI, Novartis is continuously engaged in conferences, webinars, workshops, peer learning and resource library to build capabilities among suppliers. Novartis is also engaged in the newly formed PSCI India and PSCI China group. Both aim to enhance supply chain collaboration and increase best practice sharing around sustainability on a regional level.

3.Our purpose draws major inspiration from the enthusiasm of our Employees towards a sustainable environment. In 2019, One Novartis Environmental Sustainability Team (ONEST), a network of more than 200 people across 32 countries was launched with the focus to offer a work structure for employees wishing to contribute to the achievement of our environmental targets through business-related, globally scalable ideas. For example, we currently have global teams working on designing eco-friendly events, reducing plastics and food waste, developing carpooling solutions, conducting awareness sessions

4.Signatory to the UNGC/UNEP/World Business Council for Sustainable Development (WBCSD) initiative "Caring for Climate" : The Business Leadership Platform, also fulfilling the Business Leadership Criteria on Carbon Pricing.

5.Signatory to WBCSD's Manifesto for Energy Efficiency in Buildings

6.Classify and dispose of waste according to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

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 2019 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.	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 2019, 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 2019 Novartis started an RFP for a Pan-European Power Purchase Agreement (PPA) as a follow up step in decarbonizing our electricity as part of our goal of carbon neutrality in own operations.	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 2019, 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 per 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 2019, 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 per 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 2019, 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. In 2019, 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 for the Grand Finals in 2019, helping to identify promising startups that can transform clean tech industries.

5) Novartis formally joined the Environmental League of Massachusetts (ELM) in late 2018, and was involved through 2019 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?

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 Novartis Business Services. 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 is tasked with facilitating information-sharing between other CR-related governance bodies, such as the HSE Steering Committee, the Compliance Steering Committee and Corporate Affairs. 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:

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, 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

Please select

Status

<Not Applicable>

Attach the document

<Not Applicable>

Page/Section reference

<Not Applicable>

Content elements

<Not Applicable>

Comment

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Novartis in Society ESG Report 2019 - PwC assurance statement.pdf

Page/Section reference

Pages 47 and 48 of the Novartis in Society Report 2019 contains environmental sustainability information on governance, strategy, emissions figures, emissions targets and other metrics.

Content elements

Governance

Strategy

Emissions figures

Emission targets

Other metrics

Comment

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.

As a result of leadership discussions at the CEO level that began in 2019, Novartis has made a significant investment and elevated the role of the most senior executive responsible exclusively for environmental sustainability. Novartis has now created a role for Head Environmental Sustainability as a direct report to a member of the Executive Committee of Novartis. This executive is now responsible for managing and executing all initiatives in environmental sustainability across the company, to include all of the existing governance processes listed through this report including the CEO chaired Trust and Reputation Committee and the Environmental Sustainability Strategy Implementation Steering Committee that includes multiple members of the Executive Committee of Novartis. This has created a powerful and effective voice to align environmental sustainability efforts across the company, fulfill expectations of internal and external stakeholders and take the first steps to creating a next generation set of environmental sustainability goals that are aligned with Novartis' role as a global healthcare leader. Not only will this accelerate the rate of change needed to respond to the climate crisis and fulfill Novartis approved Science Based Target, but it will also result in more effective innovation and collaboration efforts in climate thought leadership and execution across the entire value chain.

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	Head of Novartis Business Services (NBS), reporting directly to the CEO and ensuring that the Company has effective operational and financial procedures in place. Corresponding to job category 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 9th 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, Greenhouse Gas (GHG) emission data are calculated for each Novartis division. The division level GHG emissions are then used in conjunction with the requesting customer's spend per each Novartis division (as a percentage of total Novartis division revenue for the year) to calculate the carbon footprint attributed to products sold to the requesting customer.

Similar to our customers, we recognize that the environmental impact of our business extends beyond our internal operations. We are therefore working to expand our focus beyond our own facilities to assess and improve our broader supply chain. Toward this end, we are considering the following aspects of our supply chain: Product Design (e.g. improvements in packaging), Marketing (e.g. greening our fleet), Material 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	47445000000

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.

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 on various 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 data reported in the course of this questionnaire is therefore calculated based on GHG intensity numbers for Novartis Businesses (Divisions), multiplied with the spend of the requesting client company with each Division. This calculation is based on the methodology described by the WRI / WBCSD GHG Protocol Initiative standard for Scope 3 Accounting and Reporting (corporate-level allocation, market value method).
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, and product-specific environmental footprint data has only been determined for a limited number of individual products. For these reasons, GHG data reported in the course of this questionnaire is calculated based on GHG intensity numbers for Novartis Businesses (Divisions), multiplied with the spend of the requesting client company with each Division. This calculation is based on the methodology described by the WRI / WBCSD GHG Protocol Initiative standard for Scope 3 Accounting and Reporting (corporate-level allocation, market value method).

SC1.4

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

No

SC1.4b

(SC1.4b) Explain why you do not plan to develop capabilities to allocate emissions to your customers.

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.

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?

Please select

SC3.1

(SC3.1) Do you want to enroll in the 2020-2021 CDP Action Exchange initiative?

Please select

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2019-2020 Action Exchange initiative?

Please select

SC4.1

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

Please select

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, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms