

**Module: Introduction****Page: Introduction****CC0.1****Introduction**

Please give a general description and introduction to your organization.

**The Novartis Mission:**

We want to discover, develop and successfully market innovative products to prevent and cure diseases, to ease suffering and to enhance the quality of life. We also want to provide a shareholder return that reflects outstanding performance and to adequately reward those who invest ideas and work in our company.

**The Novartis Healthcare Portfolio:**

We believe our portfolio best meets the varied and often complex needs of patients and societies. Novartis is positioned to lead in innovation, partner with others and offer solutions to patients across a broad healthcare spectrum. In addition, a diverse portfolio reduces financial risk, bringing greater value to those who invest in our company. Our unique portfolio focuses on science-based healthcare sectors that are growing rapidly, reward innovation, and enhance the lives of patients.

Novartis is the only company with leading positions in each of these key areas:

- Pharmaceuticals: innovative patent-protected medicines
- Alcon: global leader in eye care with surgical, ophthalmology and consumer products
- Sandoz: affordable, high-quality generic medicines and biosimilars
- Consumer Health: self-medication products and treatments for animals
- Vaccines and Diagnostics: vaccines and diagnostic tools to protect against life-threatening diseases

Since Novartis was created in 1996 - when only 45% of net sales came from healthcare - the company has shifted focus to fast-growing areas of healthcare. Our strategy is to provide healthcare solutions that address the evolving needs of patients and societies worldwide.

**Novartis People:**

With more than 120 000 associates in 140 countries worldwide. Novartis associates share a vision of a better today and tomorrow for patients – a vision that drives our growth and success. The greatest job satisfaction for our associates is the knowledge that they improve the quality of life for patients with increasing precision and efficiency through breakthrough science and innovation. Our performance-oriented culture and responsible approach attract top experts in all areas – research and development, marketing and sales, finance and administration. Our talented associates have made us a global leader in healthcare. Novartis is committed to rewarding the people who invest ideas and work in our company.

**Environmental and Social Sustainability:**

Novartis believes that careful stewardship of natural resources, particularly tight control of greenhouse gas emissions and energy efficiency, is not only important for the Group but critical for society and future generations.

Social and environmental sustainability is an integral part of our strategy.

Novartis strives to make efficient use of natural resources and to minimize the environmental impacts of its activities and products over their entire life-cycle. Health, safety and environmental impacts are assessed to ensure that the benefits of new products, processes and technologies outweigh remaining risks.

---

## CC0.2

### Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Wed 01 Jan 2014 - Wed 31 Dec 2014

---

## CC0.3

### Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
United States of America
Germany

Select country
Switzerland
India
Italy
Slovenia
Austria
Ireland
United Kingdom
Turkey
Spain
China
Singapore
Rest of world

---

#### CC0.4

##### Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

---

#### CC0.6

##### Modules

As part of the request for information on behalf of investors, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sub-industries, companies in the oil and gas sub-industries, companies in the information technology and telecommunications sectors and companies in the food, beverage and tobacco industry group should complete supplementary questions in addition to the main questionnaire.

If you are in these sector groupings (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will not appear below but will automatically appear in the navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see <https://www.cdp.net/en-US/Programmes/Pages/More-questionnaires.aspx>.

---

## Further Information

### Module: Management

### Page: CC1. Governance

---

#### CC1.1

##### **Where is the highest level of direct responsibility for climate change within your organization?**

Board or individual/sub-set of the Board or other committee appointed by the Board

---

#### CC1.1a

##### **Please identify the position of the individual or name of the committee with this responsibility**

- Health, Safety Environment Steering Committee (HSE SteCom) chaired by the company CEO. The Novartis CEO, Joseph Jimenez, is the chairman of the Health, Safety & Environmental Steering Committee (HSE SteCom), which is responsible for authorizing and sponsoring the Energy & Climate strategy. Currently he has delegated this role to the Head of Corporate Responsibility, Jürgen Brokatzky-Geiger, who reports directly to the CEO. HSE SteCom meets three times per year and comprises heads Technical Operations of all Novartis Divisions, which are members of the executive committees of the Divisions, the head Real Estate and Facility Services of the Novartis Business Services Unit, and the head Corporate Health Safety Environment and Business Continuity (CHSE&BC). The Energy and Climate Strategy is managed by the Novartis Group Global Head Environment & Energy within CHSE.

- Undivided Line Management Responsibility: All aspects of HSE at Novartis, including energy and climate, are the undivided responsibility of line management at the various organizational levels (site, country, Division, Group), who are supported by functional units with respective technical expertise.

- Functional Units on Energy and Climate: At Divisional level, Novartis has assigned global energy managers to manage the divisional energy and greenhouse gas (GHG) emission reduction programs. Decisions on divisional energy and climate strategies are included in the annual HSE Group-level Management Reviews with all Divisions, and are a regular agenda item of the HSE SteCom. At company and site levels, local energy manager functions and committees (depending on the size of the site) are assigned to manage local energy efficiency programs. Energy use and GHG emissions are part of the HSE management system, managed by a network of corporate, divisional and site HSE functions. Targets on energy efficiency improvements and climate strategies are included in the individual targets assigned to Health, Safety and Environment Officers (HSEOs), divisional and site-based energy managers and line managers at various levels of the organization. HSEOs, energy managers and line managers who have been assigned energy targets receive cash bonuses when these are achieved or exceeded. Furthermore, all employees, regardless of their functions, can submit innovative projects or ideas to improve energy efficiency and reduce GHG emissions to the Novartis Health, Safety, Environment and Business Continuity (HSE&BC) Excellence Award scheme (which will be held for the 11th time in 2014), including five categories including energy and environment. The winners are judged by an internal panel of experts under a range of criteria, including: effectiveness, duplicability, use of renewable energy, social and development benefits, payback time and improvements in environmental areas.

**CC1.2**

**Do you provide incentives for the management of climate change issues, including the attainment of targets?**

Yes

**CC1.2a**

**Please provide further details on the incentives provided for the management of climate change issues**

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Corporate executive team	Monetary reward	Emissions reduction target	Divisional managers, who are members of the Novartis Executive Committee, are rewarded for meeting division specific absolute emission reduction targets on total Scope1 and Scope2 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).
Corporate executive team	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target Behaviour change related indicator	The head Corporate Responsibility who is a permanent guest member to the Novartis Executive Committee, is rewarded for the corporate absolute emission reduction targets on total Scope1 and Scope2 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). His targets also include other environmental, HSE and sustainability targets.
Other: Environment/sustainability managers	Monetary reward	Emissions reduction project Emissions	Environmental managers (on group and divisional levels) are rewarded for meeting group or division specific absolute emission reduction targets on total Scope1 and Scope2 GHG (in tons CO2e), CO2 emissions from vehicles fleet (in tons CO2) and energy savings

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
		reduction target Energy reduction project Efficiency project Efficiency target Behaviour change related indicator	targets (savings from energy projects in USD, GJ and tCO2e). On Group level, targets also include emission reduction and energy efficiency projects, as well as behaviour change related projects and related indicators.
Energy managers	Monetary reward	Emissions reduction target Energy reduction project Efficiency project Efficiency target	Energy managers are rewarded for meeting site specific absolute emission reduction targets on total Scope1 and Scope2 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).
All employees	Recognition (non-monetary)	Emissions reduction project Energy reduction project Efficiency project Efficiency target Behaviour change related indicator	Environment & Energy Awards as part of the overall HSE&BC Awards program that rewards associates who develop energy saving, renewable energy projects or environmental projects such as water footprint, sustainable packaging or waste and emission reduction.
Other: Country Managers	Monetary reward	Emissions reduction target Efficiency target	Country managers are rewarded for reducing CO2 emissions from the vehicles fleet and for energy efficiency of their commercial buildings.

**Further Information**

---

**CC2.1**

**Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

Integrated into multi-disciplinary company wide risk management processes

---

**CC2.1a**

**Please provide further details on your risk management procedures with regard to climate change risks and opportunities**

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	All geographical areas in which we operate are considered. These, among others, include: USA, Germany, Switzerland, India, Italy, Slovenia, Austria, Ireland, UK, Turkey, Spain, China, Singapore (in the order of size of GHG emissions in these countries)	> 6 years	Novartis manages risks proactively by implementing appropriate preventive and contingency measures. Risks include all climate change and environment-related potential risks and opportunities including natural disasters such as floods, drought, storms and earthquakes; health risks to people e.g. pandemic; safety such as fire and explosions; environmental risks such as water scarcity, spillage, soil contamination, water pollution; and risks related to business continuity e.g. as a consequence of above listed risks related to climate change and others.

---

**CC2.1b**

**Please describe how your risk and opportunity identification processes are applied at both company and asset level**

Risk/opportunity assessment at a company level:

The Novartis risk management process is designed to reduce the residual risk of an event – in terms of its likelihood of occurrence and the severity of its consequences – to an acceptable level for the company overall and for individual facilities. The two most important tools at Novartis for Health, Safety and Environment (HSE), including climate change and other environmental impacts, and related risk management are (1) risk portfolios developed at all sites and

consolidated at divisional and group level; and (2) HSE audits. In addition, for business-related risks, a Business Continuity Management (BCM) process and a Novartis Emergency Management (NEM) process are implemented as integral parts of the Novartis risk management framework. Since 1997, Novartis develops such risk portfolio, covering all aspects of HSE, including climate change and other environmental aspects on an annual frequency. HSE audits also cover issues related to climate change and are conducted according to an annual HSE audit plan. The selection of sites to be audited each year depends on the respective risks expressed in the risk portfolio. Corporate and divisional HSE audit groups conduct the audits following the annually defined auditing program. All major sites are audited at least all five years.

Risk/opportunity assessment at an asset level:

Individual risk, defined in terms of likelihood of occurrence and severity of its consequences, are evaluated and described by each site by the local experts and included in a risk portfolio. These portfolios are consolidated by each division and for the company as a whole. A formalized follow-up procedure on the results of HSE audits is in place in each division according to which corrective actions are implemented by the individual facility.

---

### CC2.1c

#### How do you prioritize the risks and opportunities identified?

Criteria to determine materiality/priorities:

HSE and BC risk portfolios are based on a bottom-up approach, developed at each site and consolidated on divisional and group levels. Risks are expressed in terms of severity and probability of occurrence, and the risk evaluation and management process includes necessary steps to evaluate measures for reducing both severity and probability of occurrence and for increasing control levels to the defined acceptance level. The consolidated Novartis HSE Risk Portfolio in 2014 included 100 risks. This summary portfolio at group level had been consolidated from a total of over 800 risks evaluated at site level and reported to divisions and group. Implementation is controlled by HSE Steering Committee (SteCom) and at the Annual HSE Business Reviews with all divisions.

The consolidated Corporate Risk Portfolio is presented to and discussed with the Risk Committee of the Board of Directors (BoD). Action plans for the risks above risk acceptance levels have been developed and are being implemented. Audit results are reported to HSE SteCom at each meeting and to the BoD Risk Committee.

---

### CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment



---

**CC2.2****Is climate change integrated into your business strategy?**

Yes

---

**CC2.2a****Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process**

The Novartis business strategy is to further strengthen a diverse healthcare portfolio, with pharmaceuticals, eye care products and generics. This is the strongest portfolio for sustained success and to best cope with challenges and opportunities related to healthcare in developed and less developed economies, and climate change.

Tropical diseases will become more prevalent when global temperatures rise and global climatic patterns continue to change. Novartis is working intensively on discovering and increasing the availability of medicines to treat those. Through our Institute for Tropical Diseases (NITD) we conduct research and development for treatments primarily focused on tropical infectious diseases that are currently not receiving adequate attention.

Furthermore, the Novartis Foundation for Sustainable Development (NFSD) plays a key role facilitating basic health programs and helping to develop innovative methods for improved medical care for the poorest people in developing countries.

Energy and climate is a focal point of managing environmental sustainability at Novartis operations worldwide. We have a dual strategy for reducing GHG emissions, primarily from energy and fuel usage. The primary focus is to improve energy efficiency in all our operations and to adopt renewable energy sources wherever it makes technical and economic sense. The second track is to undertake forestry carbon sink projects to complement the internal initiatives to further reduce our GHG emissions with these sequestrations.

**i) Influencing processes:**

Novartis management is guided by input from a variety of stakeholders in developing aspects of its business strategy, including response to climate change requirements. For example, the policy to set own GHG targets in accordance with proposed UN requirements and leading national commitments, based on the belief that governmental schemes can only be successful, if private sector companies actively contribute with targets for their own global operations. Internally we ensure progress by target setting, performance reporting and an annual process of management review on HSE with divisional heads of technical operations. The Corporate targets are approved by ECN, the decision of e.g. engagement in Forestry Carbon Sink projects by the CEO and the Chairman of the BoD.

**ii) Influencing factors:**

Increasing impacts from a changing climate, such as higher temperatures leading to sea level rise, more frequent and more severe weather events, and changing of precipitation patterns, leading to floods or longer drought periods, are highly interlinked in many parts of the world to underdevelopment and poverty. Fighting poverty and helping to develop the less developed in achieving healthier lives and higher levels of welfare by provision of medicine, by the improvement of health care systems and by providing business opportunities to the underprivileged are therefore key areas of Novartis business strategy and its energy and climate program. Our forestry projects are not only compensation of part of our own carbon footprint, but also as a contribution to economic development (with our

sustainable forestry project in Argentina and the Jatropha project in Mali, West Africa) and to protection of bio-diversity (Afforestation of natural mixed forests in Sichuan, China).

iii) Short term strategy:

In the short term climate change aspects are influencing Novartis operations strategies by several factors:

- Largely different carbon intensities of energy supply between Novartis existing European operations (e.g. CH / AT) and new operations in China: Due to expansions in China emissions of our operations there grow faster than reductions by efficiency programs are in Europe. We therefore strongly focus on implementing energy efficiency methods in China: At our new research facility in Shanghai, we currently install a best-in-class tri-gen energy centre based on natural gas, to minimize the use of standard coal-based electricity from the grid. In addition, buildings in Shanghai are equipped with highly energy efficient triple-glazed windows.
- Governmental subsidies to support renewable energy sources had helped us to install a 1MW photovoltaic array in California and for similar but smaller systems in New Jersey and in Germany, Spain and Italy.
- Change from free allocation to auctioning emission trading allowances in the EU-ETS will become material cost factors at our European sites participating in the scheme.

iv) Long term strategy:

Incorporation of new technologies: In the longer term not only operations factors related to energy efficiency, carbon intensity and pricing will be more relevant for Novartis and require the application of new technology in buildings, clean room air conditioning energy efficiency and application of renewable resources such as wind, solar and geo-thermal energy. Increases in severe effects of sea level rise, extreme weather effects, change in precipitation patterns and water scarcity will also influence the way Novartis selects new locations and how these will be protected against the effects of climate change. Sites in water scarce areas (e.g. our research centre in La Jolla, California) include water scarcity into the risk portfolio for their site and conducted water audits.

Changing core business focus: Indirect effects related to migration, political unrest and expected wider spread of tropical vector diseases such as malaria will influence Novartis business focus more strongly to tropical diseases and change the characteristics of Novartis businesses in these countries and regions where these diseases may spread. Novartis is already today among the leading pharmaceutical companies on tropical diseases such as malaria and dengue fever.

(v) Strategic advantage: With the leading position on tropical vector diseases such as malaria, Novartis is better prepared than competitors for these diseases which are related to climate change effects, as these could become more important or even critical to health care systems in a growing number of affected countries. This position gives Novartis a considerable advantage in market such as in African countries, where e.g. malaria is already wide spread and will spread further. Due to this, Novartis is well known and has an excellent reputation. This fact will help in other disease areas.

(vi) Substantial business decision in the reporting year:

- We commenced our 4th carbon offset project in Colombia with 3600ha owned land to be reforested. The project was approved in order to secure the achievement of our group GHG target.
- Novartis developed a stronger business focus on Africa.
- The manufacture of our malaria product was optimized and alternative new drug products on malaria made considerable progress in the development pipeline. An LCA has shown a largely reduced carbon footprint.

Please explain why climate change is not integrated into your business strategy

---

**CC2.2c**

**Does your company use an internal price of carbon?**

No, but we anticipate doing so in the next 2 years

---

**CC2.2d**

Please provide details and examples of how your company uses an internal price of carbon

---

**CC2.3**

**Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)**

Direct engagement with policy makers

Trade associations

Other

---

**CC2.3a**

**On what issues have you been engaging directly with policy makers?**

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Cap and trade	Support	We report GHG emissions from totally 7 sites in the European Union as par tof the EU-Emission Trading	We support the development of the EU-ETS to make it more effective and more practical. We also support the spreading of emission trading

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
		System (EU-ETS). We consider carbon emission trading an effective tool for supporting targets achievement of emission reductions	in other countries outside the EU.
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	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.
Carbon tax	Support	We are considering the use of voluntary internal carbon pricing for more effective and better aligned decision making on GHG emission reduction. We work with organizations such as the WBCSD and UN-Global Compact to support spreading the concept of carbon pricing.	We support the position of e.g. the WBCSD that allocating a true price to carbon will be effective in mitigating climate change.
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. With that we were successfully anticipating emerging legal requirements such as by the EU-Energy Efficiency Directive.	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 may additionally help to spread such best practice.
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.	Renewables based electricity can only gain broader acceptance if accepted by consumers.

### CC2.3b

**Are you on the Board of any trade associations or provide funding beyond membership?**

No

### CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
-------------------	------------------------------------------------------------	-------------------------------------------------	-----------------------------------------------------------------

---

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

---

CC2.3e

Do you fund any research organizations to produce or disseminate public work on climate change?

---

CC2.3f

Please describe the work and how it aligns with your own strategy on climate change

---

CC2.3g

**Please provide details of the other engagement activities that you undertake**

1) World Business Council for Sustainable Development (WBCSD):

i. Method of engagement: 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.

ii. Topics of engagement: Novartis actively contributes to the work-streams on Energy and Climate, Energy Efficient Buildings, Water and Ecosystems Services and Development. Novartis experts regularly participate in WBCSD meetings and working group activities.

iii. Nature of engagement: Novartis experts provide case studies and examples and strengthen WBCSD's work towards international negotiations on Climate Policy with feedback on proposals and own contributions. Before the formation of Novartis 1997, both predecessor companies Ciba Geigy and Sandoz were founding members of the WBCSD. Our rationale for participation is because WBCSD is a very active player in policy making on Climate Change, is bringing the business voice to the table of intergovernmental negotiations and is developing tools for companies to e.g. monitor and report GHG emissions and climate change disclosure, energy efficiency management and for company water performance.

iv. Actions advocating: Novartis provides input to WBCSD with case histories and success stories. In 2008 and 2010 two case studies on how Novartis manages the energy efficiency of its global real estate portfolio were posted on the WBCSD webpage. In 2011 a second case study on the Novartis Energy Excellence Award scheme was developed together with WBCSD staff. In the course of the WBCSD's policy work, Novartis is advocating for clear and predictable governmental policies and national and international target setting to reduce GHG emissions as a follow up to the Kyoto Protocol. Already in the past, Novartis set its own internal GHG targets in accordance with the Kyoto Protocol and has committed to apply the flexible mechanisms for carbon offsetting related to the Kyoto Protocol. The perceived impacts of these actions are to influence other companies by setting a good example and to strengthen the voice of the WBCSD as a lobby group to influence the political agenda on climate change.

2) United Nations Global Compact (UN-GC):

i. Method of engagement: Novartis is a founding member of the UN-Global Compact. Klaus Leisinger, the former head of the Novartis Foundation for Sustainable Development, was an adviser to the UN Secretary General Kofi Annan for the scoping of actions and implementation of the UN Global Compact for many years; supporting the Secretary General both on substance and process of the compact.

ii. Topic of engagement: Novartis is an active participant in working groups and reports to UN-GC on all aspects required, including on Energy and Climate. Representatives of Novartis are regularly participating in meetings of the UN-GC.

iii. Nature of engagement: In 2011 Novartis was an active member and contributor to the UN-GCs in preparing the "Caring for Climate".

iv. Actions advocated: Novartis has voluntarily adopted the targets and schemes of the Kyoto protocol for its global operations. Novartis is a Caring for Climate Signatory and active participant in the programs of this organization, initiated by the UN-GC. By adopting the Kyoto Protocol to its own global operations in 2004, Novartis has committed itself to the objectives of the protocol and demonstrated that the elements of the protocol (targets and tools such as the CDM) are realistic and practical and can be also used by other private sector organizations. This encourages endorsement of the protocol and actions on GHG emission mitigation by other companies. The perceived impacts of these actions are to strengthen the voice of the UN-GC in the political arena and thereby influence the respective agendas on climate change. Novartis also reports its performance according to the UN-GC requirements.

---

## CC2.3h

### **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?**

Active members and participants in the WBCSD and UN-GC activities are members of either top management or corporate functional managers of the Company: World Business Council for Sustainable Development (WBCSD):

The CEO is council member and the global head HSE&BC is liaison delegate to the WBCSD. The global head Corporate Responsibility and the global head HSE&BC participates in Council meetings representing the CEO when not available. The Novartis Group Global Head Environment & Energy and other experts participate 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.

United Nations Global Compact (UN-GC): The CEO is active members of the UN-GC organization and functional managers of our groups on HSE and Corporate Responsibility are actively involved in UN-GC related activities. We signed the pledge Caring for Climate

Novartis reporting and disclosure on sustainability and energy and climate are included in our corporate responsibility reporting, which is aligned with GHG Protocol,

GRI and UN-GC requirements. The 2014 Corporate Responsibility Report is structure in accordance with the GRI and UN-GC requirements.

---

**CC2.3i**

Please explain why you do not engage with policy makers

---

**CC2.4**

**Would your organization's board of directors support an international agreement between governments on climate change, which seeks to limit global temperature rise to under two degree Celsius from pre-industrial levels in line with IPCC scenarios such as RCP2.6?**

Yes

---

**CC2.4a**

**Please describe your board's position on what an effective agreement would mean for your organization and activities that you are undertaking to help deliver this agreement at the 2015 United Nations Climate Change Conference in Paris (COP 21)**

---

**Further Information**

**Page: CC3. Targets and Initiatives**

---

**CC3.1**

**Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?**

Absolute target

---

**CC3.1a**

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions (metric tonnes CO2e)	Target year	Comment
Abs1	Scope 1+2	100%	12%	2008	1773108	2015	The target is to reduce combined Scope1 and Scope2 GHG emissions by 12% by 2015 and 20% by 2020 based on 2008 emissions. This target is split into annual reduction targets and specific targets for each division. The baseline of 1773kt is slightly corrected with respect to the actual 2008 emissions to include Alcon and Fougera acquisitions after 2008 in the baseline. The status achieved in 2014 is 12.1% reduction and thus pre-achievement of the target set for 2015 one year in advance.
Abs2	Other: Scope 1 GHG Emissions from vehicles	100%	30%	2010	216249	2015	The original target for scope 1 GHG emissions from vehicles (20% reduction) was already achieved in 2013 with a total reduction of 27% since 2010. As a consequence, the target was increased in 2014 to a 30% reduction by 2015. Reductions were achieved by the use of more fuel efficient vehicles through the introduction of hybrid gasoline-electric cars, increased use of diesel engines fitted with particulate filters, and other emission reduction options such as liquid natural gas or bio-fuels. Ongoing measures will allow us to further reduce these emissions in the coming years. The target has been approved by ECN.

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
----	-------	-------------------------	----------------------------	--------	-----------	--------------------------------	-------------	---------

CC3.1c



Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment

### CC3.1d

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions)	Comment
Abs1	86%	94%	Novartis reduced total scope 1 & scope 2 GHG emissions by 12% for Novartis operations and 16% when Novartis forestry carbon sink projects are considered. This represents 94% of the total 17% reduction target for 2015.
Abs2	80%	90%	Novartis has reduced GHG emissions from vehicles by 27% based on the 2010 baseline, which represents 90% of the target.

### CC3.1e

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

### CC3.2

Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?

No

---

**CC3.2a**

Please provide details of how the use of your goods and/or services directly enable GHG emissions to be avoided by a third party

---

**CC3.3**

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

Yes

---

**CC3.3a**

**Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings**

<b>Stage of development</b>	<b>Number of projects</b>	<b>Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)</b>
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	3	56200
Not to be implemented	0	0

---

**CC3.3b**

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Other	Investment program on all kinds of energy and GHG emission reduction projects: Novartis maintains a group-wide program on Energy/GHG Project Accounting to support the achievement of its GHG reduction target (-12% by 2015 and -20% by 2020, compared to 2008). On that respect, targets have been set on energy savings from these projects (-14% in 2014 compared to the total energy consumption in 2008 as a baseline). The target had been overachieved in 2014 with 12.1%.	32927	Scope 1 Scope 2	Voluntary	7177859	18655201	1-3 years	6-10 years	Information collected annually include: investment, cost savings, energy savings and GHG emission reduction by these projects.
Transportation: fleet	Novartis has set a global target on CO2 emission reduction of its global vehicles fleet. The target of 20% reduction by 2015	17000	Scope 1	Voluntary Mandatory	10000000	0	1-3 years	3-5 years	Novartis maintains lease programs for its approximately 25,000 company cars, operated by its country

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	(compared to 2010) had been overachieved in the reporting year 2014 with 27% reduction. Novartis country or divisional organizations maintain programs to increase the fuel efficiency of their vehicles fleet and thereby reduce the CO2 emissions. A bonus/malus system is used e.g. in Germany to motivate drivers (primarily sales personnel) to choose more fuel efficient and lower emitting cars. Specific targets are set on the emission performance (gCO2/km) in Europe or fuel efficiency (miles per gallon) in the USA. The program in Europe is partly driven by regulatory requirements on car fuel efficiency. Savings compared to a BAU (business as usual) scenario are estimated.								organizations. Typical duration of lease is 3-4 years. Monetary savings emerge from lower fuel consumption due to higher engine efficiency.
Low carbon energy	Novartis continues its initiative to increase the	6300	Scope 2	Voluntary	630000	200000	<1 year	3-5 years	The purchase of green electricity does not really

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
purchase	amount of low-carbon or green electricity. In the reporting year 2014 the amount of green electricity purchased was increased by 62TJ, primarily in European countries.								have a payback. Economic conditions depend on the price negotiated for the higher quality electricity. In several contracts we were able to receive green electricity without material price premium (for the same price as for standard quality electricity). Contracts are typically made over several years. Assuming a future carbon cost of USD100/t CO2e, the 6300 tCO2e saved with carbon-free electricity represent a value of USD 630,000. Extra costs today are estimated to be less than 10% of the electricity price, which refers to a maximum extra cost for the green electricity of about USD 200,000.
Behavioral change	36 energy projects and 39 environmental projects were submitted from sites and divisions as part of the 2014/2015 company-		Scope 1 Scope 2 Scope	Voluntary			1-3 years	6-10 years	Total investment necessary, cost, energy and GHG savings were a criteria for project evaluation and award

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	wide HSE Excellence Awards scheme with five dedicated categories on Health, Safety, Business Continuity, Environment and Energy.		3						selection, but totals from all submitted projects were not able to be determined with sufficient quality. Nevertheless, we can make qualitative assumptions on payback period and estimated lifetime as an average for the 36 projects submitted. We consider the HSE Award scheme and its energy and environmental categories an important initiative for motivation employees to develop and propose projects for increasing energy efficiency and reducing environmental impacts.
Energy efficiency: Building fabric	Novartis in recent years erected energy efficient buildings at four major research locations in Switzerland, China and United States of America. The fabric of these buildings are designed following the Group wide requirements as included in our energy standards		Scope 1 Scope 2	Voluntary			11-15 years	>30 years	Extra investment for the higher quality windows were not specified, neither the monetary savings due to reduced energy consumption (less natural gas for heating and less electricity for cooling). Payback can nevertheless be estimated to be relatively high for such a

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	for buildings. Three buildings in Cambridge (USA), two buildings in East Hanover (USA) and five buildings in Shanghai (China) have been equipped with top-quality triple-glazed windows for highest comfort and energy efficiency.								measure, as the high-quality building fabric is rather expensive and energy prices low.

### CC3.3c

**What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Lower return on investment (ROI) specification	We allow a relaxed payback scheme (over the full lifetime of the asset) for energy projects and require that all relevant investment projects include an energy challenge.
Internal incentives/recognition programs	Since 2004, (overall over 10 years) Novartis has sponsored annual Energy Excellence Awards for innovative energy saving and emission reduction projects and achievements at its operations worldwide. The awards recognize outstanding performance in energy management.
Other	Compliance with own group-wide requirements/standards: In 2008, Novartis has issued internal energy and climate procedural requirements and standards for buildings and building/process equipment. The implementation of these standards are controlled by an audit program, with energy and GHG targets, a comprehensive reporting program and with a tight "Energy Challenge"

Method	Comment
	process for all new investments.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

#### Further Information

Page: **CC4. Communication**

CC4.1

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	Status	Page/Section reference	Attach the document
In mainstream financial reports in accordance with the CDSB Framework	Complete	p64	<a href="https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC4.1/novartis-annual-report-2014-en.pdf">https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC4.1/novartis-annual-report-2014-en.pdf</a>
In voluntary communications	Complete	p7, p53-56	<a href="https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC4.1/Novartis_CR_Performance_2014.pdf">https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC4.1/Novartis_CR_Performance_2014.pdf</a>

#### Further Information



## Module: Risks and Opportunities

### Page: CC5. Climate Change Risks

#### CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation

Risks driven by changes in physical climate parameters

Risks driven by changes in other climate-related developments

#### CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Cap and trade schemes	EU-ETS: Novartis has 7 sites in the European Union that are part of the European Emissions Trading Scheme (EU-ETS). The total amount of allowances for 2014 is 132138 tons. With an average price of currently Euro 7 this represents a value of app. Euro 925000. In 2014 these 7	Increased operational cost	3 to 6 years	Direct	Very likely	Low-medium	The 2014 shortage of 11.4% is valued to Euro 105000 (USD 120000), which so far could be compensated with surplus from previous years, small amounts of	Ongoing strong energy and GHG reduction programs across the organization are in place to work towards the global energy efficiency and GHG reduction targets. The	The EU-ETS sites and Corporate HSE have very little if any additional management cost to comply with EU-ETS. These are limited to some

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Novartis sites were able to keep their GHG emissions managed under EU-ETS at 147198 tonnes (4.6% lower than in 2013), but 11.4% above the amount of allowances received. The gap was compensated in 2014 with surplus from Phase II, purchase of additional EUAs (in Slovenia) and swop of EUAs with CERs. Allowances will be further reduced during Phase III between 2015 and 2020, while our ongoing energy and GHG reduction program will also allow for further emission reductions over coming years. Most recent experience showed that we were not able to stay below the allowances received and will have to compensate the shortage. Additional regulatory risks identified that will increase the financial implications for Novartis are an expected re-increase in the allowance price and the potential introduction of emission trading schemes in other regions</p>						<p>EUA purchase and EUA-CER swaps. Over the entire Phase III total cost is not expected to grow over USD 0.5 million per year.</p>	<p>largest sites included in the scheme is the Anti-Infectives manufacturing plant of Sandoz Division in Kundl, Austria. Kundl implemented a comprehensive energy management program (being the first site in Austria with ISO 50,000 Energy Management System certification). Major projects of energy efficiency improvement and related GHG emission reduction are electricity and heat energy savings of the fermentation processes, waste heat recovery from processes and from waste</p>	<p>additional monitoring and the verification costs, which are estimated to below USD 0.1 million p.a.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	or countries (e.g. USA, Canada, Japan, Australia, China).							water treatment. The Sandoz site in Rovereto, Italy implemented a project for heat recovery and the generation and internal use of biogas, generated from their high-load waste water and from waste water sludge.	
International agreements	With respect to regulatory schemes (such as the continued Kyoto protocol and potential future agreements), Novartis has taken a proactive approach towards existing legal schemes on greenhouse gas (GHG) emissions as set forth in its Corporate Energy and Climate Strategy (adopted by the Executive Committee of Novartis in July 2005 and reconfirmed in October 2010 with new targets up to 2020 and in August 2013 with an additional forestry carbon sink project). Novartis will	Increased operational cost	>6 years	Direct	Likely	Medium	Total energy costs were USD 387 million in 2014 and existing carbon costs were marginal. Energy prices did not increase in recent years. Since the introduction of our energy program in 2008 we have reduced annual energy costs by USD 74 million through projects compared to a	Ongoing strong energy and GHG reduction programs across the organization are in place to work towards the global energy efficiency and GHG reduction targets. Novartis has put in place and energy project accounting process for all divisions and sites. The mandatory	Energy projects over last 5 years had an average payback of less than 2-3 year. Management costs for the energy management programs at Divisions and sites of app. USD 4-5 million per year were largely over-compensated

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	also be impacted in more general terms, when prices of carbon will become more fully integrated into prices of goods and services, in particularly energy and water.						business as usual scenario. Future increases in energy prices and the implementation of carbon costs may have a stronger impact of estimated 10-20% of energy cost in the long-term, i.e. USD 38-76 million per year.	reporting includes investment, energy cost savings, energy savings and GHG emission reduction by each implemented project. Novartis has set an energy saving target of 14% energy and related GHG emission saving by 2015 (baseline 2008) and divisions implemented this target specifically at their sites. This internal target was overachieved in 2014 by 15.9% savings. A new target of 17% was now set for 2015.	by the savings of so far USD 70 million p.a. in energy costs achieved by the program over last 5 years; i.e. no additional costs but rather attractive cost reductions overall.
Emission reporting obligations	Novartis could potentially be exposed to regulatory risks due to the growing	Increased operational cost	3 to 6 years	Direct	About as likely as not	Low	Additional costs related to regulatory	In 2014 Novartis has renewed its	Little additional management

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>importance of these schemes, even though climate change currently has limited direct impact on our industry sector (pharmaceuticals, eye care products and generics), and does not represent a major commercial risk.</p>						<p>actions are not expected to be introduced in the near future or be implemented broadly. In the coming years it is expected that such costs may be limited to a few countries and thus stay below USD 1 million per year.</p>	<p>process of reporting on Corporate Responsibility (CR). The structure of the report has been changed in Q1 2014 for the 2013 CR Report, based on a materiality assessment and following requirements of GRI and UN-GC reporting requirements. The 2014 CR Report is the second issue of reports following this new structure and the first with the new process. Environmental Sustainability forms a major part of the CR Report and reporting on energy and GHG emission reduction</p>	<p>costs for the expansion of reporting are expected as a result of this risk. Group functions on CR Reporting are in place and further challenging and adaptation of reporting practice is not seen to be higher than USD 0.5 million.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								performance and targets is a central part. We are constantly challenging our reporting practice and mirror it with requirements formulated by SRI groups such as DJSI, and business organizations such as GRI and the WBCSD.	
Lack of regulation	We believe that a lack of clear international agreements and national legislation on climate change and respective targets may have a negative impact on our ability to plan measures to reduce climate change impact. Novartis has invested in long-term afforestation/reforestation projects, has certified them with formal schemes such as CDM or VCS, and compensates part of its emissions with the carbon	Other: Loss of value of carbon offsets	>6 years	Direct	About as likely as not	Low	As Novartis developed its own forestry carbon sink projects and designed them as a business case, the actual price of credits is not a key parameter in our approach. Additional economic, social and environmental values are	Novartis will continue its forestry carbon sink projects, and add additional sustainability values (social, environmental, economic) into the projects. We are working towards making the forestry carbon sink projects a business case	Management costs related to these projects are a marginal part of the total costs required to run the four forestry carbon sink projects, which overall is <USD 0.3 million per year.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	sinks gained from these projects. Uncertainty in the application and use of these schemes creates disadvantages for our forestry carbon sink projects and the value of credits developed.						created with these projects. We also do not intend to sell the credits. The registration under CDM and VCS are solely made for quality reasons. The effect of low credit prices is rather immaterial, related to the credibility and acceptance of the forestry projects. Any financial implication is not expected to exceed USD 1 million per year.	with an economically positive outcome, which also will secure their long-term continuation and durability of the carbon stocks.	

CC5.1b

Please describe your inherent risks that are driven by change in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Induced changes in natural resources	Availability of energy and water: Supply chain screening assessments of Novartis suppliers conducted in 2010 and again in 2015 have shown that several types of material and resource supplies are highly sensitive to climate change effects. The supply of electricity, almost any type (hydro-electric or thermal) to Novartis manufacturing and research operations highly depend on the availability of water. Novartis has identified all its sites located in water scarce areas (projection for 2025) and	Reduction/disruption in production capacity	3 to 6 years	Indirect (Supply chain)	Very likely	Medium	Increase in energy and water costs in water scarce areas due to further increased water stress could amount to 20-30% of the site energy and water costs. For the top-10 water scarce sites, total electricity costs in 2014 were USD 46 million and total water costs are USD 7 million. An increase as estimated above would result in an addition USD8-12mil per year.	The management method applied to this risk is a proactive facility and resource procurement and energy/water management approach. Saving programs are being implemented at the top-10 water scarce sites already. Water footprint savings achieved in recent years are partly over 20%. Additional projects are being considered and implemented. The target on water footprint set for 2015 is - 10%.	Costs associated with running the water savings program are marginal, below USD 0.2 million per year for the entire global program.



Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>requires these sites (in e.g. Egypt, Northern Africa; San Diego, South California; Fort Worth, Texas; Mumbai and Dhaka, South Asia and Beijing, Northeast China; Batam, Indonesia) to include direct and indirect water scarcity into the risk portfolio for these sites. The ten top sites with respect to water footprint and water scarcity were required to conduct a water saving program in 2013 including water audit, water flow chart, list of water savings projects and site-specific water savings</p>								

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	target. For 2014 and 2015 water savings of about 10% are set as a reduction target at these 10 sites. 10 additional sites with high water footprint of high water scarcity were requested in 2014 to as well implement learnings on water savings made at the top-10 sites.								
Change in precipitation extremes and droughts	Flooding of operations: Novartis manufacturing operations located in critical areas, e.g. Elbe river plains in Barleben-Magdeburg, Germany and Illinois in the USA Mid-West, the Mumbai area in India and in the	Reduction/disruption in production capacity	3 to 6 years	Direct	Very likely	Medium	Sites will need to invest in the reinforcement of site infrastructure (larger storm water run-off, dykes, specific building protection, etc.) which could amount to an estimated USD 2-5 million per site or 20 to 25 million overall.	Actions related to flood protection are normal 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.	Site engineering might use 5-10% more resources over several years when such flood protection projects would be implemented. These additional engineering costs are assessed to 0.4-0.5 million

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Shanghai area in China, could be flooded during severe weather events with respective damages and production interruptions. In order to avoid such events, higher costs will arise to keep such risks within acceptable limits. Flooding risks were even found in California, where local situations could unexpectedly create a flooding risk at severe weather events. Our relatively small production site in San Carlos in Central California has recently implemented a flood protection project, in cooperation</p>						<p>The total cost for the flood protection project implemented in San Carlos, California amounted to 0.25 million in correction measures on the local creek and protection equipment for the building</p>		<p>in total over next 5 years.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	with local authorities and neighboring firms.								
Sea level rise	<p>Flooding of Novartis manufacturing operations at coastal locations: Novartis manufacturing operations in coastal locations, e.g. in Tuas, Singapore, Dhaka, Bangladesh, Navi Mumbai, India, Shanghai area, China or Long Island, USA could become more risky due to sea level rise. We expect higher costs of operation in such areas due to higher demand for protection of areas with high asset values</p>	Increased capital cost	>6 years	Direct	About as likely as not	Low-medium	<p>Sites will need to invest in the reinforcement of site infrastructure (dykes or storm protection) or contribute to larger protection measures undertaken by local governments. This could amount to estimated USD 2-5 million per site, or 10-15 million for site relocation.</p>	<p>Actions related to flood protection are normal aspects of site engineering and facility management. Risks related to natural disasters or climate change induced risks such as seas level rise will be evaluated as part of the annual risk portfolio process. Sites might also be closed as part of overall capacity reassessments.</p>	<p>Site engineering might use 5-10% more resources over several years when such reinforcements will be implemented. Additional engineering costs are assessed to 0.2-0.3 million, but not within next 5 years. Site closure and/or relocation are expected to be 10 times that amount, i.e. at least 1 million for one site.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	from more frequent and repeated flooding events in such areas, resulting in higher capital and operational costs. Operations with smaller asset values or in poorer areas such as in Dhaka, Bangladesh will be required to move to other locations.								
Tropical cyclones (hurricanes and typhoons)	Damage to operations in critical areas: Tropical cyclones or tornadoes are extreme weather events that can cause significant damage and loss of assets at Novartis manufacturing and research operations. Such locations	Increased capital cost	1 to 3 years	Direct	Likely	Low	Site will be required to reinforce the infrastructure of their buildings and provide additional protection for their employees. This could amount to estimated USD 2-5 million per site, depending on the size of	Actions related to typhoon, hurricane and tornado protection are normal aspects of site engineering and facility management in areas where such severe event could happen. Local engineering and HSE groups are aware of	Site engineering at these sites might use 5-10% more resources over several years when measures for building reinforcement and employee protection will need to be implemented. This may result in extra costs of estimated 0.2-

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	in East- and South-East USA (e.g. Duluth, Georgia; Fort Worth, Texas) will need higher protection to cope with such increased risk or will be required to move to other locations.						site and number of associates working at these sites.	increasing risks related to change of weather patterns are include such changes in their risk evaluation.	0.3 million overall for major sites such as Fort Worth and Johns Creek.
Induced changes in natural resources	Availability of agro-materials for fermentation processes supplied for Novartis fermentation operations as global commodities represents a risk as the price for such commodities is expected to rise with increasing effects of climate change, due to various climate factors.	Reduction/disruption in production capacity	>6 years	Indirect (Supply chain)	Likely	Low	Prices for agricultural commodities may increase by 20-30% over the next 10 years.	The unit has an active procurement program in place to constantly optimize procurement situation for all key process materials.	Additional management costs for this aspect to be minor, i.e. less than USD 0.1 million.
Other physical	Melting of glaciers and	Reduction/disruption in production	>6 years	Direct	Unlikely	Medium-high	Replacing cooling water	Energy Management is a	Additional management

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
climate drivers	related changes in water availability or temporary water scarcity: Novartis has several locations north and south of the Alps in Kundl, Austria; Menges and Lendava, Slovenia and Rovereto, Italy, with fermentation operations that depend on a regular availability of water for process cooling. Water resources could become more expensive, or water may not be available for cooling anymore on a constant year-long basis, as rivers could dry out at certain periods of the	capacity					by mechanical chilling at any of the sites potentially impacted would results in additional energy costs of estimated 20% at these sites, resulting in higher electricity costs of up to USD 20 million per year. Replacement of equipment estimated at USD 50 million and payback of 4-5 years would also become necessary.	key function at these sites and efficiency improvements and optimization measures are ongoing aspects of process and facility management. Risks related to change in the availability of water for cooling will be addressed in the risk evaluation process that is conducted at each site on an annual basis.	costs for change of equipment and replacement if existing techniques would be an estimated USD 0.5 million over several years.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	year.								

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other drivers	Biodiversity: Potential reduction in biodiversity caused by climate change may have long term impacts on Novartis' pharmaceutical business. A temperature rise of 1.5 to 2.5°C above pre-industrial levels, which are expected by 2050 as a minimum, will lead to the extinction of 20-30% of known plant and animal species (IPCC 2007). With over 60% of all new anti-cancer and anti-infective agents	Inability to do business	>6 years	Direct	More likely than not	Medium	Current Novartis products based on natural compounds include top-selling brands like Miracalcin, Neoral and Sandostatin, which together bring more than USD 2 billion in net sales. An estimation of potential costs related to this effect is very difficult and cannot be made at this point in time.	Novartis operates a Natural Products Unit (of app. 50 researchers) within its R&D Division, including bio-prospecting programs in Asia and Latin America.	The issue are covered within the Natural Products Unit. Estimates on the additional cost of management for decrease of biodiversity have not been made so far.



Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	(both important parts of Novartis drug portfolio) being derived from natural products or their derivatives, Novartis could suffer severely from the reduction of biodiversity over the next 30 to 50 years. Current Novartis products based on natural compounds include top-selling brands like Miracalcin, Neoral and Sandostatin, which together bring more than USD 2 billion in net sales. The Novartis products Sennoside and Coartem are herbal medical products or contain natural compounds that are extracted from plants.								
Increasing humanitarian demands	Increased need and higher expectations to fight tropical diseases: Climate change will affect the spread of tropical diseases like malaria and dengue	Increased capital cost	3 to 6 years	Direct	About as likely as not	Medium	The increased spread may result in an estimated 10% higher demand. As long as the malaria treatment is given on	Novartis main management method on this aspect is research for new applications and alternative treatment	Management costs would equally increase by 10%.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>fever due to changing climate patterns to areas which are today sub-tropical or temperate (e.g. Mediterranean, northern parts of the USA, China and areas of higher altitude in India and Africa). Novartis is very active in supporting the fight against malaria with its innovative combination medicine Coartem and new malaria drugs under development. In a unique collaboration with international organizations (e.g. WHO), Novartis has provided more than 250 million Coartem treatment courses to the public sector in Africa (e.g. Kenya and Tanzania) without profit since 2001. These treatments have helped to save approximately 550000 lives. If malaria spreads</p>						<p>production costs with no profit, such spread will result in a higher demand and thus higher costs to Novartis. In case malaria will also spread out into higher income areas outside Africa (e.g. Southern Europe or North America) Novartis will have a business benefit from selling the malaria treatment to such developed markets.</p>	<p>methods for malaria. New malaria drugs are under development at Novartis. These include other combination of ingredients to overcome growing resistance to substances included in Coartem and alternative ways of treatment.</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	further as a result of climate change, Novartis will experience higher demand for medication and will continue help fighting malaria outside Africa.								

---

**CC5.1d**

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**CC5.1e**

Please explain why you do not consider your company to be exposed to inherent risks driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**CC5.1f**

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

**Further Information**

**Page: CC6. Climate Change Opportunities**

**CC6.1**

**Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

**CC6.1a**

**Please describe your inherent opportunities that are driven by changes in regulation**

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
International agreements	Clear regulation resulting in high value of carbon offsets: An agreement on climate change targets at international negotiations in the coming years will help Novartis in setting its own	Reduced operational costs	>6 years	Indirect (Supply chain)	About as likely as not	Medium	With an international agreement the carbon offset credits generated would	Novartis has already developed CDM projects in Argentina and China and is	The management costs for the four offset projects overall are approximately

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>GHG emission reduction targets that are more realistic than without such agreement. Today the targets set by Novartis of 20% GHG emissions reduction by 2020 could only be linked to targets of individual countries such as Switzerland or the EU. Without agreement, tools for carbon offsetting and carbon trading will also remain unclear or existing systems might even further deteriorate. This could reduce the value of established credits based on the current existing official or voluntary carbon offsetting schemes. Novartis has already developed CDM projects in Argentina and China and is developing another one in Colombia. Novartis also conducts a carbon offset project in Mali, based on voluntary schemes (VCS and ISO). The Novartis projects would gain credibility and acceptance with updated international agreements, and the carbon offset credits generated would achieve higher values.</p>						<p>achieve higher prices. The four Novartis forestry carbon sink projects will generate about 6 million tons in 30 years. With a current credit price of USD 5-10 (estimated for projects with sustainability benefits) the projects have a total long-term value of USD 30-60 million for the carbon credits alone. Assuming an increase of the price to USD 20, the total value could increase to USD 120</p>	<p>developing another one in Colombia. Novartis also conducts a carbon offset project in Mali, based on voluntary schemes (VCS and ISO). The projects are conducted and managed locally by forestry organizations and controlled by Novartis locally and centrally.</p>	<p>USD 0.5 million per year.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							million.		
Cap and trade schemes	EU-ETS: Possibility to sell surplus allowances related to increased energy efficiency and GHG emission reduction performance: Novartis might be able to reduce its GHG emissions at the sites included in the EU-ETS to levels that it will have surplus allowances and will be able to sell these to other companies.	Reduced operational costs	3 to 6 years	Direct	Unlikely	Low	Due to the fact that EU-ETS allowances have been reduced by 33% when moving from phase II to Phase III, the potential surplus is expected to be USD <0.1 million by 2020.	Ongoing strong energy and GHG reduction programs across the organization are in place to work towards the global energy efficiency and GHG reduction targets	The EU-ETS and Corporate have very little if any additional management cost to comply with EU-ETS. These are limited to some additional monitoring and the verification costs, which are estimated to below USD 0.1 million per year.
Voluntary agreements	Voluntary use of Carbon Offset schemes: Novartis has initiated its own forestry carbon sink projects in Argentina (CDM project: Reforestation of Grazing Lands in Santo Domingo, Argentina, registered by UN-FCCC by February 10, 2011), Mali (Mali Jatropha Initiative; a validated VCS/ISO project), China	Wider social benefits	>6 years	Direct	Likely	Medium	The forestry carbon sink projects in Argentina and Colombia are designed as business cases and will create economic returns at a later stage	The projects are conducted and managed locally by forestry organizations and controlled by Novartis locally and centrally.	The management costs for the four offset projects overall are approximately USD 0.5 million per year.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	(Afforestation/Reforestation of Degraded land in Southwest Sichuan, China) and Colombia (Reforestation of grazing lands in Hacienda El Manantial, Puerto Lopez, Colombia). These projects will not only produce carbon sinks, that Novartis uses for compensating part of its GHG emissions, but also generate wider social (economic development and community development) and environmental (water shed management, biodiversity, agro-forestation) benefits. In addition, the projects in Argentina, Colombia and Mali are designed as a business case and are therefore intended to generate long-term economic benefits to Novartis, with a reasonable return of investments and establishment costs.						(estimated 20 years after start). The benefits will be shared with the operating partners and can grow to USD 2-5 million per year for Novartis locally.		
Emission reporting obligations	Novartis reporting practices: Novartis is following a proactive reporting and disclosure style, including comprehensive and timely reporting of energy and	Other: Reputation	1 to 3 years	Direct	Very likely	Low	Positive financial outcome from proactive reporting and	In Novartis disclosure and reporting of non-financial information, including	Overall cost of CR reporting and disclosure is roughly assessed to be USD 2-5

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	climate aspects in its annual business report, on the website and in accordance to UN-Global Compact and GRI reporting requirements.						disclosure cannot be estimated.	environmental data, are part of Corporate Responsibility (CR) management at Group Level.	million per year., including all internal resources needed to collect all the requested performance information from the global organization.

CC6.1b

Please describe the inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) temperature	Due to higher global temperature and increase of expected precipitation levels changes, Novartis expects that tropical vector diseases	Increased demand for existing products/services	>6 years	Direct	About as likely as not	Low-medium	In a unique collaboration with international organizations (e.g. WHO), Novartis has provided more than 250 million Coartem treatment	Novartis is very active in supporting the fight against malaria with its innovative combination medicine Coartem and new malaria drugs	Management costs would equally increase by 10%.



Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>such as malaria, dengue fever and others will spread into more temperate zones. Thereby, larger percentage of the global population will be affected and will need treatment against these diseases.</p> <p>Novartis has malaria drugs in its portfolio and is working on the development of more effective malaria drugs and on drugs for dengue fever and other neglected diseases in its Novartis Institute on Tropical Diseases in Singapore (NITD). Businesses selling these drugs will become more profitable if the diseases spread</p>						<p>courses to the public sector in Africa (e.g. Kenya and Tanzania) without profit since 2001. Profits from a gradual spread into more-developing areas will initially be marginal to low, but could become low to medium in the longer term.</p>	<p>under development. Should malaria and other vector diseases spread more broadly outside less-developed tropical countries, the business of providing medication for such diseases will be included in normal business processes.</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	to more developed and richer countries.								

CC6.1c

Please describe the inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Among-the-leader profile in climate change management: The Novartis energy and climate management, and broader Health, Safety and Environmental (HSE) management objective is to be at the forefront together with leading peers. Novartis has set ambitious targets on absolute GHG emissions reductions and is the only pharmaceutical	Increased stock price (market valuation)	3 to 6 years	Direct	Very likely	Low	Positive financial outcome from proactive energy & climate and HSE programs cannot be estimated.	Novartis global CR and HSE programs are based on a network of experts on local, divisional and group level, including about 500 HSE experts worldwide. Many production facilities are certified to ISO 14001, ISO 50001 and OSHAS 18001 management system standards.	The energy and climate management program and energy efficiency program is managed by local, divisional and corporate HSE and engineering groups. Overall, may be 100 associates worldwide spend part of their time on this topic, to make use of all kind of saving opportunities and improvements. Few examples have shown that management cost for a proactive

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	company that has developed and implemented its own forestry carbon sink projects.								management of energy were much less than the savings achieved. Extra costs for the higher engagement to run an "among the leaders" program have not been assessed.

---

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**Further Information**

**Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading**

**Page: CC7. Emissions Methodology**

---

**CC7.1**

**Please provide your base year and base year emissions (Scopes 1 and 2)**

<b>Scope</b>	<b>Base year</b>	<b>Base year emissions (metric tonnes CO2e)</b>
Scope 1	Fri 01 Jan 2010 - Fri 31 Dec 2010	680496
Scope 2	Fri 01 Jan 2010 - Fri 31 Dec 2010	1076882

---

**CC7.2**

**Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions**

**Please select the published methodologies that you use**

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

**CC7.2a**

**If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions**

**CC7.3**

**Please give the source for the global warming potentials you have used**

<b>Gas</b>	<b>Reference</b>
CO2	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: CFC-11	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: CFC-12	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: CFC-13	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: Halon-1211	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: Halon-1301	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: Halon-2402	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HCFC-123	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HCFC-22	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HFC-134	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: HFC-143a	IPCC Fourth Assessment Report (AR4 - 100 year)

Gas	Reference
Other: Methane	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: Nitrous oxide	IPCC Fourth Assessment Report (AR4 - 100 year)
Other: Sulphur hexafluoride	IPCC Fourth Assessment Report (AR4 - 100 year)

#### CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Natural gas	0.055	metric tonnes CO2e per GJ	International Energy Agency
Methane	0.056	metric tonnes CO2e per GJ	International Energy Agency
Propane	0.060	metric tonnes CO2e per GJ	International Energy Agency
Distillate fuel oil No 2	0.0737	metric tonnes CO2e per GJ	International Energy Agency
Distillate fuel oil No 5	0.077	metric tonnes CO2e per GJ	International Energy Agency
Diesel/Gas oil	0.0736	metric tonnes CO2e per GJ	International Energy Agency
Motor gasoline	0.0739	metric tonnes CO2e per GJ	International Energy Agency
Jet gasoline	0.0732	metric tonnes CO2e per GJ	International Energy Agency

#### Further Information

Page: **CC8. Emissions Data - (1 Jan 2014 - 31 Dec 2014)**

#### CC8.1

**Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Operational control

---

**CC8.2**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e**

627982

---

**CC8.3**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e**

930294

---

**CC8.4**

**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

---

**CC8.4a**

**Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure**

Source	Relevance of Scope 1 emissions from this source	Relevance of Scope 2 emissions excluded from this source	Explain why the source is excluded
--------	-------------------------------------------------	----------------------------------------------------------	------------------------------------

**CC8.5**

**Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations**

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	Less than or equal to 2%	Metering/ Measurement Constraints	In 2006 Novartis implemented a comprehensive and sophisticated data reporting process and data management application that reduces uncertainty in our data to the bare minimum. In 2014, GHG emissions data was collected from 316 reporting units covering practically all Novartis operations world-wide. The data reporting process involves one dedicated person to enter data and a separate person to verify data at the site level. Automatic data plausibility checks are carried out by the Data Management System during data entry. Additional checks are undertaken at the Divisional and Corporate levels. The final data is then review by an independent assurance expert (PwC) before publication in the Novartis Annual Report. Please note that the data reported in this section of the CDP may differ slightly from the data presented in the Novartis Annual Report . The data presented in this publication is based on so-called 9+3 forecasts derived from 9 months of actual data and 3 months of estimated data. The data presented in the CDP is the actual data from the full 12 months of 2014. This actual data is reported in the 2014 Novartis Corporate Responsibility Performance Report. Potential minor inaccuracies could result from imprecise energy meter readings.
Scope 2	Less than or equal to 2%	Metering/ Measurement Constraints	In 2006 Novartis implemented a comprehensive and sophisticated data reporting process and data management application that reduces uncertainty in our data to the bare minimum. In 2014, GHG emissions data was collected from 316 reporting units covering practically all Novartis operations world-wide. The data reporting process involves one dedicated person to enter data and a separate person to verify data at the site level. Automatic data plausibility checks are carried out by the Data Management System during data entry. Additional checks are undertaken at the Divisional and Corporate levels. The final data is then review by an independent assurance expert (PwC) before publication in the Novartis Annual Report. Please note that the data reported in this section of the CDP may differ slightly from the data presented in the Novartis Annual Report . The data presented in this publication is based on so-called 9+3 forecasts derived from 9 months of actual data and 3 months of estimated data. The data presented in the CDP is the actual data from the full 12



Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
			months of 2014. This actual data is reported in the 2014 Novartis Corporate Responsibility Performance Report. Potential minor inaccuracies could result from imprecise energy meter readings.

**CC8.6**

**Please indicate the verification/assurance status that applies to your reported Scope 1 emissions**

Third party verification or assurance complete

**CC8.6a**

**Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements**

Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Limited assurance	<a href="https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC8.6a/Novartis_Annual_Report_Assurance_2014.pdf">https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC8.6a/Novartis_Annual_Report_Assurance_2014.pdf</a>	p65	ISAE3000	100

**CC8.6b**

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emissions Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission
------------	--------------------------------------	-------------------	------------------------

**CC8.7**

Please indicate the verification/assurance status that applies to your reported Scope 2 emissions

Third party verification or assurance complete

**CC8.7a**

Please provide further details of the verification/assurance undertaken for your Scope 2 emissions, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Limited assurance	<a href="https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC8.7a/Novartis_Annual_Report_Assurance_2014.pdf">https://www.cdp.net/sites/2015/24/13524/Climate Change 2015/Shared Documents/Attachments/CC8.7a/Novartis_Annual_Report_Assurance_2014.pdf</a>	p65	ISAE3000	100

**CC8.8**

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year change in emissions (Scope 1 and 2)	As the data displayed in our Annual Report includes Scope 1 & Scope 2 GHG emissions data from the previous year, this data is also verified during the assurance provision process. Annual Report page 64.
Emissions reduction activities	The content of the "Offsetting Greenhouse Gas Emissions" section of the Annual report on page 64 provides details on the progress of our forestry carbon sink projects during 2014.
Emissions reduction activities	The data on halogenated and non-halogenated VOC emission reductions, displayed on page 64 of the 2014 Annual Report, are covered by the scope of the 2014 assurance engagement.
No additional data verified	Performance data on contact water use and water discharge to treatment, as well as data on operational hazardous and non-hazardous waste, displayed on page 64 of the 2014 Annual Report, are covered by the scope of the 2014 assurance engagement.

---

**CC8.9**

**Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

No

---

**CC8.9a**

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

---

**Further Information**

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2014 - 31 Dec 2014)**

---

**CC9.1**

**Do you have Scope 1 emissions sources in more than one country?**

Yes

---

**CC9.1a**

**Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
United States of America	176144
Austria	73681
United Kingdom	46210
Germany	45208
Italy	39412
Slovenia	30581
Spain	23715
China	23216
Switzerland	15105
Ireland	14526
Rest of world	140185

---

**CC9.2**

**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

By business division  
By GHG type  
By activity

---

**CC9.2a**

**Please break down your total gross global Scope 1 emissions by business division**

<b>Business division</b>	<b>Scope 1 emissions (metric tonnes CO2e)</b>
Pharmaceuticals	211405
Sandoz	210083
Alcon	103892
Vaccines	58895
Consumer Health	26148
Novartis Research	11337
Novartis International	6223

---

**CC9.2b**

**Please break down your total gross global Scope 1 emissions by facility**

<b>Facility</b>	<b>Scope 1 emissions (metric tonnes CO2e)</b>	<b>Latitude</b>	<b>Longitude</b>
-----------------	-----------------------------------------------	-----------------	------------------

---

**CC9.2c**

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	600571
HFCs	27411
SF6	0
N2O	0
CH4	0

---

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Manufacturing (onsite combustion & processes)	382656
Administration (onsite combustion & processes)	61724
R&D (onsite combustion & processes)	24984
Sales (vehicle emissions)	158618

---

CC9.2e

Please break down your total gross global Scope 1 emissions by legal structure

Legal structure	Scope 1 emissions (metric tonnes CO2e)
-----------------	----------------------------------------

---

**Further Information**

Page: **CC10. Scope 2 Emissions Breakdown - (1 Jan 2014 - 31 Dec 2014)**

---

**CC10.1**

**Do you have Scope 2 emissions sources in more than one country?**

Yes

---

**CC10.1a**

**Please break down your total gross global Scope 2 emissions and energy consumption by country/region**

<b>Country/Region</b>	<b>Scope 2 metric tonnes CO2e</b>	<b>Purchased and consumed electricity, heat, steam or cooling (MWh)</b>	<b>Purchased and consumed low carbon electricity, heat, steam or cooling accounted for in CC8.3 (MWh)</b>
United States of America	350716	691667	11035
India	83832	93272	0
Germany	72952	423160	55205
Switzerland	67054	460101	88301
Italy	64738	221157	25346
China	49842	90809	0
Malaysia	34745	47789	0
Slovenia	28306	207645	0
Singapore	25345	61908	0
United Kingdom	24000	55583	6000
Rest of world	128766	773169	103527

---

**CC10.2**

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division  
By activity

---

**CC10.2a**

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2 emissions (metric tonnes CO2e)
Sandoz	276886
Alcon	274996
Pharmaceuticals	185644
Vaccines	94291
Novartis Research	60901
Consumer Health	37317
Novartis International	259

---

**CC10.2b**

Please break down your total gross global Scope 2 emissions by facility



Facility	Scope 2 emissions (metric tonnes CO2e)

---

**CC10.2c**

**Please break down your total gross global Scope 2 emissions by activity**

Activity	Scope 2 emissions (metric tonnes CO2e)
Manufacturing	682408
Administration	153844
R&D	94042

---

**CC10.2d**

**Please break down your total gross global Scope 2 emissions by legal structure**

Legal structure	Scope 2 emissions (metric tonnes CO2e)

---

**Further Information**

**Page: CC11. Energy**

---

**CC11.1**

**What percentage of your total operational spend in the reporting year was on energy?**

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

---

**CC11.2**

Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Fuel	2213557
Electricity	2465952
Heat	168264
Steam	492044
Cooling	0

---

**CC11.3**

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	2040074
Distillate fuel oil No 2	79230
Distillate fuel oil No 5	3316
Other: Waste - Fossil in nature	40071
Other: Bagasse	28616
Wood or wood waste	12415
Other: Waste - Biological in nature	2713

---

**CC11.4**

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the Scope 2 figure reported in CC8.3

Basis for applying a low carbon emission factor	MWh associated with low carbon electricity, heat, steam or cooling	Comment
Supplier specific, backed by instruments	289414	The figure reported here is the total amount of energy purchased that is generated from renewable energy sources (photovoltaic, solar-thermal, geothermal, wind, biomass or small-scale hydroelectricity <300kW). Many of our sites, particularly in Europe and the US, have chosen to purchase "low carbon energy". In order to report energy purchased from renewable sources, our reporting guidance stipulates that sites should obtain a certificate issued by a third party guaranteeing the renewable energy content of the energy mix. Such certificates are provided by the energy suppliers. Nearly 6.3% of all energy purchased at Novartis is generated by renewable energy. This percentage increases to app. 40% when also considering large-scale hydroelectric power generation.

---

**Further Information**

**Page: CC12. Emissions Performance**

---

**CC12.1**

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

Decreased

---

**CC12.1a**

Please 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

Reason	Emissions value (percentage)	Direction of change	Comment
Emissions reduction activities	3.6	Decrease	Based on program activities undertaken in 2014, Novartis achieved total Scope 1 and Scope 2 GHG emission reductions of 56.3 kilotons CO <sub>2</sub> e (kt) or 3.6% of the 1558.3 kt in 2014. Major program activities include investment projects for more energy efficient and equipment and machinery, buildings and management measures and use of renewable energy (30.0kt); the increased purchase of green or carbon-free electricity (9.3kt) and continued change to more fuel efficient vehicles (17.0kt). Nominal reduction in total Scope 1 and Scope 2 GHG emissions between 2013 and 2014 amount to 27.8 kt or 1.8% (reduction from 1586.1kt to 1558.3kt).
Divestment	0		Novartis did divest its Animal Health Division by 31. Dec 2014. All environmental data for the Animal Health Division is fully included in our 2014 reporting.
Acquisitions	0		Novartis did not make any acquisitions in 2014.
Mergers	0		Novartis was not involved in any mergers in 2014.
Change in output	0		There were no major changes in output at Novartis facilities.
Change in methodology	0		There was no change to the GHG emission or energy reporting methodology in 2014.
Change in boundary	0		The scope of GHG emission and energy reporting methodology at Novartis did not change in 2014.
Change in physical operating conditions	0		Physical operating conditions at Novartis facilities did not change in 2014.
Unidentified	0		
Other	4.3	Decrease	67.3kt or 4.3% of the 2014 total GHG emissions could be achieved by additional tree growth at our forestry by carbon sink projects in Argentina and Mali (approximately same amount as in 2013).

## CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO<sub>2</sub>e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
0.00002687	metric tonnes CO2e	unit total revenue	1.9	Decrease	Novartis' energy & climate program resulted in a nominal reduction of its total Scope 1 and Scope 2 GHG emissions by 1.8% between 2013 and 2014, due to the implementation of energy efficiency and renewable energy projects, increased purchase of green or carbon-free electricity and continued change to more fuel efficient vehicles. From 2013 to 2014, sales increased nominally only by 0.13%.

#### CC12.3

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
11.53	metric tonnes CO2e	FTE employee	2.0	Decrease	Novartis' energy & climate program resulted in a nominal reduction of its total Scope 1 and Scope 2 GHG emissions by 1.8% between 2013 and 2014, due to the implementation of energy efficiency and renewable energy projects, increased purchase of green or carbon-free electricity and continued change to more fuel efficient vehicles. During this period, the number of Novartis FTEs increased by 0.27%.

#### CC12.4

Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
7.52	metric tonnes CO2e	metric tonne of product	2.0	Decrease	Novartis' energy & climate program resulted in a nominal reduction of its total Scope 1 and Scope 2 GHG emissions by 1.8% between 2013 and 2014, due to the implementation of energy efficiency and renewable energy projects, increased purchase of green or carbon-free electricity and continued change to more fuel efficient vehicles. During this period, production increased by 0.29%.

#### Further Information

**Page: CC13. Emissions Trading**

#### CC13.1

**Do you participate in any emissions trading schemes?**

Yes

#### CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
-------------	-----------------------------------	----------------------	----------------------	------------------------------------------	----------------------

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
European Union ETS	Wed 01 Jan 2014 - Wed 31 Dec 2014	132138	29536	147198	Facilities we own and operate

---

### CC13.1b

#### What is your strategy for complying with the schemes in which you participate or anticipate participating?

Novartis is in full compliance with EU-ETS requirements. It is the strategy to minimize emissions from these sites in order to remain within the amount of allowances being allocated.

The strategy includes coordination between the seven sites being involved with regular contacts and information exchange. A corporate trading strategy was developed, which determines conditions for internal trading. As long as total shortage is below certain limits, sites are free to sell or buy allowances if needed.

Experience in Phase I and II has shown that sites were able to reduce their emissions considerably more than expected, when we regularly achieved a surplus. The allowances for Phase III are now 33% lower compared to Phase II. This is a strong motivator to continue our strong GHG emission reduction program.

In addition, Novartis's strategy is to voluntarily offset part of its global total Scope 1 and Scope 2 GHG emissions with own originated forestry carbon sink projects. The sinks generated by these projects will be annually monitored and accounted to compensate part of Novartis global total GHG emissions. Credits received under the CDM or VCS schemes are voluntarily retired after issuance as a consequence.

---

### CC13.2

#### Has your organization originated any project-based carbon credits or purchased any within the reporting period?

No

---

### CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes of CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits cancelled	Purpose, e.g. compliance

#### Further Information

Page: **CC14. Scope 3 Emissions**

#### CC14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	3790000	The amount of Scope3 GHG emissions for purchased goods and services reported here is the result of a study on 2014 data of direct material procurement. The tool uses average emission intensities by industry sector and incorporates regional trade flows and interrelationships to calculate emissions from purchased goods spend data. The amount reported includes at least six tiers of suppliers in the material	100.00%	This study was undertaken in 2015 using 2014 purchasing data and was initiated to provide more accurate data than the scope 3 GHG emissions study undertaken in 2011. The results of the new study are not comparable due to difference of boundary and methodology.



Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			value chain.		
Capital goods	Relevant, calculated	180000	This data is estimated on the basis of the gross floor area of administration and manufacturing buildings operated by Novartis (accurate primary data) and assumptions for GHG emission factors associated with these buildings and their contents.	50.00%	This study was undertaken in 2010 and has not been repeated.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Not relevant, explanation provided				There are no other fuel and energy related activities apart from perhaps the transportation of fuel, however, the GHG emissions would not be material for Novartis operations.
Upstream transportation and distribution	Not relevant, explanation provided				Considering the Scope 3 emissions from downstream transportation, it is assumed that these emissions are of similar magnitude and therefore not relevant.
Waste generated in operations	Relevant, calculated	74000	This is a calculation based on the various types and amounts of waste (accurate primary data) and respective assumptions for GHG emission factors from each of these waste types.	100.00%	A procedure was established to calculate GHG emissions from reported waste data, based on emission factors determined for each waste category and disposal path.
Business travel	Relevant, calculated	222000	Data obtained from Hogg Robinson Group (HRG), the travel agency responsible for booking over 95% of Novartis business travel for 2014 worldwide. Data was calculated from miles traveled in different flight distances (intercontinental, international, domestic) and booking classes for each individual country, added to a total. It covers all flight travel for Novartis employees plus service providers on their trips for Novartis. Calculations are based on emissions factors used by DEFRA.	95.00%	This data is provided quarterly by Hogg Robinson Group.

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Employee commuting	Relevant, calculated	144000	Novartis calculated this data on the basis of the regional distribution of employees (accurate primary data) and respective assumptions for GHG emission factors for private and public transport in each region.	50.00%	This study was undertaken in 2010 and has not been repeated.
Upstream leased assets	Not relevant, explanation provided				Novartis does not maintain many upstream leased assets and any GHG emissions associated with these assets would not be material.
Downstream transportation and distribution	Not relevant, calculated	57000	This calculation is based on the following assumptions derived from regional production types and volumes (accurate primary data): 1) All products are transported over 500 km by train or 40 t lorry (50% each) 2) All products are transported by small lorries on the last 25 km 3) Products delivered to internal and external destinations are treated equally 4)10% of all products are transported by ship for 5000 km 5) 3% of all products are transported by airplane for 5000 km.	50.00%	Compared to the total Scope 1, 2 & 3 emissions from Novartis, these emissions are not considered relevant.
Processing of sold products	Not relevant, explanation provided				Novartis goods are not processed further after they are sold.
Use of sold products	Relevant, calculated	99000	The use of Novartis products does not generally result in GHG emissions, with the exception of an inhaler product that uses HFC R134a as a propellant. All quantities of HFC R134a used in the production of the inhaler product are measured. GHG emissions are calculated using the IPCC emissions factor for HFC 134a.	100.00%	The use of Novartis products does not generally result in GHG emissions, with the exception of an inhaler product that uses HFC R134a as a propellant.
End of life treatment of sold products	Not relevant, explanation provided				Novartis pharmaceutical product are consumed by patients and therefore we can assume that any GHG emissions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					associated with the end of life of sold Novartis products are not relevant.
Downstream leased assets	Not evaluated				Any GHG emissions associated with downstream leased assets are not considered relevant.
Franchises	Not evaluated				Any GHG emissions associated with franchises are not considered relevant.
Investments	Not evaluated				GHG emissions associated with investments are assumed not to be material.
Other (upstream)	Not evaluated				Any GHG emissions associated with other upstream activities are not considered relevant.
Other (downstream)	Not evaluated				Any GHG emissions associated with other downstream activities are not considered relevant.

**CC14.2**

**Please indicate the verification/assurance status that applies to your reported Scope 3 emissions**

No third party verification or assurance

**CC14.2a**

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of Scope 3 emissions verified (%)
-----------------------------------	----------------------	------------------------	-------------------	----------------------------------------------

**CC14.3**

**Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?**

Yes

**CC14.3a**

**Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year**

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Business travel	Other: Travel cost reduction policies	22	Decrease	Scope 3 GHG emissions from business travel decreased from 285 kilotons in 2013 to 222 kilotons in 2014. The decrease is predominately due to travel restrictions implemented primarily to reduce costs.
Waste generated in operations	Other: Waste reduction and recycling efforts	13	Decrease	Scope 3 GHG emissions from waste disposal decreased from 85 kilotons in 2013 to 74 kilotons in 2014. The decrease is predominately due to waste reduction and recycling efforts at Novartis manufacturing locations.
Use of sold products	Change in output	12	Decrease	Scope 3 GHG emissions from product usage decreased from 113 kilotons in 2013 to 99 kilotons in 2014. The decrease is predominately due to reduced production

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
				volumes of the inhaler product that uses HFC R134a as propellant.
Purchased goods & services	Change in boundary	370	Increase	Scope 3 GHG emissions from purchased good increased from 1020 kilotons to 3790 kilotons due to change in boundary (including tier 2 to tier n suppliers) and change of methodology.

#### CC14.4

**Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)**

Yes, our suppliers

#### CC14.4a

**Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success**

Engagement with suppliers is undertaken on an ad-hoc basis and has initially focused on packaging suppliers. More recently it was expanded to suppliers of active pharmaceutical ingredients (API).

Novartis undertook a lifecycle assessment (LCA) study in 2012 to compare the environmental impacts of various blister packaging options. One of the options in the study included a high moisture barrier film produced by Honeywell called Aclar®. Follow-up of these studies were conducted in 2014.

Studies undertaken by Honeywell provided Novartis with accurate data for the LCA and also highlighted additional opportunities for carbon footprint reductions in the production of Aclar®.

As a company committed to efficient and sustainable production processes, Honeywell made a significant investment in thermal oxidation equipment in 2014 at its production facility to further reduce greenhouse gas emissions from these processes. The carbon footprint of the blister film, which is now being used by Novartis, has effectively been halved as a result.

Furthermore, Novartis started to engage directly with selected API suppliers in China. The two main aspects evaluated with them is the risk related to water effluents and the carbon intensity of these suppliers on-site processes. Switching from coal to natural gas was one of the topics discussed with them.

---

**CC14.4b**

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Number of suppliers	% of total spend	Comment
5	0.5%	Novartis started to engage with packaging suppliers in 2012 and will continue to increase our activities here in the future. A new sustainable procurement program, which partly aims to reduce GHG emissions in the supply chain, was launched in April 2013 and is expected to initiate further supplier engagement.

---

**CC14.4c**

If you have data on your suppliers' GHG emissions and climate change strategies, please explain how you make use of that data

How you make use of the data	Please give details
Identifying GHG sources to prioritize for reduction actions	We intend to use the carbon information supplied to help us choose less carbon intensive packaging options for our products.

---

**CC14.4d**

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

---

**Further Information**

**Module: Sign Off**

**Page: CC15. Sign Off**

---

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Dr. Markus Lehni	Novartis Group Global Head Environment and Energy	Environment/Sustainability manager

---

**Further Information**

CDP