Syngenta AG - Climate Change 2019

C0. Introduction

C0.1

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

Syngenta is one of the world's leading agricultural input companies with about 28,000 employees in some 90 countries dedicated to our purpose: Bringing plant potential to life. Syngenta uses its expertise in plant breeding, crop protection and seed care to deliver solutions designed to bring plant potential to life.

Whether they grow corn or rice, vegetables or flowers, farmers around the world trust Syngenta to help them produce healthy, premium crops and minimize the use of precious natural resources. We contribute to addressing the global challenge of food security and feeding a growing population by increasing yields through technology, improving crop quality, helping farmers use natural resources more efficiently and creating benefits for rural communities. We also encourage farmers to adopt climate-smart practices that help them to optimize inputs, reduce soil-based carbon emissions and build crop resilience to changing weather patterns.

At the heart of our contribution is The Good Growth Plan, our six commitments to address critical challenges the world faces to achieve food security. Our business – and the world's food security – depend on sustainable natural resources, healthy ecosystems and thriving rural communities. Which is why we cooperate with industry partners, governments and NGOs to support the achievement of the United Nations' Sustainable Development Goals (SDGs).

Through our world-class science, broad portfolio, leading crop solutions and strong presence in all agricultural markets, we are uniquely positioned to help growers around the world to grow more from less.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	October 1 2017	September 30 2018	No	<Not Applicable>

C0.3

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

Albania
Algeria
Angola
Argentina
Armenia
Australia
Austria
Azerbaijan
Bangladesh
Belarus
Belgium
Belize
Bolivia (Plurinational State of)
Bosnia and Herzegovina
Brazil
Bulgaria
Burkina Faso
Cameroon
Canada
Chile
China
China, Hong Kong Special Administrative Region
Colombia
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Cyprus
Czechia
Denmark
Dominican Republic

Ecuador
Egypt
El Salvador
Estonia
Ethiopia
Finland
France
French Guiana
French Polynesia
Gabon
Georgia
Germany
Ghana
Greece
Guadeloupe
Guatemala
Honduras
Hungary
India
Indonesia
Iran (Islamic Republic of)
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kuwait
Kyrgyzstan
Latvia
Lebanon
Libya
Lithuania
Luxembourg
Malawi
Malaysia
Mali
Malta
Mauritius
Mexico
Morocco
Mozambique
Myanmar
Namibia
Netherlands
New Caledonia
New Zealand
Nicaragua
Nigeria
Norway
Oman
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Puerto Rico
Qatar
Republic of Korea
Republic of Moldova
Réunion
Romania
Russian Federation
Saudi Arabia
Senegal
Serbia
Singapore
Slovakia
Slovenia
South Africa
Spain
Sri Lanka
State of Palestine
Sudan
Swaziland
Sweden

Switzerland
Taiwan, Greater China
Tajikistan
Thailand
Tunisia
Turkey
Turkmenistan
Uganda
Ukraine
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania
United States of America
Uruguay
Uzbekistan
Viet Nam
Yemen
Zambia
Zimbabwe

C0.4

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

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.
Operational control

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals
Please select

Bulk inorganic chemicals
Please select

Other chemicals
Specialty chemicals
Other, please specify (Seed production)

C1. Governance

C1.1

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

C1.1a

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

Position of individual(s)	Please explain
Other, please specify (Entire Board of Directors)	As stated in Syngenta's "Regulations Governing the Internal Organization," the entire Board of Directors provides strategic direction regarding all sustainability matters - this includes climate-related issues - and exercises oversight over the Executive Team in this respect. In particular, the Board of Directors: * defines the Company's sustainability strategic priorities, policies and issues; * assesses the effectiveness of the implementation of sustainability-related internal policies; * reviews sustainability and HSE performance and improvement plans; and * assesses and advises on sustainability- related actions proposed by the Executive Team.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Setting performance objectives Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Board meets several times a year. At least once a year the Board reviews business sustainability-related strategy, actions and performance, including those related to climate change. The topic could be discussed in additional meetings as needed. The Chief Sustainability Officer briefs the Board on all sustainability matters, including climate change. For example, on the meeting of February 14, 2019, the Board of Directors approved our non-financial performance summary, which includes GHG performance data and was published in the Sustainable Business Report 2018. Once a year, performance objectives and long-term incentive plans are put in place. The long-term incentive plans include sustainability targets.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Sustainability Officer (CSO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Other C-Suite Officer, please specify (Any member of Executive Team based on his/her area of responsibility)	Both assessing and managing climate-related risks and opportunities	As important matters arise
Risk committee	Both assessing and managing climate-related risks and opportunities	Annually

C1.2a

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

The Board of Directors provides strategic direction regarding all sustainability matters - including climate-related issues - and exercises oversight over the Executive Team in this respect. In particular, the Board of Directors defines the Company's sustainability strategic priorities, policies and issues; assesses the effectiveness of the implementation of sustainability-related internal policies; reviews sustainability and HSE performance and improvement plans; and assesses and advises on sustainability-related actions proposed by the Executive Team.

The Executive Team as a whole directs business sustainability related standards, strategy, objectives and partnerships - also including those related to climate issues. It reviews and advises on the effectiveness of implementation of internal policies. Sustainability should be every employee's responsibility. Each member of the Executive Team is responsible for embedding sustainability in his/her area of responsibility.

The Chief Sustainability Officer, who reports to the CEO and is part of the Crop Protection Executive Team, leads the Business Sustainability function. This function coordinates and channels sustainability initiatives, performance management and policy engagements – including those related to climate change. The Business Sustainability function has global, regional, territory and country representatives to ensure alignment across the organization.

Through the risk management reporting processes, the Risk Committee informs the Board of Directors of key risks impacting the company on an annual basis. These risks might include climate-related risks. Key risks are assigned a risk owner and an executive sponsor.

C1.3

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

Yes

C1.3a

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

Who is entitled to benefit from these incentives?
Corporate executive team

Types of incentives
Monetary reward

Activity incentivized
Other, please specify (Good Growth Plan, Sustainable Operations)

Comment
The overall company performance, including financial and non-financial performance is linked to the Syngenta Executive Team's remuneration. The strategic targets are set in Syngenta's Good Growth Plan and Sustainable Operations strategy. Both include targets and measures to manage our impact on climate change and our contribution to address the climate change challenge.

Who is entitled to benefit from these incentives?
Management group

Types of incentives
Monetary reward

Activity incentivized
Other, please specify (Good Growth Plan)

Comment
Senior management's remuneration includes non-financial performance associated to Syngenta's Good Growth Plan. The Good Growth Plan has targets and measures to manage our impact on climate change and our contribution to address the climate change challenge.

Who is entitled to benefit from these incentives?
Chief Sustainability Officer (CSO)

Types of incentives
Monetary reward

Activity incentivized
Other, please specify (Good Growth Plan, Sustainable Operations)

Comment
As a member of the senior management group, the CSO's remuneration includes non-financial performance associated to Syngenta's Good Growth Plan. As the most senior employee directly responsible for sustainability, the CSO's annual performance goals and results are directly linked to sustainability topics, including climate change.

Who is entitled to benefit from these incentives?
Environment/Sustainability manager

Types of incentives
Monetary reward

Activity incentivized
Emissions reduction target

Comment
The Head of Environment and Sustainable Operations is responsible for sustainable initiatives and performance within our own operations and the supply chain. As such, his annual goals and results are directly linked to these topics, which include management of GHG emissions, energy and climate change.

Who is entitled to benefit from these incentives?
Facilities manager

Types of incentives
Recognition (non-monetary)

Activity incentivized
Energy reduction target

Comment
Site-specific targets: Relevant facilities set energy targets which are part of the facility manager's responsibilities.

Who is entitled to benefit from these incentives?
Public affairs manager

Types of incentives
Recognition (non-monetary)

Activity incentivized
Other, please specify (Advocacy)

Comment
Communicating on climate change issues: We regularly and actively communicate on our climate change performance, actions and position.

Who is entitled to benefit from these incentives?
All employees

Types of incentives
Recognition (non-monetary)

Activity incentivized
Other, please specify (Innovation)

Comment
We encourage employees to develop innovative products and services that, for example, generate business related to climate change services: • Syngenta reduces GHG emissions by helping farmers reduce or avoid soil degradation through sustainable farm management practices and maximize crop yields while using less land. • For climate change adaptation, Syngenta researches and develops new and improved plant varieties that are more resistant to extremes in weather and temperature. This is recognized in individual performance review processes.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	2	Current year (i.e. 2019) or the following one as part of the budgeting process.
Medium-term	2	5	Five-year horizon (i.e. 2019-2023) as part of the long-term planning performed by operational units.
Long-term	5	20	Strategic exercise performed at corporate level to cover the period from 5 to 10 years. Process currently under revision to include a view up to 20 years.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.
Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	3 to 6 years	Climate change has a material impact on agriculture and thus is an underlying factor to Syngenta's risks and opportunities. Climate change is weaved in Syngenta's business strategy, our operations, our products and our projects as farmers' ability to grow food is challenged by increases in temperatures and erratic weather patterns. Within our operations, risks and improvement plans are revised on a yearly basis. These plans include objectives, targets and improvements at a site level, or in specific functions such as logistics or procurement. Progress is tracked annually.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Risk governance

In Syngenta, the Board of Directors and the Executive Team have the overall responsibility for risk management. The risk management strategy, set by the Executive Team, defines the approach to managing risks globally across the entire company and individual businesses. We define substantive financial or strategic impact as an impact that could have an effect on the delivery of our business objectives. Substantive change is measured against the impact it will have on the company's forecasted sales.

The risk management process has been largely integrated into existing business planning and business review processes. There is no separate/dedicated climate change risk identification process and climate-related risks are considered throughout the risk management process - both from a long-term strategic angle, and a short-term operational tactics perspective as part of local, integrated business planning and review processes.

Syngenta Group Risk Management is responsible for ensuring that the risk management approach is robust and that our risk management processes are effectively embedded across the company. The risk reports are submitted annually to the Syngenta Executive Team and the Audit Committee. Risk management is everyone's responsibility in Syngenta and employees must consider risks in daily decision making and take accountability with the scope of their roles.

Syngenta process to identify and assess risks (including climate-related risks)
1. Setting the context: understanding the uncertainties surrounding the delivery of the strategy, setting the risk appetite and risk tolerance
2. Identifying risks: identifying, recognizing and describing risks
3. Assessing risks: gaining a deeper understanding of risks by analyzing their likelihood and potential impact

The identification of risks (Step 2) aims to establish a comprehensive list of risks based on those events that might prevent, degrade or delay the achievement of key objectives. Syngenta has tools to help identify risks (risk universe) which captures different categories of risks (e.g., financial, strategic, product-related, ecosystem, etc.) as well as emerging trends, which may have a major impact on the company and the industry. Climate change is considered throughout the process, during the identification of risks by screening external trends, ecosystem risks within the 'Syngenta Risk Universe' and emerging risks and scenarios. Climate change is considered both from a strategic long-term business value impact perspective and a short-term, operational perspective at Group and business unit levels.

The assessment of risks (Step 3) is a qualitative risk assessment considering the likelihood of the threat vs. the potential impact of such an event. To illustrate this, Syngenta uses a heat map (risk matrix) which maps the likelihood and the impact of the event on a 3x3 colored grid. The coloring helps the organization to prioritize responses to each risk, highlighting which risks are most critical and need further review and those which may be addressed later. Syngenta has pre-defined classifications for likelihood and impacts which facilitate the assessment of the risk. Each risk is assessed to have either a financial, people-related (i.e. injuries/fatalities) or environmental impact.

The company uses a central electronic risk repository to document and communicate the identified risks across the organization. In addition to functional risk management requirements (e.g., HSE), management teams in the functions (e.g., production and supply, research and development) also consider risks and opportunities associated with climate change.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business, including current regulations that could impact our operations (e.g., carbon regulation in China that could increase costs associated with Syngenta's carbon footprint). Further, government regulations regarding the use of agricultural products and/or that encourage climate-smart agriculture areas to be planted with certain crops can also have an impact on our revenues (more an opportunity than a risk).
Emerging regulation	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business, including emerging and upcoming regulation that could impact our company (e.g., actions one of our UK sites, which is currently under EU ETS, will need to undertake in a post-Brexit scenario).
Technology	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. Technology plays an important role in our industry and is under close scrutiny by society (e.g., technologies that benefit climate-smart agriculture such as GMO, pest and weed management technologies or more recently CRISP-Cas9 and Cp11 genome-editing).
Legal	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business, including potential legal challenges.
Market	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks and in particular weather/climate risks that have a material impact on our business. Given the nature of the agricultural industry, Syngenta carefully considers the short- and long-term impact, and related risks, of climate change on the market.
Reputation	Relevant, sometimes included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. Given the nature of the agricultural industry, Syngenta is under close scrutiny by society, which could impact our reputation (e.g., misunderstanding about the potential benefits crop protection and GM seeds could have to help farmers tackle drought and flood risks caused by climate change).
Acute physical	Relevant, sometimes included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. Physical risks are considered where relevant to the company. Potential acute physical risks in the form of extreme weather events, such as floods or tsunamis, could affect our production sites and disrupt our manufacturing capacity. This led Syngenta to complete a comprehensive risk review of all our production sites to natural catastrophe in 2017 in collaboration with our corporate insurer.
Chronic physical	Relevant, sometimes included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. For instance chronic physical risks, such as droughts, are considered where relevant to the company as they can influence the demand for certain products over the course of a season.
Upstream	Relevant, sometimes included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. Upstream risks are considered where relevant to the company. For example, Syngenta takes into account weather patterns to select growing areas for our seeds production.
Downstream	Relevant, always included	Syngenta doesn't have a dedicated climate change risk identification process but considers these risks as part of the formal risk process which is further integrated into business planning and review processes. As part of these processes, the operational units consider the different types of risks through the lens of the "risk universe" that covers the different aspects of our business. Downstream risks are considered where relevant to the company (e.g., R&D considers farmers' needs, in particular the impacts due to changes in weather patterns on pest patterns and the need for more climate-resilient varieties, when developing new products and seeds).

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Climate-related risks and opportunities are embedded into the multi-disciplinary enterprise-wide risk management process which is further integrated into normal management processes. Typically, the time horizon of risks (long-term; medium-term; short-term) and type of risks (strategic; operational) allow to place risks in two separate categories:

- **Long-term (and medium-term) strategic** climate-related risks and opportunities are captured and integrated in the annual business review process of the Crop Protection and Seeds business units. These risks are managed through relevant business planning sessions
- **Short-term** operational climate-related risks are managed on an on-going basis by monitoring and reviewing the status of mitigation and ensuring adequate resource prioritization

Transition risk/opportunity example: *Risk 1*

For Syngenta, the risk of climate-related regulatory pressure represents an opportunity to pursue technological innovation, e.g., reducing carbon dioxide emissions and making operations more Energy-efficient.

Physical risk example: *Risk 2*

Climatic variations may affect the quality, volume and cost of seeds produced. Seed yields can be higher or lower than planned and significantly higher yields could lead to higher inventory and potentially write-offs.

C2.3

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

Yes

C2.3a

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

Identifier
Risk 1

Where in the value chain does the risk driver occur?
Direct operations

Risk type
Physical risk

Primary climate-related risk driver
Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact
Reduced revenues from lower sales/output

Company- specific description
Syngenta's results are affected, both positively and negatively, by weather conditions, which can influence the demand for certain products over the course of a season. * Climate change may make growing certain crops more or less viable in different geographic areas, but is not likely to reduce overall demand for food and feed. Syngenta currently sells and is developing new products to improve the water productivity of plants and increase tolerance to drought and heat. In addition, shifts in pest pressure are likely to increase demand for crop protection. * Weather disturbances could also affect Syngenta's or its suppliers' manufacturing and production facilities, which could affect Syngenta's costs or ability to meet supply requirements. * Natural disasters could also affect Syngenta's customers, which could affect Syngenta's sales or its ability to collect revenues from customers, resulting in lost sales or missed opportunities.

Time horizon
Short-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The impact has not been quantified financially. Financial implications are derived from: loss of sales or missed product delivery; high inventories (volumes) and high-cost inventories (concentrated in high-cost intermediaries); and increasing number of active ingredients under allocation.

Management method
Syngenta has put in place key mitigation actions. They are reviewed, updated and improved on a regular basis. There are well structured, and sophisticated supply and operations processes in place to ensure that: (a) the discussion focuses on relevant business topics and includes weather variability topics; (b) there is a sound understanding of the agricultural environment and emerging trends that may impact our industry; (c) the evaluation of unpredictable variability is realistic and well established; (d) a pragmatic and realistic approach to respond to plan variations are in place and; (e) innovative weather intelligence projects are executed to improve productivity and fast reactions. As climate change brings less predictable and more extreme weather, we offer growers solutions such as AGRISURE ARTESIAN corn, which delivers strong performance in both drought and excessively wet conditions. Hybrids with AGRISURE ARTESIAN technology maximize yield when it rains, and increase yield when it rains less, improving the return on a grower's total crop investment.

Cost of management

Comment
Costs related to risk mitigation cannot be displayed separately and are included in our production and supply lines focusing on the different crop lines. Costs are included in daily efforts to improve our business and operations.

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Customer

Risk type
Transition risk

Primary climate-related risk driver
Market: Uncertainty in market signals

Type of financial impact
Change in revenue mix and sources resulting in decreased revenues

Company- specific description
Fluctuating food prices, as a result of climate-dependent variability in supply and speculation on the commodity market, impact the prices of agricultural input and increase uncertainty, causing potential financial risk for Syngenta. Government measures, such as subsidies or rules regulating the use of agricultural products or areas allowed to be planted with certain crops, also can have an impact on Syngenta's results.

Time horizon
Short-term

Likelihood
More likely than not

Magnitude of impact
Low

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The impact has not been quantified financially. The current economic climate and food security concerns lead to increased national protectionism and price fluctuations. As a result, costs associated with these risks are the failure to capture additional sales potentials or having high inventories (by volumes or value).

Management method
Mitigation actions include establishing strong monitoring systems to be up to date on market information to increase flexibility to react.

Cost of management

Comment
Costs related to risk mitigation cannot be displayed separately and are included in our production and supply lines focusing on the different crop lines. Costs are included in daily efforts to improve our business and operations.

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Customer

Risk type
Transition risk

Primary climate-related risk driver
Market: Changing customer behavior

Type of financial impact
Reduced demand for goods and/or services due to shift in consumer preferences

Company- specific description
Consumer preferences, understanding and expectations from agriculture are changing. In 2013, we commissioned a global research study in 13 countries to assess people's perceptions on the topic of food security and the challenges of agriculture. The study concluded that producing more food for a growing population in an environmentally sustainable way would be one of the next decade's most important global challenges. However, there are conflicting opinions about how best to address this challenge, and about the likely impact of increased production on the environment and on the people who grow the food and work on the farms. In 2018, we also conducted a three-month consultation on the future of agriculture. Farmers around the world are facing increasing challenges and the views of society are changing. Farmers today need to manage climate change, soil erosion and biodiversity loss, as well as changing consumer expectations and views on agricultural technology.

Time horizon
Medium-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The impact has not been quantified financially. The shift in consumer preference on the types of agriculture practices could impact Syngenta’s business and bottom line.

Management method
Syngenta works to develop solutions that better address the needs of farmers, including digital and data tools for better predictions and identification of appropriate products and seeds. In 2019, as a result of an extensive consultation conducted in 2018, Syngenta announced that it will accelerate its innovation to address the increasing challenges faced by farmers around the world and the changing views of society. Syngenta’s new approach aims to further improve the way crops are grown and protected, and find solutions that address interconnected environmental, societal and economic challenges.

Cost of management

Comment
On average, the registration of any new crop protection product takes 10 years and costs around USD 260 million before a product is commercially launched. Similarly, for a new biotech trait, it takes around 13 years from the point of discovery of a new genetic sequence through to the complex registration process.

C2.4

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

C2.4a

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

Identifier
Opp1

Where in the value chain does the opportunity occur?
Customer

Opportunity type
Products and services

Primary climate-related opportunity driver
Shift in consumer preferences

Type of financial impact
Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

Company-specific description
There is currently limited understanding about the link between agriculture and climate change. Syngenta sees therefore an opportunity to increase awareness among farmers, policy-makers and other stakeholders about how agricultural technologies could contribute to reducing CO2 emissions throughout the value chain - from agricultural input to consumer product. Increased awareness and associated new agreements and regulations could lead to a broader acceptance of agricultural technology, better freedom to operate and sales increase for Syngenta. In particular, regulations facilitating the go to market with our products would lead to better and more timely support to farmers and increased cost efficiency for Syngenta.

Time horizon
Medium-term

Likelihood
About as likely as not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Increased awareness could lead to better freedom to operate, new product development, and better and timelier support to farmers. This would lead to increased business and sales.

Strategy to realize opportunity
We raise awareness about the link between climate change and agriculture in different ways. Our INTERRA Farm Network – a network of working farms, owned by farmers – is demonstrating that productive agriculture is compatible with the protection and enhancement of natural resources and biodiversity. The farms are used as training centers to give local farmers the latest information on a full range of sustainable agricultural practices, product stewardship and best management practices. Other visitors, such as policymakers and researches can gain first-hand information in what sustainable agriculture really means on the farms.

Cost to realize opportunity

Comment
Raising awareness about this topic is part of our advocacy activities. This is not only conducted by the Business Sustainability function but also by other functions and employees interacting with farmers, policy makers, associations and other stakeholders. We are not able to provide a cost estimate as this is part of our daily activities.

Identifier
Opp2

Where in the value chain does the opportunity occur?
Customer

Opportunity type
Resilience

Primary climate-related opportunity driver
Other

Type of financial impact
Increased revenue through new products and services related to ensuring resiliency

Company-specific description
Changes in frequency of extreme weather events, frost days and increased precipitations impact growing seasons. We are helping farmers to adapt to changing agricultural

patterns and supporting their efforts to reduce greenhouse gas emissions from agriculture. Syngenta supplies tailored solutions for different climate conditions, soil structures and crops.

Time horizon
Medium-term

Likelihood
About as likely as not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Increase sales through tailored solutions for shifting pest patterns, new drought-tolerant plants as well as nitrogen and water-efficient technologies. 2018 sales amounted to USD 13,523 million.

Strategy to realize opportunity
We manage this opportunity through increased investment in R&D of drought-tolerant and/or resource-efficient plants and production patterns. Syngenta researched and developed new plant varieties that are more resistant to extremes in weather and temperature. We have developed plant varieties with longer root systems and with improved ability to use nitrogen. This contributes to soil fertility, makes fertilizer use more efficient and reduces nitrous oxide emission. High-quality seeds are integrated into a seedling tray and later transplanted directly in soil using mechanical transplanters, reducing methane emissions from rice cultivation. For example, the introduction of AGRISURE ARTESIAN in corn delivers improved yields on dryland and in land with limited irrigation or prone to drought stress. We conducted more than 1,100 on-farm trials in the USA during the 2012 drought. In areas of severe drought stress, AGRISURE ARTESIAN hybrids increased yields by 12%. The yield gain in extreme drought conditions reached 48%. We also develop products such as EPIVIO, a seed treatment biostimulant, which address abiotic stress such as drought. Biostimulants improve the incorporation of organic matter into the soil and hence improve carbon sequestration.

Cost to realize opportunity
200000000

Comment
Syngenta's investment in R&D was USD 1.3 billion in 2018, representing almost 10% of our 2018 sales.

Identifier
Opp3

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of more efficient production and distribution processes

Type of financial impact
Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description
Our sites need energy to manufacture products. In 2016, we completed EU-standard energy-efficiency audits at 30 sites – including the 10 biggest sites covering about 80% of our energy use. These audits enabled us to identify the actions and investments offering the greatest opportunities for improvement which were implemented in 2017 and 2018.

Time horizon
Short-term

Likelihood
More likely than not

Magnitude of impact
Low

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Cost reductions from energy efficiency programs are being achieved at our top 10 manufacturing sites (which represent almost 80% of our total direct energy use).

Strategy to realize opportunity
We have energy efficiency programs at all our sites. These are continuous and permanent: when targets are met, we set more demanding ones, and we focus on the areas

with the greatest potential for improvement. After completing the EU-standard energy-efficiency audits, we developed action plans accordingly. In 2018, our efforts to increase energy efficiency and reduce carbon intensity in our operations have focused on our top 10 manufacturing sites. Energy management plans were in place in all these plants during 2018.

Cost to realize opportunity

Comment
We are not able to provide cost information.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	Changes in frequency of extreme weather events and patterns impact growing seasons and pest patterns. Syngenta supplies tailored solutions for different climate conditions, soil structures, crops and pests. Climate change could affect our products and services twofold. First, climate change could have a negative impact on the products we provide. For instance, EAME sales volumes were lower in 2018 due to difficult spring weather. Second, climate change also creates growth opportunities. For instance, weed control using herbicides lowers the need for tillage, leaving the plants' roots in the soil for better soil compaction and enhanced soil organic matter, which helps, among other things, reduce carbon emissions from the soil. Our herbicides such as AXIAL or CALLISTO (selective herbicide) and GRAMOXONE (non-selective herbicide) are widely used for conservation agriculture, especially in countries like Brazil and the USA and now increasingly in Asia.
Supply chain and/or value chain	Impacted for some suppliers, facilities, or product lines	Weather disturbances could also impact Syngenta's suppliers' production facilities, which could affect our costs or ability to meet supply requirements. We are working toward CO2 intensity reduction for all our land, sea and air distribution logistics and implementing a global program with partners who integrate and coordinate all logistics operations across supply chains to optimize processes and gain economies of scale. This will improve energy and cost efficiency, compliance and reduce CO2 emissions.
Adaptation and mitigation activities	Impacted	Climate change is disrupting agriculture in every corner of the world, from droughts or floods that damage crops, to shifting pest patterns that threaten harvests. New pest control products and resistant seed varieties are necessary for sustainable intensive agriculture that can play an important role in reducing the effects of rising temperatures. By providing products that improve soil fertility, enhance biodiversity, and create connected landscapes, we can help growers adapt to changing climate conditions. Responsible management of soil makes agriculture more resilient to the causes and effects of climate change. Soil is a major storage area for carbon in our ecosystem. But when soil is degraded or disturbed, carbon is released back into the atmosphere and becomes a greenhouse gas. With The Good Growth Plan, we support commercial activities that promote soil health and fertility, while helping it to reduce, capture and store carbon more effectively. One way to prevent carbon from being released from the soil is through conservation agriculture practices such as minimum soil disturbance, permanent soil cover (e.g., crop residues or cover crops), and crop rotation. Not tilling the soil also prevents the passing of heavy machinery on the field that burn fossil fuels. This means farmers can grow more crops, while keeping carbon in the soil and releasing less fuel emissions in the air. By joining the Race to Zero initiative (http://joinracetozero.org/companies.html#group1-5), Syngenta committed to reduce carbon emissions at scale in China through soil conservation programs that enhance soil health on 2 million hectares of farmland over the next 5 years, accounting for 2% of all farmland in China. Soil conservation techniques help retain carbon in the soil.
Investment in R&D	Impacted	We increasingly invest in R&D of drought-tolerant and/or resource-efficient plants and production patterns. For example, the introduction of AGRISURE ARTESIAN in corn delivers improved yields on dryland and in land with limited irrigation or prone to drought stress. We conducted more than 1,100 on-farm trials in the USA during the 2012 drought. In areas of severe drought stress, AGRISURE ARTESIAN hybrids increased yields by 12%. The yield gain in extreme drought conditions reached 48%.
Operations	Impacted for some suppliers, facilities, or product lines	Weather disturbances could also affect Syngenta's production facilities, which could impact our costs or ability to meet supply requirements. Our environmental management system monitors our performance in energy efficiency and carbon emissions, and helps us identify opportunities to reduce our impacts. We have energy efficiency programs at all our sites. These are continuous and permanent: when targets are met, we set more demanding ones, and focus on the areas with the greatest potential for improvement. In 2016, we completed EU-standard energy-efficiency audits, which enabled us to identify improvement opportunities. In 2018, our efforts to increase energy efficiency and reduce carbon intensity in our operations have focused on our top 10 manufacturing sites. Energy management plans were in place in all these plants during 2018. We also continued to develop and implement plans in smaller sites. Syngenta also has a number of facilities that are located in areas of potential floods. Flood management plans are therefore in place and this is assessed via site-specific environmental impact assessments.
Other, please specify	Please select	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is medium. Climate change may have both positive and negative material impacts on Syngenta's results. Climate change may make growing certain crops more or less viable in different geographic areas, but is not likely to reduce overall demand for food and feed. Syngenta currently sells and is developing products to improve the water productivity of plants and increase tolerance to drought and heat.
Operating costs	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is low. We have energy efficiency programs at all our sites. These are continuous and permanent: when targets are met, we set more demanding ones, and we focus on the areas with the greatest potential for improvement. Some suppliers in China have faced disruption or closure due to air quality issues and tightening of climate-related legislation. Energy procurement is likely to face price fluctuations as energy mixes change to more renewable sources in a number of countries.
Capital expenditures / capital allocation	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is medium. Syngenta invests about USD 1.3 billion per year in R&D to develop new products and services to better serve farmers. Changes in frequency of extreme weather events and patterns impact growing seasons and farmers' productivity.
Acquisitions and divestments	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is low. For example, we invest in smaller innovation companies through Syngenta Ventures. Current investments include Sound Agriculture Company, products to enhance crops' drought resilience (https://sound-ag.com/) and Strider, a technology company which utilizes tools for farm management via remote sensing data to optimize the use of products for pest and disease control.
Access to capital	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is low. Syngenta's principle source of liquidity is cash generated from operations. Seasonal financing requirements are supported by a global commercial paper program and a revolving credit facility. Long-term financing needs are supported by unsecured notes in issuance with maturities spread over the period from 2019 to 2048. Absent major acquisitions, Syngenta targets maintaining an investment grade credit rating.
Assets	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is low. Legislation may be enacted in the future that limits carbon dioxide emissions in the manufacture of Syngenta's products or increases the costs associated with such emissions. Investments in technology are required to reduce emissions. We are working not only to reduce emissions at our sites, but also with logistics service providers to improve energy and cost efficiency, compliance and CO2 emissions. Syngenta also has a number of facilities that are located in areas of potential extreme weather disturbances, such as flooding. Flood management plans are therefore in place.
Liabilities	Impacted for some suppliers, facilities, or product lines	The magnitude of the impact is low. Environmental impacts at our sites are reviewed on an ongoing basis. Environmental provisions are made when there is a present obligation, it is probable that expenditures for remediation work will be required within ten years (or a longer period if specified by a legal obligation) and the cost can be estimated within a reasonable range of possible outcomes. The costs are based on currently available facts: technology expected to be available at the time of the clean-up; laws and regulations presently or virtually certain to be enacted; and prior experience in remediation of contaminated sites.
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

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

C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

No, we do not have a low-carbon transition plan

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

1) Climate is a key determinant for Syngenta's products and operations. Changing climate affects agriculture in terms of growing seasons, water availability, pests and crop productivity, as a result altering demand for our products. We use science to transform the way crops are grown to improve yields in a sustainable way. We also encourage growers to adopt climate-smart practices that help them to optimize inputs, reduce soil-based carbon emissions and build crop resilience to changing weather patterns. In doing so, we contribute to bringing greater food security to a growing population and help overcome increasing pressure on limited resources such as land, water and energy. Changing climate also impacts our operations, through altered water availability, changed weather patterns and new regulations.

2) We monitor our impact on agriculture through our Good Growth Plan and its six commitments. In particular, we have set specific targets on land productivity (i.e. growing more from less and thus reducing GHG emissions per unit of output) and soil management (i.e. helping farmers reduce and avoid GHG emissions). In our operations, our environmental management system monitors our global performance in energy efficiency, carbon emissions, water, waste and pollution and helps us identify opportunities to reduce our impact. In 2018, we committed to set science-based GHG emission reduction targets.

3) Earlier this year, we announced that we would accelerate innovation to address the increasing challenges faced by farmers due to climate change and the changing views of society. An important aspect is helping farmers manage climate change-related impacts on their crops. The announcement follows the completion of more than 150 listening sessions worldwide, engaging a broad cross section of views and identifying areas of action.

4) Our strategy is influenced by:

a) Opportunities to develop new products and services to help growers better adapt to weather risks and shifting pest patterns due to climate change.

• In anticipation of changing weather patterns and potential shortages of water, we have made water efficiency a key strategic ambition shaping our product range. For example, we developed AGRISURE ARTESIAN in corn to improve yields on dryland and in land with limited irrigation or prone to drought stress.

• We have developed plant varieties with longer root systems and improved ability to use nitrogen contributing to soil fertility, making fertilizer use more efficient and reducing nitrous oxide emissions. In addition, crop protection strengthens plant resistance to heat and drought stress.

• We have developed new pest control molecules that help control shifting pest patterns and support abiotic stress management by enhancing the root systems and controlling plant growth.

• Products such as EPIVIO, a seed treatment biostimulant, address abiotic stress such as drought. Biostimulants improve the incorporation of organic matter into soil and hence improve carbon sequestration.

• Syngenta has established partnerships with NGOs and universities, such as public-private partnerships with the International Maize and Wheat Improvement Center (CIMMYT) and the International Rice Research Institute (IRRI) to advance the development of new technologies in cereals better adapted to abiotic stresses like drought, heat and cold.

b) Need to make our operations less emission-intensive. We have ongoing energy efficiency programs at our sites. These are continuous and permanent: when targets are met, we set more demanding ones.

c) Compliance with climate change regulations/legislation. We support and endorse research, development, and extension work of international organizations such as the United Nations Convention to Combat Desertification (UNCCCD) and the World Business Council for Sustainable Development, which are promoting and advancing technologies and practices for climate change.

5) In the short term, through our environmental management system, we identify opportunities for improvement associated with climate change. These are communicated to Syngenta's Executive Team to be eventually incorporated in our business strategy, ensuring our actions to reduce our carbon footprint are consistent around the world. As our business grows, our management system enables us to better understand, monitor and report our environmental, including climate change, performance over time. In 2018, we built a clear picture of our total impacts including suppliers. Working through our global procurement database, we calculated our footprint and determined baseline levels for our impacts. Having identified the areas where there is greatest scope for improvement, we will set science-based targets for our full footprint and measure our progress. We will announce the targets in 2019.

6) In the long term, our ambition is to play a vital role in the food chain to safely feed the world and take care of our planet. At the core of the long-term success of our strategy is innovation, particularly in R&D. The products of the future not only need to produce extra yield, but also have a positive impact on the environment. Yield alone is no longer enough. We innovate beyond the single product paradigm of chemical or biological products, and we innovate by crop and at scale to manage water/abiotic stress influenced by climate change. As a result of an extensive consultation conducted in 2018, we recently announced that we intend to accelerate our innovation to address the increasing challenges faced by farmers and the changing views of society, including climate change.

7) The Sustainable Development Goals (SDGs), including the commitment to take action to combat climate change and its impacts, have confirmed the right direction of our business strategy. This is the journey we started in 2013 with the launch of The Good Growth Plan (www.goodgrowthplan.com), in which we have set ourselves six targets focusing on improving the sustainability of agriculture. The SDGs and the Paris Agreement have encouraged us to further look into how we can better measure and mitigate GHG emissions and how we can strengthen climate resilience in agriculture as part of our Good Growth Plan commitments.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

Our strategy processes include climate-related changes in growing patterns, pest patterns and growers' demands. Our crop pest scenarios reflect expected crop/pest shifts and cover shifts induced by climate change. We are evaluating how to implement processes to conduct climate-related scenario analysis as part of the work associated with the TCFD recommendations, which is currently underway. Through WEF's Alliance of CEO Climate Leaders and The Prince's Accounting for Sustainability Project (A4S), we have signaled our support for the recommendations of the TCFD.

C4. Targets and performance

C4.1

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

No target

C4.1c

(C4.1c) Explain why you do not have emissions target and forecast how your emissions will change over the next five years.

	Primary reason	Five-year forecast	Please explain
Row 1	We are planning to introduce a target in the next two years	Based on the trend observed in our 2009-2018 emissions, we estimate that in 5 years our Scope 1 and 2 absolute emissions will decrease (approximately by 10%). We will likely see a larger increase in Scope 3 absolute emissions as we become more rigorous in scoping and quality of data. If we normalize forecasted emissions by forecasted revenues, we estimate that in 5 years our overall emissions per dollar revenue will likely increase slightly (approximately by 2%). However, the increase in Scope 3 intensity emissions will partially be offset mainly by efficiencies in Scope 1 and 2 intensity emissions.	In 2018, we committed to set science-based GHG reduction targets, which will be announced in 2019. We set internal targets for carbon reduction intensity and have submitted an application to the Science Based Targets Initiative to have our climate-related targets approved. In the meantime, we continue working toward achieving the targets set in our Good Growth Plan, launched in 2013. In particular, our commitments on “rescue more farmland” and “make crops more efficient” make the case that carbon capture in soil and climate-smart agriculture can help address climate change. In 2017, for the first time, we reported the GHG emission efficiency of our reference farm network. In 2017 and 2018, we built a clearer picture of our total impacts in our operations including suppliers. Working through our global procurement database, we calculated our footprint. Having identified the areas where there is greatest scope for improvement, we have hence set science-based GHG reduction targets.

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

Target
Other, please specify (Soil conservation)

KPI – Metric numerator
Hectares of benefited farmland

KPI – Metric denominator (intensity targets only)

Base year
2014

Start year
2014

Target year
2020

KPI in baseline year
0

KPI in target year
10000000

% achieved in reporting year
100

Target Status
Achieved

Please explain
As part of Syngenta’s Good Growth Plan, we have committed to “Rescue more farmland” by improving the fertility of 10 million hectares of farmland on the brink of degradation. In 2018, we have improved the fertility of 10.8 million hectares, exceeding our target.

Part of emissions target
We support commercial activities that promote soil health and fertility, while helping it to reduce, capture and store carbon more effectively. One way to prevent carbon from being released from the soil is through conservation agriculture practices such as minimum soil disturbance, permanent soil cover (e.g., crop residues or cover crops), and crop rotation. Not tilling the soil also prevents the passing of heavy machinery on the field that burn fossil fuels. This means farmers can grow more crops, while keeping carbon in the soil and releasing less fuel emissions in the air.

Is this target part of an overarching initiative?

Other, please specify (Climate Smart Agriculture - CSA 100)

Target
Other, please specify (Soil conservation)

KPI – Metric numerator
Hectares of benefited farmland

KPI – Metric denominator (intensity targets only)

Base year
2018

Start year
2018

Target year
2023

KPI in baseline year
0

KPI in target year
2000000

% achieved in reporting year
1

Target Status
Underway

Please explain
As part of the Race to Zero initiative, Syngenta committed to reduce carbon emissions at scale in China through soil conservation programs that enhance soil health on 2 million hectares of farmland over the next 5 years, accounting for 2% of all farmland in China. Soil conservation techniques help retain carbon in the soil. Race to Zero (http://www.joinracetozero.org/) is a global campaign encouraging companies to drive toward zero-carbon and zero-waste business practices.

Part of emissions target
Responsible soil management makes agriculture more resilient to the causes and effects of climate change. Soil is a major storage area for carbon in our ecosystem. But when soil is degraded or disturbed, carbon is released back into the atmosphere and becomes a greenhouse gas.

Is this target part of an overarching initiative?
Other, please specify (Race to Zero)

Target
Other, please specify (Land productivity)

KPI – Metric numerator
Percentage increase in land productivity

KPI – Metric denominator (intensity targets only)

Base year
2014

Start year
2014

Target year
2020

KPI in baseline year
0

KPI in target year
20

% achieved in reporting year
65

Target Status
Underway

Please explain
As part of Syngenta's Good Growth Plan, we have committed to "Make crops more efficient" by increasing the average productivity of the world's major crops by 20% without using more land, water or inputs. The world needs a step change in crop productivity to "grow more with less" and meet the needs of its growing population. We are targeting a 20% increase across the world's most important crops, in partnership with growers who use our products and agronomic advice.

Part of emissions target
The UN Food and Agriculture Organization recognizes that sustainable intensification strategies, which conserve and restore resources, are important in addressing climate change. More efficient resource use supports both adaptation to and mitigation of the effects of climate change by improving farm productivity and incomes while reducing emissions per unit of output. We analyzed greenhouse gas (GHG) footprints from our farm network. We have partnered with two organizations, Field to Market and the Cool Farm Alliance, to bring our growers online tools that calculate GHG footprints from data they are already collecting. This enables them to support their customers' GHG accounting, with evidence that their footprints are reducing as they use inputs more efficiently. Since the launch of The Good Growth Plan, we have seen an 8.8% efficiency increase in GHG emissions across our reference farm network.

Is this target part of an overarching initiative?
Other, please specify (Climate Smart Agriculture - CSA 100)

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	
To be implemented*	0	0
Implementation commenced*	3	200
Implemented*	3	310
Not to be implemented	0	

C4.3b

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

Initiative type
Energy efficiency: Processes

Description of initiative
Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
200

Scope
Scope 1

Voluntary/Mandatory
Voluntary

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

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

Payback period
1-3 years

Estimated lifetime of the initiative
6-10 years

Comment
Multi-year programs: - Initiatives part of the Target Agreement for 3 main Swiss sites, leading to saving approximately 100 CO2 per year. Implementation cost is included in sites' investment/maintenance budgets and cannot be reported. Savings are not quantified. - Initiatives part of Swiss ETS, in one Swiss site, leading to saving approximately 100 CO2 per year. Implementation cost is included in site's investment/maintenance budgets and cannot be reported. Savings are not quantified.

Initiative type
Low-carbon energy purchase

Description of initiative
Hydro

Estimated annual CO2e savings (metric tonnes CO2e)
200

Scope
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
0

Investment required (unit currency – as specified in C0.4)
0

Payback period
No payback

Estimated lifetime of the initiative
>30 years

Comment

New contract: purchase of 100% carbon-free electricity No investment, no saving

Initiative type
Low-carbon energy installation

Description of initiative
Biomass

Estimated annual CO2e savings (metric tonnes CO2e)
60

Scope
Scope 1

Voluntary/Mandatory
Voluntary

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

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

Payback period
1-3 years

Estimated lifetime of the initiative
6-10 years

Comment
Modification of driers burning biomass instead of LPG - part of a bigger project Investment and saving unknown

Initiative type
Energy efficiency: Building fabric

Description of initiative
Insulation

Estimated annual CO2e savings (metric tonnes CO2e)
50

Scope
Scope 1

Voluntary/Mandatory
Voluntary

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

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

Payback period
4 - 10 years

Estimated lifetime of the initiative
16-20 years

Comment
New insulation of the main production building Part of a bigger project, investment and saving unknown

C4.3c

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

Method	Comment
Dedicated budget for low-carbon product R&D	We are investing in the research and development of new plant varieties that can capture energy from the sun more effectively and also use nitrogen more efficiently. In order to be able to breed these new varieties, we are also investing in biodiversity conservation and support seed banks. In addition, we invest in research and development of new and sophisticated herbicides – helping growers to adopt conservation tillage which improves soil fertility and provides higher productivity.
Dedicated budget for other emissions reduction activities	We invest in farmers' training and capacity building to enable more farmers to improve their farming practices in order to maximize crop yield and to support greater carbon storage in soils and vegetation. Responsible management of soil makes agriculture more resilient to the causes and effects of climate change. Soil is a major storage area for carbon in our ecosystem. But when soil is degraded or disturbed, carbon is released back into the atmosphere and becomes a greenhouse gas. Syngenta joined the Race to Zero initiative (http://joinracetozero.org/companies.html#group1-5) and committed to reduce carbon emissions at scale in China through soil conservation programs that enhance soil health on 2 million hectares of farmland over the next 5 years, accounting for 2% of all farmland in China. Soil conservation techniques help retain carbon in the soil.
Dedicated budget for energy efficiency	We have energy efficiency programs at all our sites. These are continuous and permanent: when targets are met, we set more demanding ones, and we focus on the areas with the greatest potential for improvement. In 2016, we completed EU-standard energy efficiency audits at 30 sites. These audits enabled us to identify the actions and investments offering the greatest opportunities for improvement. Energy management plans were in place in all top 10 manufacturing sites, and we continue to develop and implement plans at smaller sites.
Partnering with governments on technology development	Syngenta, through the Syngenta Foundation for Sustainable Agriculture, has partnered with the World Bank's BioCarbon Fund (BioCF) and has developed a methodology to account for agriculture-based carbon sequestration through sustainable agricultural land management (SALM) practices. The aim is to facilitate smallholder farmers to access carbon markets and receive additional revenue streams from the sale of sequestered carbon. The methodology helps to estimate and monitor the greenhouse gas emissions of a project's activities. In the methodology, SALM is defined as any practice that increases carbon stocks on the land. Examples of SALM practices are: manure management, use of cover corps, returning composted crop residuals to the field and the introduction of trees into the landscape. The methodology is developed for voluntary standards and is applicable to areas where the organic carbon in the soil would remain constant or decrease in the absence of the project.
Other	We collaborate with NGOs, business, institutions and other stakeholders. We support organizations such as the United Nations Convention to Combat Desertification (UNCCCD), the International Maize and Wheat Improvement Center (CIMMYT) and the International Rice Research Institute (IRRI), and initiatives such as the World Business Council for Sustainable Development's Climate Smart Agriculture group, which are promoting sustainable agricultural practices, resilient food systems and social policies. We are a signatory to the World Economic Forum's Alliance of CEO Climate Leaders. This coalition believes the private sector has a responsibility to engage in global efforts to reduce GHG emissions, and to help lead the global transition to a low-carbon, climate-resilient economy. For our part, we aim to draw attention to the role agriculture plays in mitigating the effects of climate change and helping rural communities to adapt. Syngenta is also a member of the Cool Farm Alliance and Field to Market. These organizations provide science-based sustainable agriculture assessment tools to track GHG emissions on the farm and identify improvement opportunities through climate-smart agricultural practices. For example, we have integrated Field to Market's sustainability metrics into our Land.db software, which provides farm management solutions to US farmers.

C4.5

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

Yes

C4.5a

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

Level of aggregation
Group of products

Description of product/Group of products
Through our products and services, we contribute to reducing GHG emissions and to enhancing carbon sequestration in the agricultural sector. Although the sector is the world's second-largest emitter of GHGs (after the energy sector), agriculture simultaneously sequesters a significant amount of emissions. Carbon capture in agriculture is mainly driven by our herbicide product range supporting modern farming practices like minimum or no-till and thus helps to reduce the amount of carbon dioxide released from the soil. For instance, weed control using herbicides lowers the need for tillage, leaving the plants' roots in the soil for better soil compaction and enhanced soil organic matter, which helps, among other things, reduce carbon emissions from the soil. Our herbicides such as AXIAL or CALLISTO (selective herbicide) and GRAMOXONE (non-selective herbicide) are widely used for conservation agriculture, especially in countries like Brazil and the USA and now increasingly in Asia. The amount of carbon stored in soil, depending on soil type, texture, biotic activities in soil and local weather conditions, is always significantly higher than the amount of carbon used to produce, transport and apply the herbicides. Calculations are based on taking cropland carbon per hectare t CO2e/ha and vegetation and soil down to a depth of 1m (Source: IPCC Land-use change) into account, depending on the different croplands, e.g., deserts, tundra, tropical savannahs, tropical forests boreal forests, wetlands. (Source of GHG saving potentials: Tristram O. West, "Net Carbon flux from Agriculture")

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

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions
Other, please specify (See description column)

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

Comment
We expect to increase the development of climate-smart solutions for farmers.

Level of aggregation
Group of products

Description of product/Group of products
Improving the efficiency and productivity of food production systems through better management practices and improved input technologies can go a long way to reducing emissions. Better management practices and technologies, such as those provided by Syngenta, help to optimize crop yields and thereby reduce land use-based emissions by decreasing the amount of arable land needed per unit of crop, consequently allowing for higher carbon sequestration by the remaining untouched land, leaving it in its natural state. For example, our fungicide PrioriXtra increases yields by 20-30% with an associated reduction on emissions. Drought-tolerant seeds, such as our AGRISURE ARTESIAN corn, can also help produce reliable yields even in drier and semi-arid conditions, thus reducing the need for new arable land. A 2010 study from Stanford University found that the net effect of higher yields in agriculture – driven by the adoption of higher-yielding crop varieties, increased use of pesticides and fertilizers and improved access to irrigation and mechanization – has avoided emissions of up to 161 gigatons of carbon (GtC) (590 GtCO2e) between 1961 and 2005. (Study link: http://www.pnas.org/content/107/26/12052.long)

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

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions
Other, please specify (See description column)

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

Comment
We expect to increase the development of climate-smart solutions for farmers.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start
October 1 2005

Base year end
September 30 2006

Base year emissions (metric tons CO2e)
605000

Comment

Scope 2 (location-based)

Base year start
October 1 2005

Base year end
September 30 2006

Base year emissions (metric tons CO2e)
157000

Comment

Scope 2 (market-based)

Base year start
October 1 2005

Base year end
September 30 2006

Base year emissions (metric tons CO2e)

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.
Defra Voluntary 2017 Reporting Guidelines
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
589000

Start date
October 1 2017

End date
September 30 2018

Comment

C6.2

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

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based
We have operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure

Comment
Some sites cannot get location-based figures and use market-based figures. The result is a mix, mainly location-based.

C6.3

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

Reporting year

Scope 2, location-based
330000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
October 1 2017

End date
September 30 2018

Comment

C6.4

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

C6.4a

(C6.4a) 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
Energy used in sales office buildings

Relevance of Scope 1 emissions from this source
Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source
Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)
Emissions are not relevant

Explain why this source is excluded
Emission data from sales office buildings is difficult to obtain and not material compared to the emissions generated in production activities. Results from a carbon footprint pilot conducted in a business office in a significant country showed these emissions are negligible compared to the emissions generated in production activities (< 0.1%). Please note: the emissions from fleet cars used by sales representatives are included in the disclosure of Scope 1 emissions. The emissions from business trips (air travel) are included in the disclosure of Scope 3 emissions.

Source
Energy used in very small sites and farms

Relevance of Scope 1 emissions from this source
Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source
Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)
Emissions are not relevant

Explain why this source is excluded
Emissions data difficult to collect and not material compared to the emissions generated in production activities (< 0.1%).

C6.5

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

Purchased goods and services

Evaluation status
Relevant, calculated

Metric tonnes CO2e
7041000

Emissions calculation methodology
Syngenta has calculated its Scope 3 emissions in line with the GHG Protocol, the Science Based Targets initiative and industry standard practices. A composite of the average data and spend-based methods was employed to allow Syngenta to use more precise data, where available. We assessed emissions from all our direct and indirect procurement.

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Explanation
This is the first time we attempt to calculate Scope 3 emissions for purchased goods and services. This information has not been reported in our Sustainable Business Report 2018 as the results were not available at the time of publication.

Capital goods

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
None of the relevance criteria is fulfilled. The business is not capital-intensive and the capital goods are amortized over very long periods.

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

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
No fuel- and energy-related activities

Upstream transportation and distribution

Evaluation status
Relevant, calculated

Metric tonnes CO2e
639000

Emissions calculation methodology
Type and source of data: - List of all the shipments, with transportation mode. - Average emission factors specific to regions and mode of transportation (air, sea, road, rail). The factors were defined internally, based on a detailed analysis of the shipments. - Methodology: Calculation done individually per region and mode of transport. - Emissions = tons x emission factor. All results are added to consolidate emissions globally. - Data quality: Transport and distribution are contracted. Some haulers are able to supply the emissions resulting from their activities. We used this information to test our methodology. Both results were compared and no significant difference found. Upstream and downstream emissions are included in our annual GHG reporting.

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Explanation
We are currently implementing a fourth-party logistics (4PL) project to optimize logistics and our transportation network. The project will allow to track emissions more accurately as well as significantly optimize CO2 emissions.

Waste generated in operations

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
The calculation done in 2013 showed this is not relevant as the emissions are <0.1% of the total emissions reported. Contribution magnitude is not significant, and no other relevance criteria is fulfilled.

Business travel

Evaluation status
Relevant, calculated

Metric tonnes CO2e
27000

Emissions calculation methodology
Type and source of data: - List of all the business trips supplied by the travel agency. - DEFRA emission factors. Methodology: All business trips are booked via a travel agency, supplying an annual value for the business trip emissions, using the DEFRA methodology. - Data quality: The results supplied by the travel agency were cross-checked internally. We assume the results are +/- 20%. Emissions from business travel are included in our annual GHG reporting.

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation

Employee commuting

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
The calculation done in 2013 showed this is not relevant as the emissions are <0.1% of the total emissions reported. Contribution magnitude is not significant, and no other relevance criteria is fulfilled.

Upstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
No upstream leased assets

Downstream transportation and distribution

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
Included in upstream transportation and distribution emissions. Our ongoing fourth-party logistics (4PL) project to optimize logistics and our transportation network also applies in this case.

Processing of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
Products sold are "ready to use," no processing is needed.

Use of sold products

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
Emissions resulting from the sole use of sold products has not been evaluated. We have, however, evaluated the GHG emission efficiency (kg CO2e/t crop) of farms which have used our products and followed our protocols. See “Other (downstream)”.

End of life treatment of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
Sold products are seeds and plant protection products. They are used by farmers as part of the farming process. They require no end-of-life treatment. Waste from package materials is frequently recycled, and fulfills none of the relevance criteria.

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
No downstream leased assets

Franchises

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation
No franchise

Investments

Evaluation status
Not evaluated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation

Other (upstream)

Evaluation status
Please select

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Explanation

Other (downstream)

Evaluation status
Relevant, calculated

Metric tonnes CO2e

Emissions calculation methodology
We calculate the percentage increase in GHG emission efficiency at farm level (i.e. at customers' farms). We do this by monitoring a network of reference farms (which use Syngenta products and protocols) and benchmark farms. GHGs are calculated according to the Cool Farm Tool methodology using available farm data and proxies where farm data is not available. For USA farm data, the calculation methodology is consistent with Field to Market: The Alliance for Sustainable Agriculture. Details on data inputs, methodology, assumptions and limitations can be found on: www.data.syngenta.com

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Explanation
The "Metric tonnes CO2e" field has been left blank because we do not report this as absolute emissions but as increases in GHG emissions efficiency (kg CO2e/t crop). Since the launch of The Good Growth Plan (baseline 2014), we have seen an 8.8% efficiency increase in GHG emissions across our reference farm network.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?
Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.

Row 1

Emissions from biologically sequestered carbon (metric tons CO2)
25000

Comment

C6.10

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

Intensity figure
67.96

Metric numerator (Gross global combined Scope 1 and 2 emissions)
919000

Metric denominator
unit total revenue

Metric denominator: Unit total
13523

Scope 2 figure used
Location-based

% change from previous year
0.7

Direction of change
Decreased

Reason for change
[unit total revenue in USD million]. Reduction partly due to increased revenues which compensated an increase in emissions generated by more production activities

---

Intensity figure
33.14

Metric numerator (Gross global combined Scope 1 and 2 emissions)
919000

Metric denominator
full time equivalent (FTE) employee

Metric denominator: Unit total
27732

Scope 2 figure used
Location-based

% change from previous year
6

Direction of change
Increased

Reason for change
Increase partly due to an increase in emissions generated by increased production

---

C7. Emissions breakdowns

C7.1

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

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	441000	IPCC Fifth Assessment Report (AR5 – 100 year)
Other, please specify (HFCs)	148000	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	222000
Asia Pacific (or JAPA)	54000
Latin America (LATAM)	50000
United Kingdom of Great Britain and Northern Ireland	210000
France	12000
Benelux	9000
Switzerland	8000
Other, please specify (Rest of world)	24000

C7.3

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

By facility

By activity

C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Huddersfield	207000	56.66	-1.75
St Gabriel	151000	30.25	-91.1
Greens Bayou	37000	29.76	-95.17
Nantong	39000	32.09	120.91
Ituiutaba	19000	-18.97	-49.46
St Pierre	6000	49.16	1.39
Enkhuizen	3000	52.7	5.27
Jealotts Hill	2500	51.45	-0.74
Monthey	2500	46.25	6.96
Waterloo NE	5000	41.29	-96.28
De Lier	2500	51.98	4.27
Venado Tuerto	2500	-33.75	-61.97
Kaisten	4500	47.55	8.03
Greensboro	2500	36.07	-79.91
Others	105000		

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Crop protection (chemicals)	457000
Seeds	61000
Mixed	71000

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	457000	<Not Applicable>	Emissions related to our crop protection business unit. Operational control boundaries used.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	156000		314000	
Asia Pacific (or JAPA)	30000		115000	
Latin America (LATAM)	8000		50000	
United Kingdom of Great Britain and Northern Ireland	29000		108000	
Benelux	6000		20000	
Switzerland	93000		364000	
Other, please specify (Rest of world)	8000		45000	

C7.6

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

By facility
By activity

C7.6b

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

Facility	Scope 2 location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
St Gabriel	80000	
Monthey	59000	
Nantong	16000	
Kaisten	26000	
Grangemouth	24000	
Greens Bayou	22000	
Research Triangle Park	11000	
Jealotts Hill	5000	
Greensboro	9000	
Stein	5000	
Omaha	5000	
Phillips	5000	
Waterloo NE	5000	
Slater R&D, IA	5000	
Iksan	5000	
Others	48000	

C7.6c

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

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Crop protection (chemicals)	257000	
Seeds	60000	
Mixed	13000	

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	257000		Emissions related to our crop protection business unit. Operational control boundaries used.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Other (please specify) (Commodity and specialty chemicals)	31	Syngenta purchases a wide variety of commodity and specialty chemicals. Based on a current assessment of our entire carbon footprint, we estimate that 71% of Syngenta's tCO2e come from our Supply Chain direct emissions. Of that 71%, 31% come from the purchase of raw materials such as commodity and specialty chemicals. The calculation methodology is based on spend data (as defined by the GHG Protocol). Syngenta has evaluated all direct and indirect procurement data to complete this exercise.

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	Syngenta does not sell this product
Methane (CH4)	0	Syngenta does not sell this product
Nitrous oxide (N2O)	0	Syngenta does not sell this product
Hydrofluorocarbons (HFC)	0	Syngenta does not sell this product
Perfluorocarbons (PFC)	0	Syngenta does not sell this product
Sulphur hexafluoride (SF6)	0	Syngenta does not sell this product
Nitrogen trifluoride (NF3)	0	Syngenta does not sell this product

C7.9

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

Increased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	23000	Decreased	2.5	Increased use of wood and biomass. Increased use of electricity from renewable origin.
Other emissions reduction activities	2000	Decreased	0.2	Several emission reduction projects, including better efficiency of fleet cars (approx. 2,000 metric tons CO2e)
Divestment		<Not Applicable>		No divestment included in reporting
Acquisitions		<Not Applicable>		No acquisition included in reporting
Mergers		<Not Applicable>		No merger took place in 2018
Change in output	78000	Increased	8.5	Increased activity in some large sites
Change in methodology		<Not Applicable>		No change in methodology
Change in boundary		<Not Applicable>		No change in boundary
Change in physical operating conditions		<Not Applicable>		No change in operating conditions
Unidentified		<Not Applicable>		No other significant changes
Other		<Not Applicable>		No other significant changes

C7.9b

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

Location-based

C8. Energy

C8.1

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

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

C8.2

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

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	56000	1176000	1232000
Consumption of purchased or acquired electricity	<Not Applicable>	199000	439000	638000
Consumption of purchased or acquired heat	<Not Applicable>	0	12000	12000
Consumption of purchased or acquired steam	<Not Applicable>	0	366000	366000
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total energy consumption	<Not Applicable>	255000	1993000	2248000

C-CH8.2a

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	985000
Consumption of purchased or acquired electricity	<Not Applicable>	428000
Consumption of purchased or acquired heat	<Not Applicable>	9000
Consumption of purchased or acquired steam	<Not Applicable>	345000
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	<Not Applicable>
Total energy consumption	<Not Applicable>	1767000

C8.2b

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

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

C8.2c

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

Fuels (excluding feedstocks)
Natural Gas

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
1066000

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
320000

Comment
Detailed consumption is not available

Fuels (excluding feedstocks)
Liquefied Petroleum Gas (LPG)

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
25000

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
25000

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
0

Comment
All consumption is for self-generation of heat. LPG (propane) is used for laboratories, heating of buildings or direct heating of driers.

Fuels (excluding feedstocks)
Diesel

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
23000

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

Comment
Diesel fuel is used for vehicles, heating of building, etc. Detailed consumption is not available.

Fuels (excluding feedstocks)
Fuel Oil Number 2

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
63000

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
63000

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
0

Comment
All consumption is for self-generation of heat. Heavy fuel is used in some of our large chemical sites.

Fuels (excluding feedstocks)
Wood

Heating value
LHV (lower heating value)

Total fuel MWh consumed by the organization
55000

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
55000

MWh fuel consumed for self-generation of steam
0

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration
0

Comment
Wood and biomass are mainly used in corn driers for heat generation.

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Diesel

Emission factor
3.2

Unit
metric tons CO2e per metric ton

Emission factor source
Average value from official sources (suppliers, IEA, DEFRA-UK, ADEME-France, EPA-USA, etc.)

Comment

Fuel Oil Number 2

Emission factor
325

Unit
metric tons CO2e per metric ton

Emission factor source
Average value from official sources (DEFRA-UK, ADEME-France, EPA-USA, etc.)

Comment

Liquefied Petroleum Gas (LPG)

Emission factor
3

Unit
metric tons CO2e per metric ton

Emission factor source
Average value from official sources (DEFRA-UK, ADEME-France, EPA-USA, etc.)

Comment

Natural Gas

Emission factor
0.184

Unit
metric tons CO2e per MWh

Emission factor source
Average value from official sources (suppliers, IEA, DEFRA-UK, ADEME-France, EPA-USA, etc.)

Comment

Wood

Emission factor
1.8

Unit
metric tons CO2e per metric ton

Emission factor source
Average value from official sources (DEFRA-UK, ADEME-France, EPA-USA, etc.)

Comment

C8.2f

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

Basis for applying a low-carbon emission factor
No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type
<Not Applicable>

Region of consumption of low-carbon electricity, heat, steam or cooling
<Not Applicable>

MWh consumed associated with low-carbon electricity, heat, steam or cooling
<Not Applicable>

Emission factor (in units of metric tons CO2e per MWh)
<Not Applicable>

Comment
No market-based Scope 2 figure is reported

C-CH8.3

(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.

Feedstocks
Natural gas

Total consumption
1541

Total consumption unit
million cubic feet

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
53.12

Heating value of feedstock, MWh per consumption unit
307.16

Heating value
Unable to confirm heating value

Comment
No other direct consumption of feedstock

C-CH8.3a

(C-CH8.3a) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	
Natural Gas	
Coal	
Biomass	
Waste	
Fossil fuel (where coal, gas, oil cannot be distinguished)	
Unknown source or unable to disaggregate	100

C9. Additional metrics

C9.1

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

Description
Other, please specify (Soil conservation)

Metric value
3.4

Metric numerator
Million hectares of benefited farmland

Metric denominator (intensity metric only)
-

% change from previous year
10

Direction of change
Increased

Please explain
As part of Syngenta's Good Growth Plan, we have committed to "Rescue more farmland" by improving the fertility of 10 million hectares of farmland on the brink of degradation. One way to prevent carbon from being released from the soil is through conservation agriculture practices such as minimum soil disturbance, permanent soil cover (e.g., crop residues or cover crops), and crop rotation. Since 2014, the number of benefited hectares is 10.8 million.

Description
Other, please specify (Land productivity)

Metric value
13

Metric numerator

Percentage increase in land productivity*

Metric denominator (intensity metric only)
-

% change from previous year

Direction of change
<Not Applicable>

Please explain
The UN Food and Agriculture Organization recognizes that sustainable intensification strategies, which conserve and restore resources, are important in addressing climate change. More efficient resource use supports both adaptation to and mitigation of the effects of climate change by improving farm productivity and incomes while reducing emissions per unit of output. Since 2014, land productivity increase on reference farms is 13%. * Since baseline 2014

Description
Other, please specify (GHG emission efficiency)

Metric value
8.8

Metric numerator
Percentage increase in GHG emission efficiency*

Metric denominator (intensity metric only)
-

% change from previous year

Direction of change
<Not Applicable>

Please explain
We analyze GHG footprint from our farm network. We have partnered with two organizations, Field to Market and the Cool Farm Alliance, to bring our growers online tools that calculate GHG footprints from data they are already collecting. Since 2014, we have seen an 8.8% efficiency increase in GHG emissions across our reference farm network. * Since baseline 2014

Description
Waste

Metric value
189000

Metric numerator
Tonnes of hazardous waste

Metric denominator (intensity metric only)
-

% change from previous year
4

Direction of change
Increased

Please explain
In 2018, higher production levels increased hazardous waste generation at Syngenta sites by 4% to 189,000 tonnes – of which about 45% were recycled or reused

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Description
Waste

Metric value
149000

Metric numerator
Tonnes of non-hazardous waste

Metric denominator (intensity metric only)
-

% change from previous year
25

Direction of change
Increased

Please explain
The amounts of non-hazardous waste generated in our operations also increased in 2018. Contributing factors included increased seed production and debris created by construction and reconstruction work following hurricane damage at sites in the USA.

Description
Energy usage

Metric value
8966

Metric numerator
TJ

Metric denominator (intensity metric only)
-

% change from previous year
6

Direction of change
Increased

Please explain
Due to increase in production

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

Output product
Specialty chemicals

Production (metric tons)
174000

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
2.53

Electricity intensity (MWh per metric ton of product)
2.09

Steam intensity (MWh per metric ton of product)
1.96

Steam/ heat recovered (MWh per metric ton of product)
0

Comment
Syngenta produces a variable range of chemicals. The capacity is variable, depending on the product mix, hence cannot be reported.

C-CH9.6

(C-CH9.6) Disclose your organization's low-carbon investments for chemical production activities.

Investment start date
January 1 2018

Investment end date
December 31 2018

Investment area
R&D

Technology area
Product redesign

Investment maturity
Large scale commercial deployment

Investment figure
200000000

Low-carbon investment percentage
0 - 20%

Please explain
Our products, combined with improved input technologies and better management practices, are strengthening agriculture against both the causes and the effects of climate change. We do this through increased investment in R&D of drought-tolerant and/or resource-efficient plants and production patterns. For example, AGRISURE ARTESIAN in corn delivers improved yields on dryland and in land with limited irrigation or prone to drought stress.

Investment start date
January 1 2018

Investment end date
December 31 2018

Investment area
Property, plant and equipment

Technology area
Waste heat recovery

Investment maturity
Large scale commercial deployment

Investment figure

Low-carbon investment percentage
0 - 20%

Please explain
Syngenta uses waste heat recovery in a variety of ways in production facilities across our global portfolio. One example is the waste heat recovery boiler at our Saint Gabriel facility in the USA, which recovers over 1 TJ of waste heat per annum. Costs are not tracked for waste heat recovery individually as this is integrated into overall project costs. Waste heat recovery is one example of how we save energy, carbon and manufacture in a more sustainable manner. Syngenta has been conducting waste heat recovery projects since its inception.

C10. Verification

C10.1

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

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

C10.1a

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

Scope
Scope 1

Verification or assurance cycle in place
Biennial process

Status in the current reporting year
No verification or assurance of current reporting year

Type of verification or assurance
Limited assurance

Attach the statement
Syngenta-Sustainable-Business-Report-2017.pdf

Page/ section reference
Assurance was conducted in 2017 and will be conducted again in 2019. Sustainable Business Report 2017, page 45 (https://www.syngenta.com/site-services/sustainable-business-report-2017)

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
0

Scope
Scope 2 location-based

Verification or assurance cycle in place
Biennial process

Status in the current reporting year
No verification or assurance of current reporting year

Type of verification or assurance
Limited assurance

Attach the statement
Syngenta-Sustainable-Business-Report-2017.pdf

Page/ section reference
Assurance was conducted in 2017 and will be conducted again in 2019. Sustainable Business Report 2017, page 45 (https://www.syngenta.com/site-services/sustainable-business-report-2017)

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
0

C10.1b

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

Scope
Scope 3- all relevant categories

Verification or assurance cycle in place
Biennial process

Status in the current reporting year
No verification or assurance of current reporting year

Attach the statement
Syngenta-Sustainable-Business-Report-2017.pdf

Page/section reference
Assurance was conducted in 2017 and will be conducted again in 2019. Sustainable Business Report 2017, page 45 (https://www.syngenta.com/site-services/sustainable-business-report-2017)

Relevant standard
ISAE3000

C10.2

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

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C5. Emissions performance	Year on year emissions intensity figure	ISAE3000	Assurance was conducted in 2017 and will be conducted again in 2019.
C9. Additional metrics	Other, please specify (waste, energy, water)	ISAE3000	Assurance was conducted in 2017 and will be conducted again in 2019.
C9. Additional metrics	Other, please specify (soil conservation)	ISAE3000	Assurance was conducted in 2017 and will be conducted again in 2019.
C9. Additional metrics	Other, please specify (land productivity)	ISAE3000	Assurance was conducted in 2017 and will be conducted again in 2019.
C9. Additional metrics	Other, please specify (GHG emissions efficiency)	ISAE3000	Assurance was conducted in 2017 and will be conducted again in 2019.

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

EU ETS

Switzerland carbon tax

Switzerland ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

EU ETS

% of Scope 1 emissions covered by the ETS
23

Period start date
January 1 2018

Period end date
December 31 2018

Allowances allocated
47613

Allowances purchased
38373

Verified emissions in metric tons CO2e
60179

Details of ownership
Facilities we own and operate

Comment

Switzerland ETS

% of Scope 1 emissions covered by the ETS
10

Period start date
January 1 2018

Period end date
December 31 2018

Allowances allocated
16254

Allowances purchased
14692

Verified emissions in metric tons CO2e
21016

Details of ownership
Facilities we own and operate

Comment
Some sites with a "Target Agreement" are not directly included in the ETS.

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

Switzerland carbon tax

Period start date
January 1 2018

Period end date
December 31 2018

% of emissions covered by tax
1

Total cost of tax paid

Comment
Cost unknown, quantity is negligible (<1%)

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

Our Huddersfield site in the UK participates in the EU ETS, and our Kaisten site in Switzerland participates in the Swiss ETS.

In Huddersfield, our strategy has been to retain our surplus of EU carbon allowances to compensate for any shortfalls that could occur in Phase III (2013-2020). In 2016 and 2017, Syngenta did not need to purchase allowances as our emissions were below the granted allocation. In 2018, due to the Brexit uncertainty, a decision was taken to sell our remaining bank of 32,628 EU allowances and purchase 38,373 CERs.

In Kaisten, our strategy is to implement initiatives that increase energy efficiency, consequently reducing GHG emissions. Thanks to this strategy, we expect the site to stay within the allocated allowances for the period 2013-2020. If this would prove impossible, the site would then buy additional emission rights at periodic auctions in order to balance its production growth. The site purchased 16,039 emission rights in 2016, and 5,529 emissions rights in 2017. In 2018, the site bid a higher price and purchased 14,692 emission rights.

C11.2

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

No

C11.3

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

No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

C12.1a

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

Type of engagement
Compliance & onboarding

Details of engagement
Other, please specify (Climate change is integrated into supplier evaluation processes)

% of suppliers by number
94

% total procurement spend (direct and indirect)

% Scope 3 emissions as reported in C6.5
0

Rationale for the coverage of your engagement
The percentage indicated under "% of suppliers by number" reflects the percentage of our Chemical suppliers who are part of our Sustainable Sourcing program. We are also engaging with our Packaging (50%) and Formulation, fill and pack (86%) suppliers. The categories listed above have been identified as the high impact/risk categories following a risk assessment across procurement categories, and are therefore the current focus of our program. Additional categories will be added over time. Our Sustainable Sourcing program requires suppliers to undertake an EcoVadis sustainability assessment as a minimum requirement and in many cases either a Together for Sustainability (TfS) audit or a Syngenta audit. The percentage provided includes Chemical/Formulation, fill and pack suppliers classified as high or medium risk and all Packaging suppliers that have undergone a Syngenta audit, TfS audit or EcoVadis assessment in the last 3 years.

Impact of engagement, including measures of success
In 2018, 94% (2017: 90%, 2016: 67%) of our Chemical suppliers, 50% of our Packaging suppliers and 86% of our Formulation, fill and pack suppliers were included in our Supplier Sustainability program, in which suppliers are covered by either internal HSE audits, TfS supplier audit or an EcoVadis assessment.

Comment
Supplier audits and assessments include evaluation of suppliers' actions to track and reduce GHG emissions. GHGs associated with site processes and activities, transport fuel used both on and offsite, and other sources are expected to be monitored and routinely assessed. Any gaps are highlighted in the form of findings, and our procurement teams follow up with their suppliers to ensure that relevant corrective actions are developed and then progress is made. We have a robust process in place to ensure that suppliers undergo relevant audits and assessments and that progress is monitored throughout all levels of the organization. Buyers are required to undergo training on the process, sustainability and how to engage with suppliers. Percentage of Scope 3 emissions, as reported in C6.5, is 0 because this was not included in 2018 but will be reported moving forward.

Type of engagement
Information collection (understanding supplier behavior)

Details of engagement
Other, please specify (Supplier spend)

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

% Scope 3 emissions as reported in C6.5
0

Rationale for the coverage of your engagement
Supplier spend/volume data is used to determine environmental impact, including supplier GHG footprint. It is calculated using LCA and industry data following the Greenhouse Gas Protocol, Technical Guidance for Calculating Scope 3 emissions.

Impact of engagement, including measures of success
Baseline data has been calculated across all categories/products purchased. This has generated a detailed overview of overall GHG impact by sector/product.

Comment
Percentage of Scope 3 emissions, as reported in C6.5, is 0 because this was not included in 2018 but will be reported moving forward.

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Other, please specify (Creating synergies with partners)

% of suppliers by number

% total procurement spend (direct and indirect)

% Scope 3 emissions as reported in C6.5
96

Rationale for the coverage of your engagement
We are also committed to long-term CO2 intensity reduction for all our land, sea and air distribution logistics. We are currently implementing a global program with partners who integrate and coordinate all logistics operations across supply chains to optimize processes and gain economies of scale. This will improve energy and cost efficiency, compliance and CO2 emissions.

Impact of engagement, including measures of success
Better logistics coordination, route planning, tracking and monitoring have begun to reduce both operating costs and CO2 emissions.

Comment

C12.1b

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

Type of engagement
Collaboration & innovation

Details of engagement
Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

% Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
Helping farmers with soil conservation: Responsible management of soil makes agriculture more resilient to the causes and effects of climate change. But when soil is degraded or disturbed, carbon is released back into the atmosphere and becomes a greenhouse gas. As part of Syngenta's Good Growth Plan, we have committed to "Rescue more farmland" by improving the fertility of 10 million hectares of farmland on the brink of degradation. We support commercial activities that promote soil health and fertility, while helping it to reduce, capture and store carbon more effectively. We help farmers reduce their carbon footprint and adapt to climate change. We are actively promoting the message with farmers that conservation agriculture – based on minimum soil disturbance, crop rotation and permanent ground cover – is a viable element of climate-smart agriculture. It helps reduce emissions, prevents land degradation, improves food security and increases farm and community resilience.

Impact of engagement, including measures of success
Five years into the soil commitment, we have implemented 197 projects in 41 countries, benefiting a total of 10.8 million hectares. In 2018, we increased the pace significantly, adding 3.4 million hectares as we optimize our programs around the globe. The integration of soil conservation practices into our crop protocols and training is gaining momentum, helping us to differentiate our commercial offer as well as our seed multiplication. Over 70% of benefited hectares are making use of our products and services.

Type of engagement
Collaboration & innovation

Details of engagement
Other – please provide information in column 5

% of customers by number

% Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
Helping farmers improve land productivity: The UN Food and Agriculture Organization recognizes that sustainable intensification strategies, which conserve and restore resources, are important in addressing climate change. More efficient resource use supports both adaptation to and mitigation of the effects of climate change by improving farm productivity and incomes while reducing emissions per unit of product. As part of Syngenta's Good Growth Plan, we have committed to "Make crops more efficient" by increasing the average productivity of the world's major crops by 20% without using more land, water or inputs.

Impact of engagement, including measures of success
Across all our reference farms in 2018, the average land productivity increase over the 2014 baseline was 13%.

Type of engagement
Collaboration & innovation

Details of engagement
Other – please provide information in column 5

% of customers by number

% Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
Helping farmers increase GHG emission efficiency: Syngenta is a member of the Cool Farm Alliance and Field to Market. These organizations provide science-based sustainable agriculture assessment tools to track GHG emissions on the farm and identify improvement opportunities through climate-smart agricultural practices, such as cover crops and reduced tillage. For example, we have integrated Field to Market's sustainability metrics into our farm management software Land.db to provide a seamless solution to farmers in the USA. We use results to engage with farmers to raise awareness, benchmark performance and inform decision making.

Impact of engagement, including measures of success
We used the Cool Farm Tool to quantify GHG emissions on The Good Growth Plan reference farm network. This enables the support of customers' GHG accounting, with evidence that their footprints are reducing as they use inputs more efficiently. Since the launch of The Good Growth Plan, we have seen an 8.8% efficiency increase in GHG emissions across our reference farm network.

C12.1c

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

Syngenta has various engagements with players in the value chain. For example:

Syngenta is a member of the Cool Farm Alliance and Field to Market. These organizations provide science-based sustainable agriculture assessment tools to track GHG emissions on the farm and identify improvement opportunities through climate-smart agricultural practices. The results of the integration of Field to Market's sustainability metrics into our farm management software Land.db in the USA are used to engage with farmers (as described in the previous answer). These results are also used to engage with input retailers and distributors, food value chain partners and other commercial stakeholders to raise awareness, benchmark performance and inform decision-making. Data confidentiality, auditability and transparency are leading principles in our farmer-focused, data-driven GHG initiatives and fundamental to building trust with our partners and stakeholders.

The development of our NUCOFFEE® Sustentia project in Brazil demonstrates the evolving benefits for growers and value chain partners. When we launched it in 2006, with UTZ as our value chain certification partner, the project was focused on crop quality. Later, we were able to help participating farmers improve their productivity and efficient use of inputs such as crop protection and nutrients. Now we're working with them to better understand the drivers of sustainability improvements such as GHG reduction. As we collect more data through The Good Growth Plan – and integrate it with other inputs such as weather data – we are seeing a step change in the spectrum of insights and benefits that we bring to growers and the value chain.

We have also joined value chain partners including Unilever, Olam, Barry Callebaut and Rabobank to launch the CSA100 initiative. This aims to unite 100 leading food value chain companies in promoting climate-smart agriculture that increases agricultural productivity and incomes sustainably, builds resilience to climate change and reduces greenhouse gas emissions.

In Vietnam, we are working to improve soil management on coffee plantations with two value chain partners – the Louis Dreyfus Company and Jacobs Douwe Egberts – and IDH The Sustainable Trade Initiative. Using 30 demonstration plots as well as direct action on farms, the three-year project aims to develop and promote sustainable landscapes that reduce soil degradation, combat deforestation, conserve irrigation water and improve climate change resilience. We aim to train some 2,500 farmers and agronomists on sustainability issues, eliminating overuse and unsafe use of pesticides. We are also working with local authorities to develop a model that can be scaled up further. The next phase of the partnership will extend the model into three more Highlands provinces, benefiting a total of 5,500 farmers by 2021.

C12.3

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

Direct engagement with policy makers
Trade associations
Funding research organizations
Other

C12.3a

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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Adaptation or resilience	Support	We work with leading organizations (including the World Business Council for Sustainable Development, The Nature Conservancy, the Global Alliance for Climate Smart Agriculture, and the World Economic Forum) to bring our voice to relevant policy arenas on sustainable agriculture. In particular, we want to advance technologies and practices that help farmers develop more climate-resilient food systems without increasing greenhouse emissions.	We support policies that promote climate-resilient food systems
Adaptation or resilience	Support	We are particularly active in our engagements on agricultural productivity, resource efficiency and ecosystem resilience, essential for the well-being of rural communities and smallholder farmers. Through the World Business Council for Sustainable Development and our industry association, CropLife International, we bring our voice to international organizations including the United Nations Framework Convention on Climate Change (UNFCCC) and the Food and Agriculture Organization (FAO).	We support policies that improve agricultural productivity, resource efficiency and ecosystem resilience. For example, in 2018, we supported CropLife International in its submission to the UNFCCC Koronivia road map under the Koronivia joint work on agriculture. Through our "Landscape connectivity: a call to action" publication, we also encouraged businesses and other stakeholders to contribute to the creation of ecological corridors using marginal lands.
Adaptation or resilience	Support	Syngenta is a member of WEF's Alliance of CEO Climate Leaders as well as of the World Business Council for Sustainable Development's CSA 100 initiative. The Alliance of CEO Climate Leaders is a global network of chief executive officers who see the business benefits of bold and proactive action to ensure a smooth transition to a low-carbon and climate-resilient economy. The CSA 100 Initiative aims to bring together 100 leading food value chain companies to address the climate change challenges across the three pillars of climate-smart agriculture (productivity, resilience and mitigation).	Syngenta wishes to raise attention of the role that agriculture plays in mitigating the effect of climate change and helping rural communities to adapt. We believe that improved agriculture technology and practices can play a key role in tacking climate change. In advance of UNFCCC COP24 in Poland, the Alliance of CEO Climate Leaders urged world leaders, heads of government and the international community to deliver an enhanced, ambitious action plan to tackle climate change. In support of CSA 100, Syngenta launched a public policy position on climate change in 2018. The position includes our commitment and engagements on climate change both in our downstream activities and in our operations and supply chains.
Adaptation or resilience	Support	Syngenta has been the private-sector partner of the United Nations Convention to Combat Desertification (UNCCD) for five years, together with the World Business Council for Sustainable Development (WBCSD). We have supported UNCCD with managing and running the Soil Leadership Academy (SLA), which is designed to strengthen (inter)national policy processes and frameworks by inspiring key policy and decision makers to take practical actions to achieve SDG 15 and its associated Target 15.3, that requires states to "strive to achieve a land-degradation neutral world." The partnership with UNCCD is a move to collective action to address the global challenge of protecting and improving soil health at scale. The Academy is helping to bridge the knowledge gap among policy makers on the importance of fertile soils to sustain current and future food production.	We support policies that protect and improve soil health at scale. Soil is a major storage area for carbon in our ecosystem. Together with the UNCCD and the WBCSD, we have organized over 30 Soil Leadership Academy workshops to raise awareness about soil conservation among UNCCD member nations, civil society organizations and academia. With the WBCSD, we have published a report on the business case for investment in soil health, targeting governments, value chains, farmers and land users. It was launched on World Soil Day in December 2018.

C12.3b

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

Yes

C12.3c

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

Trade association

CropLife International

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Farmers today need to adapt to steadily growing climate change impacts. They face soil degradation and increasing numbers of insects and pests that are adapting to warmer climates. These issues are raising food security concerns against a background of increased pressure on agricultural productivity. To adapt to climate change, farmers need better tools that will help them meet the food security challenge, ensure resilient agriculture systems, and strong rural economies. Increased investment in research, development and scientific capacity is key to finding new sustainable solutions to help farmers maintain, enhance and evolve their production systems. Over the last 150 years, the planet has lost half of its fertile soils, partly due to traditional tillage practices, which result in soil erosion and greenhouse gases. Sustainable soil management is crucial to preserve this natural resource and address land degradation. Examples include planting cover crops, rotating crops, and adopting climate-smart agriculture practices like no-till farming. Combining no-till to control weeds and biotech crops has helped to reduce erosion, thus preserving biodiversity and improving moisture retention in the soil. Healthy soils can also store more carbon, increasing carbon sequestration, which in turn helps to reduce emissions and limits global warming; 10% of the world's carbon dioxide is stored in soils and tilling releases it into the atmosphere. Healthy soils also generate socioeconomic benefits as farmers' livelihoods directly depend on their soil. No-till farming also helps to retain soil moisture by up to 24% (https://croplife.org/news/water-agricultures-most-precious-resource/). Used in combination with biotech crops, it prevents that weeds compete for water with crops. Biotechnology can also be used to breed drought- (i.e. maize) or salt- (i.e. rice) tolerant crops. The Water Efficient Maize in Africa project combines both drought and insect resistance, leading to crops that can also deal with increasing insect pressures caused by climate change. This could be a vital tool in combatting the Fall Armyworm outbreak.

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

Syngenta engages with CropLife International to promote climate-smart agriculture and provides case studies on how technologies along with the right agronomic practices can and are contributing to climate change mitigation and adaptation.

C12.3d

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

Yes

C12.3e

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

We work with leading global organizations to bring our voice to relevant arenas on sustainable agriculture and climate change. Among our partners are the World Business Council for Sustainable Development, the Global Alliance for Climate Smart Agriculture, and the World Economic Forum, all leading organizations.

Syngenta is a member of the Global Alliance for Climate Smart Agriculture (GACSA). The United Nations' Food and Agriculture Organization (FAO) spearheads climate-smart agriculture through the GACSA. The GACSA is a voluntary multi-stakeholder platform bringing together governments, farmers, scientists, businesses, and civil society, as well as regional unions and international organizations. It facilitates forums to discuss and learn about solutions and policy mechanisms to combat climate change in the agricultural sector. GACSA's vision is to improve food security, nutrition and resilience in the face of climate change. We are part of the Strategic Committee and Knowledge Action Group working in conjunction with other industry bodies and NGOs to promote research and development into technologies, practices, and policy approaches for climate-smart agriculture.

Further, we have expressed our support for the recommendations of the industry-led Task Force on Climate-related Financial Disclosure (TCFD), convened by the Financial Stability Board. When recommendations are implemented, companies will be encouraged to disclose the impacts of climate change on their business activities. Investors and financial institutions will have a common set of data and information to enable dialogue on the implications of climate change for a specific company and to support investment decisions. The information will highlight the risks posed by the physical impacts of climate change, the implications of relevant policies, and liability risks that may arise from inaction – providing greater visibility on how companies are managing these risks. The information will also indicate the business opportunities generated by supporting a low-carbon economy. We are currently conducting a gap assessment on internal practices and external disclosure according to the TCFD recommendations.

C12.3f

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

We coordinate and channel all our global policy engagements on climate change, direct and indirect, through our global Business Sustainability function to ensure consistency of our global engagements with our climate change strategy. Our regional and country level policy engagements on climate change are carried out through our respective regional and country offices in close association with the global Business Sustainability team, to ensure that these policy engagements are scoped and carried out in line with our global position on the topic.

C12.4

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

Publication
In voluntary sustainability report

Status
Complete

Attach the document
Syngenta-Sustainable-Business-Report-2018.pdf

Page/Section reference
Sustainable Business Report 2018, pages: 20, 23, 40, 54

Content elements
Strategy
Emissions figures
Other metrics

Comment

Publication
In voluntary communications

Status
Complete

Attach the document
www.syngenta.com - Climate Change web.pdf
climate-change-policy-position.pdf

Page/Section reference
On our website, we provide information about our position on climate change: https://www.syngenta.com/how-we-do-it/corporate-responsibility/climate-change

Content elements
Strategy
Risks & opportunities
Other, please specify (Engagements)

Comment

C14. Signoff

C-FI

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

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	CEO	Chief Executive Officer (CEO)

Submit your response

In which language are you submitting your response?
English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

Please confirm below

I have read and accept the applicable Terms