

C0. Introduction

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C0.1

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

Celanese Corporation is a global technology leader in the production of differentiated chemistry solutions and specialty materials used in most major industries and consumer applications. Our two complementary business cores, Acetyl Chain and Materials Solutions, use the full breadth of Celanese’s global chemistry, technology and business expertise to create value for our customers and the corporation. As we partner with our customers to solve their most critical business needs, we strive to make a positive impact on our communities and the world through The Celanese Foundation. Based in Dallas, Celanese employs approximately 7,600 employees worldwide and had 2020 net sales of \$5.7 billion. For more information about Celanese and our product offerings, visit [www.celanese.com](http://www.celanese.com) or our blog at [www.celaneseblog.com](http://www.celaneseblog.com).

C0.2

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

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

C0.3

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

- Belgium
- Brazil
- Canada
- China
- Germany
- India
- Italy
- Mexico
- Netherlands
- Singapore
- Sweden
- Switzerland
- United Kingdom of Great Britain and Northern Ireland
- United States of America

C0.4

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

USD

C0.5

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

Operational control

C-CH0.7

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

**Row 1**

**Bulk organic chemicals**

- Methanol
- Polymers

**Bulk inorganic chemicals**

Please select

**Other chemicals**

- Specialty organic chemicals

**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
Chief Executive Officer (CEO)	The Environmental, Social and Governance (ESG) Council was established by the Celanese CEO in 2019, and the ESG Council reports regularly to the CEO. At least quarterly an update is provided to the board on selected ESG topics.
Other C-Suite Officer	The ESG Council is led by our SVP and General Counsel and is made up of senior leaders from key ESG-related functional and business areas with special representation from our regional leadership. The purpose of the ESG Council is to develop a strategy and framework for ongoing communications to key stakeholders on ESG topics material to the company's long-term success, including climate related issues. ESG recommendations are reviewed for approval by the Executive Leadership Team (ELT) prior to going to the Board for review. The ELT is led by the CEO and consists of a small group of the company's most senior executive leaders.
Other, please specify (Full Board of Directors)	In the spring of 2021 the Celanese Board of Directors enhanced and clarified its oversight of our priority ESG issues reviewing each of our identified priority issues and aligning a specific committee or the full Board to each. The full Board now has oversight of Celanese Climate Policy and Strategy. As noted above, the Board receives reports from the EHSQPP Committee on the development, implementation and monitoring of greenhouse gas reduction and sustainability-related investments into the Company's manufacturing and production processes.
Board-level committee	The Environmental, Health, Safety, Quality and Public Policy Committee (EHSQPP) of the Celanese Board of Directors ("Board") oversees the development, implementation and monitoring of greenhouse gas reduction and sustainability-related investments into the Company's manufacturing and production processes. The EHSQPP Committee meets and reports to the Board at least quarterly.

**C1.1b**

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> <li>Reviewing and guiding strategy</li> <li>Setting performance objectives</li> <li>Monitoring implementation and performance of objectives</li> <li>Overseeing major capital expenditures, acquisitions and divestitures</li> <li>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</li> </ul>	<Not Applicable>	The Environmental, Health, Safety, Quality and Public Policy Committee (EHSQPP) Committee of the Celanese Board is briefed regularly on significant issues related to the environment, including climate. ESG Executive Sponsor shares progress of the ESG Committee work, SASB Chemical Standard implementation, and metrics and reporting associated with the ESG council. The ESG Council meets on a monthly basis. The ESG Working Group on Climate currently meets regularly.

**C1.2**

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Sustainability committee	<Not Applicable >	Other, please specify (The Environmental, Social and Governance (ESG) Council was established by the Celanese CEO in 2019, and the ESG Council reports to the CEO. )	<Not Applicable>	Quarterly
Other committee, please specify (The Executive Leadership Team (ELT), that reports to the CEO, has responsibility for climate related issues. )	<Not Applicable >	Both assessing and managing climate-related risks and opportunities <i>The ELT is led by the CEO and consists of a small group of the company's most senior executive leaders.</i>	<Not Applicable>	Quarterly
Other, please specify (Other C-Suite officer, SVP and GC)	<Not Applicable >	Other, please specify (The Environmental, Social and Governance (ESG) Council, chaired by the SVP and General Counsel, Manages and drives all ESG related issues, including climate.)	<Not Applicable>	Quarterly
Other, please specify (The Climate Working Group)	<Not Applicable >	Other, please specify (VP, Procurement & VP, Global Public Policy Co-Chair the Climate Working Group. Develops climate approach for the company and makes recommendations to the ESG on all climate related issues)	<Not Applicable>	Quarterly
Other, please specify (Sr. Principal Engineer, Environmental Manufacturing: )	<Not Applicable >	Other, please specify (Air engineer specializing in EU ETS related compliance programs, permitting, and BREF regulatory requirements.)	<Not Applicable>	Quarterly
Other, please specify (ESG Climate-specific working group )	<Not Applicable >	Other, please specify (ESG subcommittee group focusing on climate and responsible for implementing a strategy to reduce carbon footprint. members are •VP, Procurement •VP, Public Policy •Sr. Dir. Process Tech. •Sr. Mgr, Projects •Dir. Env., EHS •Dir., Gov. Relations )	<Not Applicable>	Quarterly

**C1.2a**

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

Under our new structure, the Celanese Board is responsible for climate policy and strategy, and the [Committee on Environmental, Health, Safety, Quality and Public Policy \(EHSQPP\)](#), oversees greenhouse gas reduction and sustainability in manufacturing which includes climate policy and strategy. The EHSQPP Committee reports to the Board at least quarterly on Environmental, Social and Governance (ESG) topics including climate related issues as they arise.

An ESG Council (the Sustainability Committee) was established in 2019 and is led by our SVP and General Counsel and made up of a cross-functional team of senior leaders whose purpose is to develop a strategy and framework for ongoing communications to key stakeholders on ESG topics material to the company's long-term success. Where appropriate, ESG recommendations are reviewed for approval by the Executive Leadership Team (ELT) prior to going to the Board for review. The ELT is led by the CEO and consists of a small group of the company's most senior executive leaders.

An ESG Council Climate Working Group, focusing specifically on climate related issues has been established and meets biweekly to develop and implement a comprehensive strategy to reduce Celanese's carbon footprint. The ESG Council Climate Working Group is co-chaired by our VP, Procurement and VP, Global Public Policy.

**C1.3**

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

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

**C1.3a**

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Energy manager	Non-monetary reward	Efficiency target Behavior change related indicator	Company recognition through company-sponsored, trade group, and agency awards (e.g., Celanese "Rock" Awards, ACC and CEFIC recognition, Energy Star Partner of the Year Awards, U.S. Department of Energy BPP Awards), internal peer nominations, and through the Celanese's intranet/blog. In addition, employees are driving and developing behavioral improvement projects (BIPs) on energy reduction.
Environmental, health, and safety manager	Non-monetary reward	Efficiency target Behavior change related indicator	Company recognition through company-sponsored, trade group, and agency awards (e.g., Celanese "Rock" Awards, ACC and CEFIC recognition, Energy Star Partner of the Year Awards, U.S. Department of Energy BPP Awards), internal peer nominations, and through the Celanese's intranet/blog. In addition, employees are driving and developing behavioral improvement projects (BIPs) on energy reduction.
Facilities manager	Non-monetary reward	Efficiency target Behavior change related indicator	Company recognition through company-sponsored, trade group, and agency awards (e.g., Celanese "Rock" Awards, ACC and CEFIC recognition, Energy Star Partner of the Year Awards, U.S. Department of Energy BPP Awards), internal peer nominations, and through the Celanese's intranet/blog. In addition, employees are driving and developing behavioral improvement projects (BIPs) on energy reduction.
All employees	Monetary reward	Efficiency target Behavior change related indicator	Internal performance reward based on specific project performance. Rewards can be given to employees through performance bonuses or company internal awards.
All employees	Non-monetary reward	Efficiency target Behavior change related indicator	Company recognition through company-sponsored, trade group, and agency awards (e.g., Celanese "Rock" Awards, ACC and CEFIC recognition, Energy Star Partner of the Year Awards, U.S. Department of Energy BPP Awards), internal peer nominations, and through the Celanese's intranet/blog. In addition, employees are driving and developing behavioral improvement projects (BIPs) on energy reduction.
Chief Executive Officer (CEO)	Monetary reward	Other (please specify) (Corporate stewardship target)	A portion of the annual performance bonus of the CEO is linked to the company's stewardship/environment metrics that measure the number of serious and major chemical releases into environment, including climate change emissions such as methane, CO2.
Chief Financial Officer (CFO)	Monetary reward	Other (please specify) (Corporate stewardship target)	A portion of the annual performance bonus of the CFO is linked to the company's stewardship/environment metrics that measure the number of serious and major chemical releases into environment, including climate change emissions such as methane, CO2.
Other, please specify (C-Suite Officer)	Monetary reward	Other (please specify) (Corporate stewardship target)	A portion of the annual performance bonus of the C-Suite Officers is linked to the company's stewardship/environment metrics that measure the number of serious and major chemical releases into environment, including climate change emissions such as methane, CO2.

**C2. Risks and opportunities**

**C2.1**

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

Yes

**C2.1a**

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

	From (years)	To (years)	Comment
Short-term	0	3	
Medium-term	3	10	
Long-term	10	30	

**C2.1b**

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

Cost increase or profit loss exceeds \$5MM for all risks, including climate related risks. Some of these indicators would include Emission Trading Scheme (ETS) carbon allowances yearly values.

**C2.2**

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

**Value chain stage(s) covered**

Direct operations  
Upstream  
Downstream

**Risk management process**

A specific climate-related risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term  
Medium-term  
Long-term

**Description of process**

Effective Risk Management is critical to Celanese's ability to achieve its strategy and ESG (Environmental, Social, Governance) goals. Risk management is considered a strategic activity within the Company and responsibility for managing risk rests with executive management while the committees of the Board and the Board as a whole participate in risk oversight. The Company holds annual risk workshops with the leadership teams of key functions to assess the current risk universe applicable to those functions. These workshops take into account Celanese specific risks, external risks as well as macro trends. Once risks are identified, the leadership team assigns risk owners who develop and execute adequate remediation plans. Risk and remediation status are tracked continually throughout the year, with quarterly certifications by the executive leadership team for major risks. Historically, climate & water risks have been discussed with the Manufacturing leadership team. Recognizing the increased importance of ESG risks and related disclosures, the Company will be adding a new workshop starting in 2021 to focus specifically on ESG related risks. Our cross-functional ESG Council will be participating in the workshop, allowing for a more in-depth discussion of ESG risks and their interdependencies

**C2.2a**

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Celanese, as part of our risk process, engages personnel in all regions where the company has a presence to be aware of regulatory and legislative requirements that may impact the company (e.g., ETS schemes in Asia, Carbon Boarder Adjustment Mechanism, U.S. Tax Credits via 45Q program). For example, if Celanese builds a new plant or makes changes at existing European plants, Celanese checks the ETS Directive and relevant transposition into national law to determine applicability so we can estimate future CO2e emissions and energy consumption, estimated costs to compensate emissions by allowances and to schedule personnel to manage the administrative (e.g. preparation of annual CO2 emissions reports due to the ETS Directive or preparation of monitoring reports or applications for free allowances).
Emerging regulation	Relevant, always included	Celanese is highly engaged with regional trade group organizations such as American Chemistry Council and Cefic to understand impacts to our organization of climate-related risks. In addition, Celanese purchased the EU Issue Tracker which is a European newsletter. Whenever the EU Commission makes a proposal for a new directive or prepares a draft to amend a directive. EU issue tracker sends out an email to the European Environmental Leader of Celanese to make her aware. The EU Environmental Leader reviews the newsletter for relevance followed by an impact assessment for the ETS covered sites. For example, a detailed impact assessment was done for the different reduction options of the benchmarks for heat, fuel and process emissions if Celanese would need to purchase allowances at the stock market. Beside the newsletter the EU Environmental Leader participates in trade group meetings like VCI and Cefic for additional information and a better understanding by discussing upcoming legislation with other member companies.
Technology	Relevant, always included	The main risks associated with technological improvements that support the transition to a lower-carbon, energy-efficient system is the security of renewable energy supplies and the timeframe in which operators must retrofit facilities to renewable energies. Another risk is the technical feasibility with renewable energies for large-scale facilities – very often new technologies only work on the laboratory scale and need more time to be developed for large-scale. To these points, Celanese has implemented a cogeneration facility at our Lanaken Belgium plant in 2020. Additionally, we are evaluated the use of solar power at our Clear Lake Plant and have executed a contract to begin procurement of renewable power beginning in 2021
Legal	Relevant, always included	Celanese recognizes the importance of legal risks associated with climate change. As such, Celanese's Senior Vice President and General Counsel, leads the Environmental, Social, and Governance (ESG) Council. Climate-related litigation claims are considered a potential risk as Celanese has the experience that authorities may try to revoke free allowances that they granted in previous years. Given that applications for free allowances need to be certified by an independent third party and the DEHSt (German competent authority) makes the decision for the preliminary number of allowances before they send the national allocation plan to the EU for final decision Celanese does not expect to be faced with a potential revocation of allowances. There is also the potential risk of when an operator has sold the surplus of allowances for a lower price at the stock market and years later the authorities try to revoke the allowances. The operator might be required to buy the allowances at a higher price than sold years ago generating a deficit.
Market	Relevant, always included	Celanese sees a shift in demand for certain products and services. Customers are focused more on products with a low product carbon footprint since they want to reduce their product carbon footprint based on the products they buy as raw materials. Customers ask more for bio-based products than in the past. For example, currently Celanese is evaluating the use of bio-based Methanol to produce Formaldehyde which is an important raw material for our Polyoxymethylene (POM) production as a customer is interested in the application of bio-based POM in the medical sector. Another example is the EPDLA study Celanese participates in to update our LCAs for our dispersions. Also, Celanese has begun conducting LCAs with a third-party for several of our Tier 1 products. Additionally, Celanese through the newly formed ESG Council has implemented the SASB Chemical Standard with reporting to begin in 2021.
Reputation	Relevant, always included	Reputation goes along with market demands. Celanese is aware that we need to provide product carbon footprints to our customers if we want to maintain our reputation. Celanese has begun to see an increase in the number of Life Cycle Assessment requests and has therefore begun to act upon several of these requests.
Acute physical	Relevant, always included	Celanese experienced acute physical risks globally through droughts in Europe, (e.g., Europe in 2018 where the low water level in the river Main at our the Frankfurt site affected transport), extreme temperatures (e.g., record temperatures at many sites and record lows in Gulf Coast region in U.S.), and record number of hurricanes impacting U.S. mainland. These events have had a direct impact on our production.
Chronic physical	Relevant, always included	In Europe Celanese expects higher temperatures than in the past with the consequence that water levels in the rivers will decrease during summer like the example of the river Main mentioned in "Acute physical". As higher temperatures will be an issue in the future Celanese will consider moving from ship transport to other types of transport or to move production to other sites where the transport of raw materials will not be an issue during summer.

**C2.3**

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

Yes

**C2.3a**

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

**Identifier**

Risk 1

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

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation	Other, please specify (Mandates on and regulation of existing products and services; Enhanced Emission-reporting obligations)
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**Primary potential financial impact**

Increased direct costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

European Union Emission Trading System (ETS) and Beyond: There is risk of the EU ETS continuing to expand scope of manufacturing activities subject to cap and trade, which would potentially result in cost increase for purchasing additional allowances or permit applications. For instance, until 2017, Celanese was only subject to cap and trade due to basic organic chemicals production and boiler house operation for steam and power. In 2018 another facility was added to ETS due to the German transposition of the EU ETS Directive changed in 2017 to include polymerization units. Future risks include production units or sources with less activity may be subject to cap and trade or new sources could be subject to ETS. These potential regulation changes would require Celanese to purchase allowances, develop additional permit applications for free allowances requiring additional resources and 3rd party verification, and/or removal from the carbon leakage list resulting in less free allowances. Celanese currently receives more free allowances from steam production (heat recovery) than needed for their emissions. Besides heat recovery based on an exothermic heat reaction, Celanese uses heat generated by thermal and catalytic incinerators for heat recovery. There will be limited free allowances in the 4th ETS period due to benchmark updates (lower than the third ETS period) which may lead to the need to purchase allowances, which will likely result in a CO2 allowance price increase. Due to the EU ETS Directive, the Market Stability Reserve (MSR) will initiate higher allowance prices. Due to the amendment of the EU ETS Directive, free allowances will be more adapted to the actual production (dynamic allocation). In the past, the number of free allowances was reduced when the activity rate decreased by 50%. In the 4th ETS period the number of free allowances will already be reduced when the activity rate decreases by 15%. National ETS for China began operation at the end of 2017. Thus far, it targets only the electricity industry within the initial National ETS period between 2018-2020. The Oil and Chemical industry are not anticipated to be covered until after 2020 generating costs of carbon allowance purchase and carbon allowance transactions. An even more impactful scenario would occur if the EU ETS were to abolish free allowances for operators and require all allowances to be purchased on the market as contemplated under a potential CBAM regulation.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

500000

**Potential financial impact figure – maximum (currency)**

1000000

**Explanation of financial impact figure**

While we do not believe the European Commission will eliminate free allowances completely as part of European Emissions Trading Scheme, we do anticipate a reduction in the number of free allowances during the first half (2021-2025) of the 4th period. For this financial impact figure, we assume a reduction of 10,000 free allowances over the first 5-year period. We assume the range of average price to be between \$50 and \$100 per certificate based on historical prices and expectation that price will increase in the fourth ETS period. Therefore, for purposes of providing a reasonable financial impact, we estimate the cost impact between \$500,000 and \$1,000,000. The financial impact will increase if EU Commission eliminates free allowances. Financial considerations for China have not been incorporated into this estimate to date given there is no clear picture for how this will be implemented for the Oil and Chemical industry.

**Cost of response to risk**

50000

**Description of response and explanation of cost calculation**

Celanese generates steam by heat recovery as much as possible because of the EU ETS benefit. By doing this the free allowances increase. Celanese will prepare for the ETS covered units' free allowances applications. Celanese can control costs by using internal resources to prepare applications for allowances. The costs for 3rd party verification cannot be changed.

**Comment**

**Identifier**

Risk 2

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

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation	Carbon pricing mechanisms
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**Primary potential financial impact**

Increased direct costs

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Another emerging issue is the carbon border adjustment mechanism (CBAM). CBAM might generate implementation issues and could trigger / intensify trade conflicts. Such compensation at the border will be very complicated, it will reduce export opportunities, especially for downstream users. The compensation may require extensive knowledge about product carbon footprints for our own products. Celanese will have to weigh import competition conditions versus international supply relationships and export interests. An international corporation like Celanese has engaged Cefic and is currently monitoring globally CBAM proposals from the European Commission and others, including key information: a. How would potential rising CO2 prices as a result of CBAM affect competitiveness of locally produced products in the EU if they are no longer cost-advantaged comparing with imported products from US or China? b. Where is our position in the chemical value chain? How do rising prices of our suppliers (at home and abroad) affect Celanese? c. Where is Celanese's part of international value chains? How would a CBAM impact our international supplier relationship? d. How would cost increases based on CBAM affect our export interests? The EU Commission has published a legislative CBAM proposal in July 2021. The proposed CBAM regime is intended to complement the EU Emission Trading System (ETS), creating a new mechanism to cover the direct emissions in products that are subsequently imported into the EU. The regime will be phased in gradually and will initially apply only to a selected number of sectors. The chemical sector is not included in the initial phase. As of 2026, EU importers in the included sectors are required to declare annually the quantity of goods and the amount direct emissions in the total goods they imported into the EU in the preceding year and surrender the corresponding amount of purchased CBAM certificates. The price of the CBAM certificates will mirror the ETS price being calculated. By the end of the transition period (2026), the EU Commission will evaluate the CBAM and whether to extend its scope to more products and services - including down the value chain (e.g. the chemical industry).

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

50000000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The CBAM is not in place at the moment. There is no final legislation agreement to guide Celanese to calculate/estimate potential financial impact in total. However, an estimation of the financial impact, we have assumed 1/3 of our gross scope 1 and scope 2 emissions outside of Europe are contained in products exported to Europe. Using an estimate of \$60/MT GHG and approximately 880,000 MT GHG, the financial impact would be roughly \$50 million USD.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

The CBAM is not in place at the moment and thus the only activity has been global engagement with trade group organization to ensure global alignment on the CBAM implementation.

**Comment**

**Identifier**

Risk 3

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

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation	Mandates on and regulation of existing products and services
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**Primary potential financial impact**

Decreased revenues due to reduced demand for products and services

**Climate risk type mapped to traditional financial services industry risk classification**

<Not Applicable>

**Company-specific description**

Product efficiency regulations and standards Celanese purchases raw materials from its suppliers and is also a supplier of raw materials (mostly molecules) for further downstream processing before products reach the end markets. Physical properties of products cannot be altered and thus carbon footprint of raw material Celanese receives cannot be altered. Same applies to raw material we produce, of which the carbon footprint cannot be altered by downstream users. For example, Celanese produces raw materials for dispersions and the dispersions are raw material for paints. If the European Union requires a certain product carbon footprint for products, of which our carbon footprint level is higher than competitors, it could result in demand loss of our products. Another potential risk is that certain raw materials might no longer be available due to legislative restrictions, in which case they would need to be replaced by more ecologically favorable molecules which might not currently be in the product range. Celanese has begun performing carbon footprint activities (LCAs) with third parties for a number of our Tier 1 products on key products to better understand and mitigate these risks and assist our customers with labelling requirements and reducing their carbon footprint.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

No, we do not have this figure

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

The financial implications depend on the loss of business if we cannot provide products with a low carbon footprint. Given the uncertainty, we cannot estimate the costs at this time.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Celanese intends to conduct the LCA analysis on our Tier 1 products and then evaluate the opportunities we have to drive product specific reductions in the carbon footprint. Once we have conducted the final analysis of our Tier 1 products, we will be able to identify, prioritize, and begin planning further LCA improvement projects. As such, the cost of response to risk stops at the implementation of LCAs.

**Comment****Identifier**

Risk 5

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

Direct operations

**Risk type & Primary climate-related risk driver**

Emerging regulation	Enhanced emissions-reporting obligations
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**Primary potential financial impact**

Increased indirect (operating) costs

**Climate risk type mapped to traditional financial services industry risk classification**

&lt;Not Applicable&gt;

**Company-specific description**

General environmental regulations, including planning United States EPA: Currently large facilities that are considered major sources with a potential to emit of greater than 100,000 tons per year of CO<sub>2</sub>e must evaluate each project for emission increases. If a project increases CO<sub>2</sub>e emissions greater than 75,000 tons per year (increases are defined as potential to emit minus actual emissions), the project triggers a Prevention of Significant Deterioration (PSD) review. During the review sites are required to assess Best Available Control Technology (BACT) and install if technologically feasible and economically reasonable. Risks involve the following: (1) thresholds are subject to change either through legal challenges or regulatory tightening, (2) modifications, expansions, and construction of new grass-root facilities could potentially trigger PSD requiring extensive permit review, project delays, and additional significant capital that could potentially cancel potential projects, (3) require significant time and commitment to review every project to ensure PSD is not triggered. Global Regulations: There has been a broad range of proposed climate change regulation at the international, national, state and local levels. These proposals apply or could apply in countries where Celanese has interests or may have interests in the future. Laws in this area continue to evolve and, while they are likely to be increasingly widespread, at this stage it is not possible to accurately estimate either a timetable for implementation of future costs or opportunities to any degree of accuracy. Celanese has a number of operations within the framework of the EU emissions trading scheme ("ETS"). Celanese also has a number of operations in the U.S. subject to various Environmental Protection Agency (the "EPA") regulations for greenhouse gas reporting and permitting.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)**

30000000

**Potential financial impact figure – maximum (currency)**

70000000

**Explanation of financial impact figure**

Based on anticipated range of global scope 1 GHG emissions potentially impacted by future capital projects at the Clear Lake site by abating through capture and storage (CCS). The estimate was calculated by using estimated Clear Lake Plant CO<sub>2</sub>e emissions and multiplying by \$103 ton/yr of carbon dioxide abated using CCS (estimate from Carbon Capture & Storage Association) (for partial to full abatement). There would also be additional costs for personnel required to manage the regulatory agency requirements (i.e. preparing applications, annual monitoring reports, consultant fees, etc.). For additional, future regulations, not yet fully characterized. Compliance with changes in laws, regulations and obligations could increase costs and permitting obligations, however, changes may also increase demand or open new markets to

products currently produced by Celanese.

**Cost of response to risk**

0

**Description of response and explanation of cost calculation**

Depending on the availability of internal resources, agency regulatory requirements will be managed by internal resources as much as possible. Additionally, Celanese has already implemented an enhanced ESG reporting process that aides in the evaluation of impacts.

**Comment**

Celanese expects to control costs for additional regulatory agency requirements i.e. compliance, permitting and reporting by utilizing internal resources.

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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

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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?**

Upstream

**Opportunity type**

Resilience

**Primary climate-related opportunity driver**

Other, please specify (Participation in renewable energy programs and adoption of energy efficiency measures; Resource Substitute/Diversification; Supplier Risk Management )

**Primary potential financial impact**

Other, please specify (Reduced direct costs ; Reduced indirect (operating) costs )

**Company-specific description**

Cap and trade schemes Opportunity to trade allowances that are not needed by Celanese for our own production. For example, the Vinyl acetate and Formaldehyde plants covered by the emission trading scheme are expected to receive more free allowances than they need for their emissions although the benchmarks will be lowered resulting in less free allowances in the fourth ETS period compared to the third ETS period. Depending on the allowance stock price, Celanese can potentially gain profits to further invest in energy reduction projects. As we develop our strategy in the ESG space, we have been working to understand our carbon footprint or life cycle analysis (LCA) for key Celanese products. As we work to complete these LCAs, its very apparent that raw materials and energy supply play a critical role. Therefore, we have begun to evaluate how to incorporate sustainable sourcing of raw materials and energy into our ESG strategy. One such way is through the supplier risk management process. Through this process we can evaluate and procure lower carbon energy sources (e.g., renewable power) and work with key customers on improving their product footprint, our raw material, which has an impact not only on our manufacturing footprint but along the value chain as well. We have recently filled several roles in the procurement organization to help us identify and implement energy and raw material opportunities. One such example is the execution of a solar energy contract for our flagship site in Clear Lake Texas where we will be procuring approximately 33% of our total electricity demand from solar power. This translates into an approximate scope 2 greenhouse gas reduction of over 66,000 MT, the equivalent of 14,500 cars annually. As part of our strategy, we will be evaluating additional sources of renewable and bio-based energy sources and working with key suppliers to lessen the impact of raw materials on our products.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

400000

**Potential financial impact figure – maximum (currency)**

1200000

**Explanation of financial impact figure**

Celanese is still assessing supplier risk management as part of our global strategy. GHG reductions of Celanese emissions and of our key raw materials have potentially widely different opportunity values. This financial impact figure is based on the estimated annual financial impact value for GHG reductions for sites in the United States assuming that one-third of the current electricity demand is provided by renewable sources where Celanese obtains RECs. The range of the value assumes that between \$5 and \$15 per MT of CO2 reductions could be traded. Another option, not yet quantifiable, is that lower CO2 products will drive further value along the value chain as products with lower CO2 footprints will be in higher demand thus driving potentially high margins.

**Cost to realize opportunity**

250000

**Strategy to realize opportunity and explanation of cost calculation**

The cost to realize the opportunity is the added expense, if any, associated with procuring renewable power, with RECs, versus grid electricity for sites in the United States. The financial costs provided here is associated with one full time equivalent (FTE) to track the market and to negotiate service level contracts with energy providers. While the cost gaps are expected to decrease, the cost estimates provided here assume average annual costs of gas generated electricity versus solar equating to an estimate of approximately \$10/MWH. From a high-level, renewable energy may be equivalent in cost to fossil fuel derived energy. As existing contracts begin to expire and renewable power becomes more available, the opportunity to switch to renewable may become more affordable.

**Comment****Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Resource efficiency

**Primary climate-related opportunity driver**

Other, please specify (Use of more efficient production and distribution processes Use of recycling)

**Primary potential financial impact**

Other, please specify (Increased revenues resulting from increased production capacity for products and services; Increased revenues resulting from increased demand for products and services; Returns on investment for low emission technology)

**Company-specific description**

Part of our manufacturing ESG strategy is to enable sustainable integration amongst and between our production units. This enables lower overall energy utilization and associated GHG emissions while providing for opportunities to recycling. There are several such examples across our enterprise including added cogeneration facilities at our Lanaken Belgium plant and the announced methanol expansion (Project Green) at the Clear Lake Plant, Texas. The cogeneration facility is a plant that replaces the need for purchased electricity while producing the required steam for plant activities. This project, which started operation in 2020, is estimated to reduced GHG emissions by 3100 metric tonnes per year. Project Green will utilize by-product CO2 from Celanese owned and operated facilities as well as by-product CO2 from other external stakeholders to produce additional methanol production. The reduced GHG emissions from project green are estimated at 180,000 metric tonnes per year, equivalent to emissions from approximately 39,000 cars. This approach is consistent with the view that we will continuously evaluate opportunities to integrate circular economy principles into our manufacturing philosophy.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – minimum (currency)**

900000

**Potential financial impact figure – maximum (currency)**

2700000

**Explanation of financial impact figure**

The range of the value provided above assumes a value of between \$5 and \$15 per MT for the estimated 180,000 MT CO2 not emitted to atmosphere.

**Cost to realize opportunity**

0

**Strategy to realize opportunity and explanation of cost calculation**

The cost to implement Project Green is \$0 compared to the next best alternative as the project meets our CAPEX hurdles. This project is being implemented per our normal capital evaluation and allocation process.

**Comment**

none

**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Downstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Other, please specify (Development and/or expansion of low emission goods and services; Development of new products or services through R&amp;D and innovation; Shift in consumer preferences)

**Primary potential financial impact**

Other, please specify (Increased revenues resulting from increased demand for products and services; Increased revenues through access to new and emerging markets)

**Company-specific description**

Through Celanese core values, with sustainability being central to our business, Celanese develops new and accelerates existing safe and sustainable solutions for the marketplace to meet customers sustainability needs. We have history of producing solutions to meet customer and societal needs. For example, in 2012 we partnered with a

major paint customer to produce low VOC paint for homes to improve indoor air quality. Additionally, we produce critical polymers for the automotive industry that provide structural strength replacing steel and metal component to decrease vehicle weight and increase fuel efficiency as well as polymers that provide the essential componentry for electric vehicle batteries and solar panels. Light weighting solutions improve fuel economy by offering up to 30% mass savings versus traditional part materials. In addition to providing light weighting solutions, Celanese develops and offers our customers a range of materials with recycled content and lower CO2 footprint by leveraging bio-based raw materials. Based upon our projections, we see substantial growth opportunities in these areas and are developing plans to meet the growing global demand. Celanese understands that technology innovation plays a critical role in helping solve world issues. Celanese recently joined Operation Clean Sweep or OCS, a global organization, formed 30-years ago to help industry implement good housekeeping and pellet containment practices to prevent plastics from entering the environment through streams, waterways or oceans. While we are committed to ensuring no impact on the environment from our products, we have developed and begun production of BlueRidge™, a bio-based, biodegradable, cellulosic alternative to single use plastics. At the same time, Celanese recently closed an acquisition of Elotex, a company that produces redispersible powders (RDP). The RDP business segment provides further manufacturing integration of our emulsion product platform through the removal of water. The acquisition of RDP provides Celanese an enhanced building and construction portfolio enabling further integration into solutions such as tile grouts, insulation and solar membranes, and cement enhancements. Through our existing solutions and teams actively working to develop, quantify, and understand customer needs through our LCA process, we are confident we can continue to expand our product offerings to meet the demands of today and of the future.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

10000000

**Potential financial impact figure – maximum (currency)**

100000000

**Explanation of financial impact figure**

The range of \$10 million to \$100 million is for the manufactured product BlueRidge™ based on initial anticipated consumer trends while also taking into consideration specific targeted markets (e.g., e.g. quick service restaurants, grocery) plus initial production scale-up.

**Cost to realize opportunity**

30000000

**Strategy to realize opportunity and explanation of cost calculation**

Strategy to realize the opportunity consists leveraging the bio-degradability of our acetate flake product coupled with consumer demand of reducing/eliminating single use plastics for key markets and Celanese's manufacturing extrusion process. Costs are based on initial capital estimates for raw material through compounding for staged implementation.

**Comment**

none

**C3. Business Strategy**

**C3.1**

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

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

**C3.1a**

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

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	Please select	

**C3.2**

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

Yes, qualitative and quantitative

**C3.2a**

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

Climate-related scenarios and models applied	Details
Other, please specify	We have holistically evaluated climate related scenarios that guided us in evaluations of our recent CO2 reduction projects (e.g., Project Green, Lanaken Cogen, Clear Lake Solar PPA). Next steps include, assessing Celanese baseline emissions against scenarios while layering in commercially available abatement technologies. Especially important is linking our LCA impacts for top tiered products to better understand impacts associated with Scope 3 emissions. Methanol expansion is a great example of applying scenario planning for current and future needs. In this case, we needed additional methanol production where options included increasing natural gas usage for heat and raw material, procuring methanol requirements, or implementing a CO2 reduction project. In this scenario, we analyzed the impact of 45Q as well as natural gas pricing on overall project economics. We layered this into the 5-year capital plans and the expected life expectancy of the project. We ultimately concluded that capturing and utilizing CO2 was the preferred option. Importantly, this was a cross-functional effort that included operations, finance, procurement, business, technology, stewardship, ESG Council, and external stakeholders.

**C3.3**

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Several of the previous mentioned risks and opportunities are with regards to our products. Most of our products depend on the price of emissions and energy or other legislation around CO2. On the other hand, we see opportunities from climate change by offering innovative solutions which help companies reduce their CO2 footprint. However, for some of our sustainable products there is the risk that other companies enter the market and offer the same products. Importantly, LCAs requests from our customers as well as our requests to our suppliers have highlighted key elements of the strategy. These are current actions we are undertaking today. LCAs go through the expert committee to allocate resources and set deliverables for those projects. These are revisited every 5-years and may be more frequent in the future.
Supply chain and/or value chain	Yes	Environmental awareness, particularly in the climate change arena, has grown significantly as technological innovation continues to drive efficiency and disrupt business models. More stakeholders globally are now aware of climate change and sustainability. There could be impacts on Celanese’s reputation if our customers switch to alternative products, which could have a material impact. The growing availability of renewable energy has factored into the strategy, especially with the 2021 Clear Lake Solar PPA and hiring of dedicated employees to specifically find and procure renewable energy. These are current actions we are undertaking today. Power contract renewal dates are known and are routinely reviewed. In this example, the Clear Lake PPA was set for 15-years.
Investment in R&D	Yes	Our Research and Development projects are focused on products and applications with an environmental benefit including utilization of waste CO2, materials that light weight / enable low emission vehicles, bio-based polymers and recycled materials. New products are in development which have environmental / energy efficiency benefits and aligned with ESG and circular economy objectives including products which have increased recycled content, end of life reuse, and are bio-based. These are current actions active R&D projects. R&D projects are reviewed by expert committees typically every week or month to ensure alignment with key objectives and for allocation of resources. In addition, allocation of R&D resources is embedded in the Annual Operating Plan.
Operations	Yes	Our production operations are impacted by rising cost for energy and CO2 (e.g. via taxes, legislation, etc.). Also, physical risks from climate change can impact our operations, e.g. a shortfall of energy or supplies would lead to a production downtime. However, we have mitigation strategies and plans (e.g. business continuation plans, multi-source procurement) for possible scenarios. One important step forward Celanese has taken in 2020/2021, is the development of a holistic sustainability life cycle that evaluates the impacts of projects across energy, water, waste, air and carbon emissions to enable Celanese to operate our manufacturing assets in alignment with the recently formed Celanese ESG council. At a minimum of annually, or more frequently as needed, the ESG team will evaluate the impacts associated with projects. Importantly, the operations team is a key resource in providing quarterly data on emissions so leadership can elucidate improvement areas for the next year.

**C3.4**

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Direct costs Capital expenditures Capital allocation Acquisitions and divestments	Direct Cost: Energy direct costs based on usage and efficiency are managed and planned as part of the business and site Annual Operating Plan (AOP) process and annual productivity program and targets. The AOP is developed, reviewed, and approved annually by the executive leadership team. Capital Allocation / Capital expenditures: when allocating or spending capital for new technology, process efficiency or growth, energy efficiency, waste and water are factors considered as part of the decision process. This is now incorporated into our productivity database to track not only cost savings, but also other environmental impacts/benefits for air emissions, energy, waste, water, and GHG emissions. Celanese maintains a rolling 5-year capital plan that is developed, reviewed, and approved annually by the executive leadership team. Major capital projects require Board Approval are tracked to closure until completion of the project. Acquisitions and Divestment: Sustainability factors are included as part of our initial data requests for any future due diligence which include: energy, efficiency, GHG emissions, waste, water, and air emissions.

**C3.4a**

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

no additional information at this time.

**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 did not have an 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	Our emissions are forecast to decrease over the next five years.	In the last year, we have invested in a metric tracking software, including training all relevant personnel, which means we are now capturing approximately 50% more climate-related data points. Our 2020 environmental metrics reflect this alignment. This comprehensive and robust insight serves as a foundation for analyzing the data, restating our baseline, evaluating a mid-long-range emissions target, and assessing a strategy to meet our reduction goals. Our ESG Council Climate Committee is overseeing this process, and we look forward to reporting our progress. In the meantime, the Council has approved a new Climate Policy to become the basis of a robust program to identify and implement sustainable and innovative solutions to reduce our carbon impact. This includes developing products that reduce carbon and working with suppliers, government and other key stakeholders such as the ACC and Cefic to make meaningful progress. Our next priority is to assess and develop a reduction strategy using our enhanced set of emission sources and commercially available abatement technologies. Celanese is committed to understanding our scope 3 emissions sources in order to develop a roadmap to identify, quantify and collect Scope 3 emissions

C4.2

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

No other climate-related targets

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	73	1227
Implementation commenced*	0	0
Implemented*	61	3190
Not to be implemented	0	0

C4.3b

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

**Initiative category & Initiative type**

Energy efficiency in production processes	Combined heat and power (cogeneration)
---	--

**Estimated annual CO2e savings (metric tonnes CO2e)**

3100

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

1400000

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

3700000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

16-20 years

**Comment**

In 2021, Celanese developed and implemented an award-winning, life-cycle cost evaluation checklist that our engineers use to consider energy efficiency in new project design. The checklist covers energy, GHG impact, waste and water conservation and will allow us to understand the true sustainability impact of a project for future reporting cycles.

**Initiative category & Initiative type**

Energy efficiency in production processes	Process optimization
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**Estimated annual CO2e savings (metric tonnes CO2e)**

90

**Scope(s)**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

4600000

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

0

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

11-15 years

**Comment**

In 2021, Celanese developed and implemented an award-winning, life-cycle cost evaluation checklist that our engineers use to consider energy efficiency in new project design. The checklist covers energy, GHG impact, waste and water conservation and will allow us to understand the true sustainability impact of a project for future reporting cycles.

**C4.3c**

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

Method	Comment
Compliance with regulatory requirements/standards	Celanese builds its plants to meet and, in many cases exceed, emission regulations.
Dedicated budget for energy efficiency	Payback period for energy reduction projects and energy management systems
Dedicated budget for other emissions reduction activities	Funds are committed to reduce emissions as needed per regulations
Employee engagement	Celanese involves employees at all levels to reduce emissions

**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

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**(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**

Celanese manufactures products that reduce GHG emissions from end users. Several examples across multiple business lines include specialty engineered and performance polymers. Engineering materials offers a wide range of engineered thermoplastics having advanced performance that are often chosen over metallics to reduce component weight. These products are used in applications ranging from transportation and automotive, electrical, electronics, and medical applications enabling, for example, higher fuel efficiency through lighter weight components. We launched a new sustainable product offering, POM ECO-B, where customers can realize lower GHG emissions in their end-use products and advance their renewable content goals. With up to 97% bio-content via a mass-balance approach (certified by the International Sustainability and Carbon Certification), it reduces CO<sub>2</sub> per kilogram of POM by more than 50% half without any impact on properties. EVA Performance Polymers (EVA) manufactures a broad product portfolio of ethylene vinyl acetate polymers and copolymers. In addition, we manufacture a line of LDPE polymers. These materials are used in a wide variety of applications ranging from pharmaceutical and medical applications, solar cells, high performance films, automotive parts and foam. EVA sold into the solar market is a prime example of lowering greenhouse gas emissions along the supply chain. Clarifoil Insulation is made from the same natural raw material as paper – cellulose. Advantages are light weight, recyclable, and fundamentally biodegradable allowing high-speed trains to be more energy efficient. The formulation of low-VOC, low-odor paints for contractors and do-it-yourselfers, Celanese's EcoVAE® water-based emulsions are helping to reduce air emissions and ability to meet increasingly popular green building guidelines (LEED®). The cement sector is the one of the largest industrial sources of emissions accounting for an estimated 88% of the emissions for the average concrete mix. We recently acquired a redispersible polymer powders business, Elotex®, to help address this challenge. Used by the construction industry, Elotex® uses less water and energy than conventional mortar ingredients. These powders improve cement adhesives which also enables the use of lower amounts of cement in the construction or retrofitting of buildings.

**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 (Product knowledge)

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

0

**% of total portfolio value**

<Not Applicable>

**Asset classes/ product types**

<Not Applicable>

**Comment**

Per guidance, given we are reporting "avoided emissions" we are leaving the R&D field blank. % revenue for "avoided emission" products is not broken down. Instead revenue is divided by end market.

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## C5. Emissions methodology

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### C5.1

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

**Scope 1**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

In 2020 a strategy was developed to use 2021 as a baseline year.

**Scope 2 (location-based)**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

In 2020 a strategy was developed to use 2021 as a baseline year.

**Scope 2 (market-based)**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

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

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C5.2

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

Other, please specify (Chemicals Sustainability Accounting Standard 2018 and The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard )

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C5.2a

**(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**

We have calculated Scope 1 GHG emissions using The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, as a guide. The organizational boundaries for this report align with the Operational Control approach outlined in the GHG Protocol for Celanese manufacturing facilities. Following Scope 1 Guidance for Direct Emissions, we first conducted a comprehensive inventory of Celanese owned or operated emission sources within Celanese manufacturing facilities. For each Celanese owned or operated manufacturing source, we estimated reported gross Scope 1 emissions using actual or estimated activity rates combined with actual or published emissions factors (e.g., European Environment Agency (EEA), U.S. Environmental Protection Agency (EPA)), default higher heating values for purchased fuels, and global warming potential values from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report).

For gross Scope 2 Indirect Emissions, we quantified the amount of purchased utilities (e.g., electricity, steam) for Celanese owned or operated manufacturing facilities, excluding administrative locations and certain activities, combined with published or site-specific emission factors of sources of steam and electricity purchased from third parties. Celanese also manufactures steam and electricity for onsite, collocated site partners and electrical grid systems not owned or operated by Celanese. These Scope 1 emissions were calculated for the volume of steam and electricity sold to 3rd parties using the calculation methodologies specified in the GHG Protocol, Allocation of GHG Emissions from a combined heat and power (CHP) plant, where steam and/or electricity is sold. Net Scope 1 and Scope 2 emissions were then quantified by aggregating gross scope 1 and gross scope 2 emissions less emissions attributable to utilities sold to external parties. For purposes of CDP disclosure, reported values are based on aggregated gross Scope 1 and Scope 2 emissions.

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C6. Emissions data

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C6.1

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**(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)**

2275903

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

Global Scope 1 GHG emissions reported are those calculated from Celanese owned or operated sources within Celanese manufacturing facilities during calendar year 2020

C6.2

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**(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 of our European sites have market-based emissions and are able to obtain emission factors from electricity and steam suppliers.

C6.3

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

**Reporting year**

**Scope 2, location-based**

1371062

**Scope 2, market-based (if applicable)**

<Not Applicable>

**Start date**

<Not Applicable>

**End date**

<Not Applicable>

**Comment**

Global Scope 2 GHG emissions reported are from purchased utilities (e.g., electricity, steam, other utilities) for Celanese owned or operated sources within Celanese manufacturing facilities during calendar year 2020 using site specific and published emission factors. This value excludes Scope 2 GHG emissions from administrative locations and other activities.

C6.4

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

No

C6.5

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

## Purchased goods and services

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Our next priority is to assess and develop a reduction strategy using our enhanced set of emission sources and commercially available abatement technologies. Celanese is committed to understanding our scope 3 emissions sources in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Capital goods

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

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

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Upstream transportation and distribution

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Waste generated in operations

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Business travel**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Employee commuting**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Upstream leased assets**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Downstream transportation and distribution**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Processing of sold products**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Use of sold products

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## End of life treatment of sold products

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Downstream leased assets

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Franchises

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

## Investments

### Evaluation status

Relevant, not yet calculated

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Other (upstream)**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

**Other (downstream)**

**Evaluation status**

Relevant, not yet calculated

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

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

<Not Applicable>

**Please explain**

Celanese plans to develop a roadmap to identify, quantify and collect Scope 3 emissions

C6.7

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

No

C6.10

---

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

**Intensity figure**

0.00064

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

3646965

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

5700000000

**Scope 2 figure used**

Location-based

**% change from previous year**

37.9

**Direction of change**

Increased

**Reason for change**

Increase in 2020 Emissions for CY2020 based on implementation of the SASB Chemical Standard and decrease in 2020 Total Revenue from 2019

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C7. Emissions breakdowns

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C7.1

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**(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
Other, please specify (CO2e)	2275903	IPCC Fifth Assessment Report (AR5 – 100 year)

### C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Belgium	55647
Brazil	11840
Canada	26191
China	108366
United Kingdom of Great Britain and Northern Ireland	3240
Germany	48070
India	25
Italy	264
Mexico	206190
Netherlands	5626
Singapore	860
Sweden	1906
Switzerland	2318
United States of America	1805359

### C7.3

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

By business division

### C7.3a

**(C7.3a) Break down your total gross global Scope 1 emissions by business division.**

Business division	Scope 1 emissions (metric ton CO2e)
Intermediate Chemistry (IC)	1176771
Engineered Materials (EM)	471311
Emulsion Polymers (EP)	32178
Acetate Tow (AT)	587489
Food Ingredients	5154

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	2275903	<Not Applicable>	Global Scope 1 GHG emissions reported are those calculated from Celanese owned or operated sources within Celanese manufacturing facilities during calendar year 2020.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility 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 (midstream)	<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 for in Scope 2 market-based approach (MWh)
United States of America	357312	0	9949749	0
Canada	75151	0	231475.96	0
Mexico	33569	0	1134605	0
Brazil	2984	0	59164.23	0
China	294528	0	757284	0
Singapore	99958	0	422525.69	0
Germany	477125	0	1330344	0
Netherlands	9411	0	51745.73	0
Belgium	3358	0	325862.79	0
Sweden	83	0	18931.95	0
United Kingdom of Great Britain and Northern Ireland	758	0	21091.07	0
Italy	11823	0	49574.75	0
India	4945	0	5217.72	0
Switzerland	47	0	15802.97	0

**C7.6**

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

By business division

**C7.6a**

**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Acetate Tow (AT)	27814	0
Engineered Materials (EM)	419862	0
Emulsions Polymers (EP)	67590	0
Intermediate Chemistry (IC)	793443	0
Food Ingredients (FI)	62352	0

**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	1371062	0	Global Scope 2 GHG emissions reported are from purchased utilities (e.g., electricity, steam, other utilities) for Celanese owned or operated sources within Celanese manufacturing facilities during calendar year 2020 using site specific and published emission factors. This value excludes Scope 2 GHG emissions from administrative locations and other activities.
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 (midstream)	<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

**C-CH7.8a**

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	24254.7	In 2020 Singapore Plant sold 13,064 MT CO2. In 2020 Frankfurt Plant sold 11,190.7 MT CO2.
Methane (CH4)	0	
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	0	

**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	0	No change		
Other emissions reduction activities	0	No change		
Divestment	0	No change		
Acquisitions	0	No change		
Mergers	0	No change		
Change in output	0	No change		
Change in methodology	0	No change		
Change in boundary	0	No change		
Change in physical operating conditions	0	No change		
Unidentified	0	No change		
Other	728011	Increased	25	Change in Methodology

**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 5% but less than or equal to 10%

**C8.2**

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

**C8.2a**

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	10583252	10583252
Consumption of purchased or acquired electricity	<Not Applicable>	301	1230422	1233436
Consumption of purchased or acquired heat	<Not Applicable>	0	4600	4600
Consumption of purchased or acquired steam	<Not Applicable>	0	2491281	2491281
Consumption of purchased or acquired cooling	<Not Applicable>	0	60807	60807
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	18	<Not Applicable>	18
Total energy consumption	<Not Applicable>	3032	14370362	14373394

**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)	HHV (higher heating value)	10583252
Consumption of purchased or acquired electricity	<Not Applicable>	1233436
Consumption of purchased or acquired heat	<Not Applicable>	4600
Consumption of purchased or acquired steam	<Not Applicable>	2491281
Consumption of purchased or acquired cooling	<Not Applicable>	60807
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	18
Total energy consumption	<Not Applicable>	14373394

**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	Yes
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**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

10134365

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

1756499

**MWh fuel consumed for self-generation of steam**

8367148

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

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

0

**Emission factor**

53.06

**Unit**

kg CO2e per million Btu

**Emissions factor source**

EPA Emission Factors for Greenhouse Gas Inventories (2020)

**Comment**

**Fuels (excluding feedstocks)**

Fuel Oil Number 2

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

23793

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

23793

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

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

0

**Emission factor**

73.96

**Unit**

kg CO2e per million Btu

**Emissions factor source**

EPA Emission Factors for Greenhouse Gas Inventories (2020)

**Comment**

---

**Fuels (excluding feedstocks)**

Hydrogen

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

2382

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

2382

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

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

0

**Emission factor**

0

**Unit**

kg CO2e per million Btu

**Emissions factor source**

EPA Emission Factors for Greenhouse Gas Inventories (2020)

**Comment**

---

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

2597

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

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

0

**Emission factor**

2.307

**Unit**

kg CO2e per liter

**Emissions factor source**

EPA Emission Factors for Greenhouse Gas Inventories (2020)

**Comment**

Transportation

---

**Fuels (excluding feedstocks)**

Other, please specify (Tail Gas mixture )

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

363247

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

363247

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-generation or self-trigeneration**

0

**Emission factor**

10.0697

**Unit**

kg CO2e per million Btu

**Emissions factor source**

Internal analysis

**Comment**

**Fuels (excluding feedstocks)**

Propane Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

56868

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-generation or self-trigeneration**

0

**Emission factor**

1.515

**Unit**

kg CO2e per liter

**Emissions factor source**

EPA Emission Factors for Greenhouse Gas Inventories (2020)

**Comment**

Transportation

**C8.2d**

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	436691	189179	18	18
Heat	1799555	1799555	0	0
Steam	7071898	6671343	0	0
Cooling	0	0	0	0

**C-CH8.2d**

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	436691	189179
Heat	1799555	1799555
Steam	7071898	6671343
Cooling	0	0

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

Yes

C-CH8.3a

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

**Fuels used as feedstocks**

Natural gas

**Total consumption**

0

**Total consumption unit**

thousand cubic feet

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

0.05

**Heating value of feedstock, MWh per consumption unit**

0.29

**Heating value**

HHV

**Comment**

Total consumption of feed stock is proprietary

C-CH8.3b

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

	Percentage of total chemical feedstock (%)
Oil	10
Natural Gas	65
Coal	20
Biomass	5
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

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

**Description**

Other, please specify (Energy Intensity)

**Metric value**

2.57

**Metric numerator**

Energy used

**Metric denominator (intensity metric only)**

Production volume by weight

**% change from previous year**

14

**Direction of change**

Increased

**Please explain**

In 2020 the energy intensity increased by 14% Key metric drivers are site energy efficiency initiatives and projects across Celanese global sites, as well as the balance of volumes and production rates at low and high intensity processes. These all contribute to changes to the enterprise wide energy intensity. The metric was affected primarily by fluctuating production demand, reliability issues and planned outages which result in lower energy efficiency when operating at lower rates. Implementation of SASB reporting standards and an improved reporting IT platform for reporting energy, resulted in changes to the overall metric result, due to improved and more complete reporting of energy from all CE owned and operated units.

C-CH9.3a

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

**Output product**

Other, please specify (Polyoxymethylene ("POM"), Ultra-high weight polyethylene, Acetate flake, Tow, Acetic acid, Vinyl Acetate Monomer, Vinyl acetate ethylene ("VAE") emulsions, Redispersible Powders, Methanol, Acetaldehyde, Esters, other organic and polymer products)

**Production (metric tons)**

8652805

**Capacity (metric tons)**

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

**Electricity intensity (MWh per metric ton of product)**

**Steam intensity (MWh per metric ton of product)**

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

**Comment**

The requested details for each of these products are considered company confidential information. We are a global chemical and specialty materials company and are a leading global producer of high performance engineered polymers that are used in a variety of high-value applications, as well as one of the world's largest producers of acetyl products, which are intermediate chemicals, for nearly all major industries. As a recognized innovator in the chemicals industry, we engineer and manufacture a wide variety of products essential to everyday living. Our broad product portfolio serves a diverse set of end-use applications including automotive, chemical additives, construction, consumer and industrial adhesives, consumer and medical, energy storage, filtration, food and beverage, paints and coatings, paper and packaging, performance industrial and textiles. Our products enjoy leading global positions due to our differentiated business models, large global production capacity, operating efficiencies, proprietary technology and competitive cost structures. A listing of some of our products can be found on our external facing website at [www.celanese.com](http://www.celanese.com).

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

**(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?**

	Investment in low-carbon R&D	Comment
Row 1	Yes	Celanese is developing products aligned with ESG and circular economy objectives including products which have increased recycled content, end of life reuse, and are bio-based. Specific products include bio films, and recycled PA 66 compounds and polymers for electric motors. We are also investigating applications including biodegradable straws, and food compliant paper packaging to replace plastic. Additionally, we are focused on supporting the United Nations' Sustainable Development Goal of "Good Health and Well-Being" through our support of our customer's innovations in long-acting dosage forms, drug delivery devices, and orthopedic components.

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Process step integration	Applied research and development	≤20%		Given the metric for R&D investment figure in the reporting year is optional, Celanese has decided to leave this field blank

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)	No third-party verification or assurance
Scope 3	No emissions data provided

C10.1a

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

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

GUR Unit.pdf

Vinylacetate Unit.pdf

Perstorp.pdf

Acetaldehyde.pdf

Lanaken.pdf

Formaldehyde Unit.pdf

**Page/ section reference**

There are 6 units/sites covered by EU ETS. The relevant information is highlighted in violet. There are only excerpts attached as the complete reports contain confidential business information.

**Relevant standard**

European Union Emissions Trading System (EU ETS)

**Proportion of reported emissions verified (%)**

5

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?

No, we do not verify any other climate-related information reported in our CDP disclosure

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

## C11.1b

---

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

### EU ETS

**% of Scope 1 emissions covered by the ETS**  
5

**% of Scope 2 emissions covered by the ETS**  
0

**Period start date**  
January 1 2020

**Period end date**  
December 31 2020

**Allowances allocated**  
142973

**Allowances purchased**  
0

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**  
106257

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**  
0

**Details of ownership**  
Facilities we own and operate

**Comment**

## C11.1d

---

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

To reduce emissions and implement energy saving projects, such as heat recovery projects, to obtain more free allowances to support the Celanese units which do not have enough allowances to fulfil the legal requirements. Management of an internal Celanese banking and allowance transfer strategy to minimize the total demand for purchasing allowances.

Purchase allowances if needed.

## C11.2

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

No

## C11.3

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**(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

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### C12.1

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**(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

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

#### Type of engagement

Information collection (understanding supplier behavior)

#### Details of engagement

Other, please specify (We have begun to collect carbon footprint from key raw material and energy suppliers and incorporate sustainable sourcing into our ESG strategies as well as our supplier risk management process.)

#### % of suppliers by number

0

#### % total procurement spend (direct and indirect)

0

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

0

#### Rationale for the coverage of your engagement

As we develop our strategy in the ESG space, we have been working to understand our carbon footprint or life cycle analysis (LCA) for key Celanese products. As we work to complete these LCAs, its very apparent that raw materials and energy supply play a critical role. Therefore, we have begun to evaluate how to incorporate sustainable sourcing of raw materials and energy into our ESG strategy. One such way is through the supplier risk management process. Through this process we can evaluate and procure lower carbon energy sources (e.g., renewable power) which has an impact not only on our manufacturing footprint but along the value chain as well.

#### Impact of engagement, including measures of success

We have recently filled several roles in the procurement organization to help us identify and implement energy and raw material opportunities. One such example is the execution of a solar energy contract for our flagship site in Clear Lake Texas where we will be procuring approximately 33% of our total electricity demand from solar power. This translates into an approximate scope 2 greenhouse gas reduction of over 66,000 MT, the equivalent of 14,500 cars annually. As part of our strategy, we will be evaluating additional sources of renewable and bio-based energy sources and working with key suppliers to lessen the impact of raw materials on our products.

#### Comment

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## C12.1b

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

#### Type of engagement

Education/information sharing

#### Details of engagement

Share information about your products and relevant certification schemes (i.e. Energy STAR)

#### % of customers by number

50

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

0

#### Portfolio coverage (total or outstanding)

<Not Applicable>

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

Celanese actively seeks opportunities to engage with customers in order to share goals and commitments on climate metrics as well as to communicate achievements and progress against these metrics. We also engage with customers to learn about their goals, and how our actions contribute toward transparency and climate-related objectives. Engagement opportunities may vary from direct and in-depth, climate-related discussions with customers, to information sharing based on our sustainability messaging which is also communicated publicly on our website. In-depth discussions would include sharing product-specific emission intensities, as well as time-wise progress toward reducing our emissions. An example of climate-related certification that we proudly engage with our customers on is being awarded ENERGY STAR® Partner of the Year Sustained Excellence Award. The Sustained Excellence Award is bestowed by the U.S. Environmental Protection Agency to companies who have been recognized with the Partner of the Year recognition for a minimum of two consecutive years and have gone above and beyond the criteria needed to qualify for the recognition. Celanese has been awarded ENERGY STAR® Partner of the Year recognition for five consecutive years.

#### Impact of engagement, including measures of success

Engagement with customers allows Celanese to demonstrate and reinforce our commitment to climate-related goals and metrics. We measure our success by the breadth and depth of these engagements, their number and frequency, and the ability to gain new insights from our customer base on what is important to them, and how Celanese can play an impactful role in helping them achieve their own climate-related goals.

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## C12.1d

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

- 1) Our global energy coordinator routinely attends and speaks at trade group/agency sponsored events and conferences where we communicate our highly successful approach and activities. This stakeholder outreach enables us to engage and directly impact best practices related to energy and climate change when and where appropriate.
- 2) In addition to the global energy coordinator, our global environmental team is actively involved in stakeholder outreach with member trade associations (e.g., ACC, TCC, CEFIC, VCI). Through these activities, we work with regulatory agencies to develop achievable, cost-effective, and sustainable regulatory requirements for the regulated entities.

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**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?**

Trade associations

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**C12.3b**

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

No

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**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?**

Our global energy coordinator routinely attends and speaks at trade group/agency sponsored events and conferences where we communicate our highly successful approach and activities. This stakeholder outreach enables us to engage and directly impact best practices related to energy and climate change when and where appropriate. In addition to the global energy coordinator, our global environmental team is actively involved in stakeholder outreach with member trade associations (e.g., ACC, TCC, CEFIC, VCI). Through these activities, we work with regulatory agencies to develop achievable, cost-effective, and sustainable regulatory requirements for the regulated entities. We work through our process safety steering committee to help achieve our goal that all site and corporate actions and activities are well thought-out and consider emerging regulatory requirements. We also comply with all U.S. Environmental Protection Agency and state regulations that could potentially impact climate change. We also carefully follow the potential policy changes that could occur in the climate change area.

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**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 communications

**Status**

Complete

**Attach the document**

Climate Policy.pdf

**Page/Section reference**

<https://www.celanese.com/Sustainability>

**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets

**Comment**

Attached is the new Climate Policy which can be found at the following website: <https://www.celanese.com/Sustainability>

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**C15. Signoff**

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**C-FI**

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(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.

## C15.1

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

	Job title	Corresponding job category
Row 1	Environmental Director	Environmental, health and safety manager

## SC. Supply chain module

### SC0.0

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

Celanese attempts to provide allocations of our Scope 1 and Scope 2 emissions to customers who request our participation in the CDP Climate questionnaire. We are not yet at a point where we can allocate our Scope 3 emissions, though we intend to improve our capabilities on Scope 3 reporting and Scope 3 allocations in the future. In addition, in some cases and for some customers we are not able to calculate a reasonable emission allocation estimate. This may be the result of one or more factor, including, for example, granularity of data, multi-regional/multi-sourced products, complexity of operations, acquisitions or divestitures in the reporting year, etc. In these cases, you may not receive an allocation of emissions in this reporting cycle.

### SC0.1

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

	Annual Revenue
Row 1	5655000000

### SC0.2

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

Yes

### SC0.2a

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

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	US	1508701034

### SC1.1

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

**Requesting member**

Altria Group, Inc.

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

37104

**Uncertainty (±%)**

20

**Major sources of emissions**

Natural gas for steam and power generation, waste gas incineration

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

The amount of natural gas used for steam and power production is measured directly. The allocation of emissions to Altria is based on 2020 sales volume of 6901 MT, specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps, and certain raw material adjustments.

**Requesting member**

Altria Group, Inc.

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

1609

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

Energy consumption is measured directly. The allocation of emissions to Altria is based on 2020 sales volume of 6901 MT of tow purchased by Altria and specific emissions (tons CO2 per ton of tow produced) averaged over our two manufacturing sites and multiple production steps.

**Requesting member**

British American Tobacco

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

6158

**Uncertainty (±%)**

20

**Major sources of emissions**

Natural gas for steam and power generation, waste gas incineration

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

The amount of natural gas used for steam and power production is measured directly. The allocation of emissions to BAT is based on 2020 sales volume of 1145 MT, and specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps, and certain raw material adjustments.

**Requesting member**

British American Tobacco

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

Energy consumption is measured directly. The allocation of emissions to BAT is based on 2020 sales volume of 1145 MT, and specific emissions (tons CO<sub>2</sub> per ton of tow produced) averaged over two manufacturing sites and multiple production steps.

**Requesting member**

Imperial Brands

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

&lt;Not Applicable&gt;

**Emissions in metric tonnes of CO<sub>2</sub>e**

5317

**Uncertainty (±%)**

20

**Major sources of emissions**

Natural gas for steam and power generation, waste gas incineration

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

The amount of natural gas used for steam and power production is measured directly. The allocation of emissions to Imperial Brands is based on 2020 sales vol. of 989 MT, and specific emissions (tons CO<sub>2</sub> per ton of tow produced) averaged over two manufacturing sites and multiple production steps, and certain raw material adjustments.

**Requesting member**

Imperial Brands

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

&lt;Not Applicable&gt;

**Emissions in metric tonnes of CO<sub>2</sub>e**

231

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

Energy consumption is measured directly. The allocation of emissions to Imperial Brands is based on 2020 sales vol. of 989 MT, and specific emissions (tons CO<sub>2</sub> per ton of tow produced) averaged over two manufacturing sites and multiple production steps.

**Requesting member**

JT International SA

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

55229

**Uncertainty (±%)**

20

**Major sources of emissions**

Natural gas for steam and power generation, waste gas incineration

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

The amount of natural gas used for steam and power production is measured directly. The allocation of emissions to JTI is based on 2020 sales vol. of 10272 MT, and specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps, and certain raw material adjustments.

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**Requesting member**

JT International SA

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

2395

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

Energy consumption is measured directly. The allocation of emissions to JTI is based on 2020 sales vol. of 10272 MT, and specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps.

---

**Requesting member**

Philip Morris International

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

176898

**Uncertainty (±%)**

20

**Major sources of emissions**

Natural gas for steam and power generation, waste gas incineration

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

The amount of natural gas used for steam and power production is measured directly. The allocation of emissions to PMI is based on 2020 sales vol. of 32900 MT, and specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps, and certain raw material adjustments.

---

**Requesting member**

Philip Morris International

**Scope of emissions**

Scope 2

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**Allocation level**

Company wide

**Allocation level detail**

&lt;Not Applicable&gt;

**Emissions in metric tonnes of CO2e**

7671

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

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

Energy consumption is measured directly. The allocation of emissions to PMI is based on 2020 sales vol. of 32900 MT, and specific emissions (tons CO2 per ton of tow produced) averaged over two manufacturing sites and multiple production steps.

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

None

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

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	Celanese produces hundreds of products, across different major business lines, plant sites, and geographies. Improving the granularity of our data collection would be necessary to help overcome these challenges. Celanese continues to work to make these improvements in data collection.
Managing the different emission factors of diverse and numerous geographies makes calculating total footprint difficult	Celanese produces hundreds of products, across different major business lines, plant sites, and geographies. We often produce the same product in different plant sites and in different geographies. Customers buying from multiple sites and/or geographies adds complexity to the ability to accurately allocate emissions. Celanese continues to work to improve our abilities to allocate emissions to our customers who request this information.
Customer base is too large and diverse to accurately track emissions to the customer level	Celanese produces hundreds of products, across different major business lines, plant sites, and geographies. Customers often buy multiple products, and these products can be sourced from multiple sites and/or geographies. This adds complexity to the ability to accurately allocate emissions. Emissions data granularity and robust, consolidated data collection would help to improve our allocations estimates. Celanese continues to work to improve our abilities to allocate emissions to our customers who request this information.

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

Yes

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

Celanese continues to work to develop greater means and higher accuracy of our emissions allocations. In addition, we plan to begin calculating and reporting Scope 3 emissions in the next two - three years. Our global footprint, extensive and multi-regional product lines, and shared site production capabilities make these extensive project undertakings.

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

Altria Group, Inc.

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into Altria's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit Altria's goals on Scope 3 emissions reductions.

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**Requesting member**

ARKEMA

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

---

**Requesting member**

Avery Dennison Corporation

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

---

**Requesting member**

Bayer AG

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

Braskem S/A

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings****Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

---

**Requesting member**

British American Tobacco

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings****Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into BAT's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit BAT's goals on Scope 3 emissions reductions.

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**Requesting member**

Imperial Brands

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings****Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

International Flavors & Fragrances Inc.

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings****Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

JT International SA

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into JTI's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit JTI's goals on Scope 3 emissions reductions.

---

**Requesting member**

Philip Morris International

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into PMI's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit PMI's goals on Scope 3 emissions reductions.

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**Requesting member**

SEKISUI CHEMICAL CO.,LTD.

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

Symrise AG

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

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**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

The Dow Chemical Company

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

---

**Requesting member**

The LEGO Group

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

Velux A/S

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

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**Requesting member**

WestRock Company

**Group type of project**

Relationship sustainability assessment

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**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

**Requesting member**

Zimmer Biomet Holdings, Inc.

**Group type of project**

Relationship sustainability assessment

**Type of project**

Aligning goals to feed into customers targets and ambitions

**Emissions targeted**

Actions that would reduce our own operational emissions (our scope 1 & 2)

**Estimated timeframe for carbon reductions to be realized**

Other, please specify

**Estimated lifetime CO2e savings**

**Estimated payback**

Please select

**Details of proposal**

Unknown at this point. As our operational emissions feed into customer's Scope 3 emissions, reductions of our own Scope 1 & 2 emissions will benefit customer's goals on Scope 3 emissions reductions.

SC2.2

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

No

SC4.1

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

No, I am not providing data

Submit your response

**In which language are you submitting your response?**

English

**Please confirm how your response should be handled by CDP**

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

**Please confirm below**

I have read and accept the applicable Terms