

# Welcome to your CDP Climate Change Questionnaire 2022

## C0. Introduction

### C0.1

**(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 8,500 employees worldwide and had 2021 net sales of \$8.5 billion. For more information about Celanese and our product offerings visit [www.celanese.com](http://www.celanese.com).

### C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Reporting year	January 1, 2021	December 31, 2021	No

### C0.3

**(C0.3) Select the countries/areas in which you operate.**

- 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

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

USD

## C0.5

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

Operational control

## C-CH0.7

**(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

### Other chemicals

Specialty organic chemicals

## C0.8

**(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?**

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, an ISIN code	1508701034

## 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 Celanese CEO and Chairman of the full Board (CEO), established the Environmental, Social and Governance (ESG) Council, and the ESG Council's recommendations are reviewed and approved by the CEO, who is a member of the full Celanese Board. In 2020 and 2021 the CEO made it a priority to improve and analyse Celanese's greenhouse (GHG) emissions database, evaluate meaningful reduction targets, and develop a GHG abatement strategy. These efforts led to Celanese announcing GHG emissions reduction targets in early 2022. At least quarterly updates are provided to the board on ESG topics, including climate.
Director on board	The full Board has oversight responsibility for climate policy and strategy, and receives reports at least quarterly from the Environmental, Health, Safety, Quality and Public Policy Committee (the "EHS Committee").
Board-level committee	The Environmental, Health, Safety, Quality and Public Policy Committee (the EHS Committee) of the full Celanese Board oversees the development, implementation and monitoring of greenhouse gas reduction and energy targets in manufacturing and production processes. The EHS Committee meets and reports to the full Board at least quarterly.
Board-level committee	The Nominating and Corporate Governance Committee (NCG) of the Board oversees reporting on ESG metrics, that includes oversight on reporting frameworks such as SASB and TCFD.

#### C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
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Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Setting performance objectives</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>The full Celanese Board has oversight responsibility for climate policy and strategy. The EHS Committee reports to the board at least quarterly and oversees GHG reduction and sustainability targets in manufacturing. Also, the NCG Committee reports to the board at least quarterly and provides oversight on reporting of ESG metrics</p>
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## C1.1d

**(C1.1d) Does your organization have at least one board member with competence on climate-related issues?**

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	Members of the Celanese Board have experience with complex environmental regulation and sustainability-focused strategy, including climate-related risk management.

## C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Sustainability committee	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

Other, please specify The Climate Working Group	Assessing climate-related risks and opportunities	More frequently than quarterly
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## C1.2a

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

The CEO, who is also Chairman of the Celanese Board, approves the strategy for the development, implementation and monitoring of greenhouse gas reduction and energy targets setting and progress.

The full Celanese Board oversees climate policy and strategy, and the Committee on [Environmental, Health, Safety, Quality and Public Policy Committee](#) (EHS Committee), oversees greenhouse gas reduction and sustainability in manufacturing which includes climate policy and strategy. The EHS Committee reports to the Board at least quarterly on Environmental, Social and Governance (ESG) topics including climate related risks and opportunities.

The Nominating and Corporate Governance Committee (NCG) oversees ESG reporting metrics, and reports to the full Board at least quarterly.

An ESG Council (the Sustainability Committee) is led by our SVP and General Counsel and is made up of a cross-functional team of senior leaders whose purpose is to develop strategy, reporting frameworks, monitor progress, and to make recommendations to executive leadership on key ESG topics important to the company's long-term success.

An ESG Council Climate Working Group focuses specifically on climate related issues and meets biweekly to develop and implement a comprehensive strategy to reduce Celanese's carbon footprint; including assessing and developing company-wide climate policy, targets on Scope 1, 2 and 3 reporting and emissions reduction recommendations. The ESG Council Climate Working Group is co-chaired by our Chief Procurement Officer and VP, Global Government Affairs.

## 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
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Chief Executive Officer (CEO)	Monetary reward	Efficiency project	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.
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.

## 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?**

We primarily consider "materiality" under relevant securities laws (meaning generally that the magnitude or nature of the item is such that it is probable that the judgment, buy/sell or voting decision of a reasonable investor would have been changed or influenced by the information). For reasonably financially quantifiable items, as a general guideline, but not a definitive

threshold, we typically consider a risk to be material if it represents 5% or more of pre-tax income. However, this is a general guideline only, and not all information that exceeds this threshold will be material and some information that does not cross this threshold may be material due to qualitative or other factors.

In addition to this financial threshold, Celanese considers risks and opportunities through reputational, operational and regulatory criteria. Many of these risks which are not possible to quantify with precision or at all. Celanese uses various tools to identify these risks and opportunities, including a sustainability priority assessment, stakeholder engagement outreach, and our enterprise risk management process. This process evaluates potential exposure, likelihood and financial or reputational magnitude of risk exposure. Refer to our annual 10-K report, available at [investors.celanese.com](http://investors.celanese.com), for a discussion of these risk factors that are considered to be the most substantive.

## C2.2

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

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### **Value chain stage(s) covered**

Direct operations  
Upstream  
Downstream

### **Risk management process**

Integrated into multi-disciplinary company-wide risk management process

### **Frequency of assessment**

More than once a year

### **Time horizon(s) covered**

Short-term  
Medium-term  
Long-term

### **Description of process**

Climate-related risks and opportunities which could have a substantive financial or strategic impact are integrated into our overall corporate enterprise risk management (ERM) processes. Led by Internal Audit, 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 consider Celanese specific risks, external risks as well as macro trends, and are methodically evaluated based on exposure, likelihood and financial or reputational magnitude risk exposure.

Historically, climate and water risks have been discussed in the Manufacturing leadership ERM workshop. Recognizing the increased importance of ESG risks and related disclosures the company added a new workshop in 2021 to focus specifically on ESG related risks to inform the ERM program for 2022. Our cross-functional ESG

Council participated in the workshop, allowing for an in-depth discussion of ESG risks such as climate, energy, and their interdependencies.

Major risks identified are assigned to risk owners who develop and execute remediation plans. As with other types of risks, sustainability risks, including major climate risks, are monitored and mitigation progress reviewed with leadership and the full board at least annually. Risk and remediation status are tracked continually throughout the year with quarterly certifications by the executive leadership team for major enterprise level risks. We plan on continuing the ESG specific workshop to inform the ERM program for 2023.

## 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 the American Chemistry Council (ACC) and Cefic to understand impacts to our organization of climate-related risks. For example, Celanese's CEO is an active member of the ACC Board Sustainability Committee, and the Chief Procurement Officer (CPO) represents Celanese on the ACC Sustainability Climate Subcommittee. The EU Environmental Leader also participates in trade group meetings such as VCI, in addition to Cefic, for information and a better understanding of upcoming legislative and regulatory requirements. In addition, to better engage in the EU, Celanese utilizes the EU Issue Tracker which is a European regulatory awareness tool. The EU issue tracker informs Celanese's European Environmental Leader of Celanese of any new climate-related regulatory requirements. The EU Environmental Leader reviews the information for relevance followed by an impact assessment for impacted sites and business lines. 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.
Technology	Relevant, always included	The main risks associated with technological improvements that support the transition to a lower-carbon, energy-efficient system is the availability and reliability of renewable energy supplies and the timeframe in which operators must retrofit facilities to renewable energies. Another risk is the technical feasibility of 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 brought online a cogeneration facility at our Lanaken Belgium plant in 2020. Additionally, we evaluated the use of solar power at our Clear Lake Plant and have executed a contract and began 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 a 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 on products with a low product carbon footprint to reduce their scope 3 impact. Customers ask more for bio-based products than in the past. For example, Celanese currently leverages bio-based Methanol as an important raw material to produce bio-based Polyoxymethylene (POM), which is important to certain customers in the medical sector. Another example is the EPDLA study Celanese participates in to update our LCAs for our dispersions. Also, Celanese has developed an LCA program and has completed LCAs with a third-party for several of our Tier 1 products.
Reputation	Relevant, always included	Celanese is committed to strong ESG performance and reflecting good stewardship in our decisions and actions. Our public ESG reporting, and disclosures are an important way in which we communicate with stakeholders regarding our commitment. For instance, our ESG Council strategy to align to the SASB Chemical Standard and TCFD was

		implemented and disclosed in our 2021 ESG report. We believe that these efforts to enhance corporate brand and reputation help improve our perception with investors, communities, customers, employees and potential employees. We believe that these efforts to enhance corporate brand and reputation help improve our perception with investors, communities, customers, employees and potential employees.
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 affected transport at our Frankfurt site), extreme temperatures (e.g., record temperatures at many sites and record lows in Gulf Coast region in the U.S.), and a 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 may decrease during summer months (e.g., the River Main mentioned in “Acute physical” response above). As higher temperatures may be an issue in the future, Celanese may 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 months.

## 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

Carbon pricing mechanisms

**Primary potential financial impact**

Increased indirect (operating) costs

### **Company-specific description**

EU ETS and Beyond: There is a risk of the EU ETS continuing to expand the scope of manufacturing activities subject to cap and trade regulation, which could potentially result in increased costs for purchasing additional allowances or permit applications. For example, in 2018 another Celanese facility was added to ETS due to the German transposition of the 2017 EU ETS Directive including 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.

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**

Short-term

### **Likelihood**

Likely

### **Magnitude of impact**

Medium-low

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

Yes, an estimated range

### **Potential financial impact figure (currency)**

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

1,125,000

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

1,500,000

### **Explanation of financial impact figure**

While we do not believe the European Commission will eliminate free allowances as part of the 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 15,000 free allowances over the first 5-year period. We assume the range of average price to be between \$75 and \$100 per certificate based on historical prices and the expectation that the price will increase in the fourth ETS period. Therefore, for purposes of providing a reasonable financial impact, we estimate the cost impact between \$1,125,000 and \$1,500,000.

The financial impact will increase if EU Commission eliminates free allowances. Note that we are designating the time horizon of this risk as occurring in the short-term, while it is also expected to extend into the medium-term planning horizon.

Financial considerations for China have not been incorporated into this estimate given the China ETS program for the Chemical Sector has not been implemented to date (see comment section).

### **Cost of response to risk**

50,000

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

Celanese identified a situation where there were emerging regulatory impacts that would result in a potential shortage or elimination of free allowances. Celanese currently receives more free allowances from steam production (heat recovery) than needed for their emissions. Since this situation is likely to change in the 4th ETS period because there will be limited free allowances due to benchmark updates, the difference may lead to the need to purchase allowances, which will likely result in a CO<sub>2</sub> allowance price increase as well. Due to the EU ETS Directive, the Market Stability Reserve (MSR) will also initiate higher allowance prices.

Based on these findings, free allowances will be more adapted to production (referred to as dynamic allocation going forward). In the 4th ETS period, the number of free allowances will already be reduced when the activity rate decreases by 15% and likely include emissions from marine and ocean-going vessels (Shipping Monitoring Reporting and Verification called MRV). While the direct impact has not yet been finalized, many of our products and raw materials are shipped from countries outside the EU and in and around the EU on marine vessels and ships.

Celanese global environment and global government affairs routinely evaluate these changes to existing and upcoming new regulations for impact evaluation and engagement in trade groups for decisions and feedback to internal stakeholders. Thus, we utilized the internal global energy team to conduct the dynamic allocation evaluation which we estimate to cost approximately \$50,000. The analysis was incorporated into the planning for the global CO<sub>2</sub> targets which also included initiation of further energy reduction teams, and evaluation and implementation of renewable energy and other strategic projects (e.g., Project Green).

In summary, consistent with the STAR approach, Celanese identified emerging regulatory impacts for carbon trading, evaluated regulatory options against manufacturing footprint, and governmental affairs continually evaluated changes to regulations for impact evaluation and engaged with trade groups for decisions, and feedback was provided to internal stakeholders. The outcome was a review and evaluation of steps required to minimize impact and risk.

### **Comment**

In addition, the National ETS for China, initially covering only power sector, began online trading on July 16, 2021 at a cost of approximately \$8 per tonne of CO<sub>2</sub>. The power sector covers 2,225 companies and covers approximately 12% of total global CO<sub>2</sub> emissions. While the initial phase of the China National ETS does not cover the chemical industry, seven major carbon emitting industries are expected to gradually be rolled into the market ETS program. There is currently no direct impact to Celanese with Phase 1 of the China ETS, however, the Chemical Sector ETS is estimated to be implemented between 2023 and 2025 with minimal quota and cost impacts when it begins.

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### 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

### Primary potential financial impact

Increased direct costs

### 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 CO<sub>2</sub> 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 and expected to be enforced by 2023 - provided that the ordinary legislative procedure between EU Commission, EU Parliament and EU Council is completed by end of 2022.

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. According to the current proposal, the regime will be phased in gradually and will initially apply only to a selected number of sectors. Chemicals and plastics are 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 criteria - including down the value chain as well as indirect emissions.

**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)**

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

75,000,000

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

100,000,000

**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 estimated range of between \$75 and \$100 per metric ton of CO<sub>2</sub> and approximately 1,000,000 MT GHG (1/3 of scope 1 and scope 2 emissions outside Europe), the financial impact would be roughly \$66-\$88 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. In general, our efforts to develop LCAs, understand the embedded carbon in our products, and seek ways to reduce all scopes of carbon are expected to improve Celanese's position with respect to future carbon pricing impacts. However, those efforts are ongoing for a variety of reasons, not specifically (or largely) in response to the potential risk posed by CBAM.

### **Comment**

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#### **Identifier**

Risk 3

#### **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

#### **Primary potential financial impact**

Increased indirect (operating) costs

#### **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 the 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.

United States SEC: In 2022, the Securities and Exchange Commission proposed sweeping regulations for U.S. companies on climate related financial disclosures. These regulations would significantly increase operational costs on the quantification of scope 1 and scope 2 emissions verifications as well as scope 3 for all operations. Additionally, the SEC has outlined additional aspects that would require annual filing

early every calendar year outlining materiality and risks.

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)**

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

40,000,000

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

59,000,000

**Explanation of financial impact figure**

Based on anticipated range of global scope 1 GHG emissions are potentially impacted by future capital projects at the Clear Lake site by abating through capture and storage (CCS). The estimate was calculated by using an estimated scope 1 Clear Lake Plant CO<sub>2</sub>e emission rate and multiplying by a range of \$69 to \$103 tonne 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 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.

## C2.4

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

Yes

## C2.4a

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

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#### Identifier

Opp1

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

Direct operations

#### Opportunity type

Energy source

#### Primary climate-related opportunity driver

Use of lower-emission sources of energy

#### Primary potential financial impact

Reduced indirect (operating) costs

#### Company-specific description

Carbon Footprint Information and Scope 2 Considerations  
Celanese has identified a potential 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 fewer free allowances in the fourth ETS period compared to the third ETS

period. Depending on the allowance stock price, Celanese could gain future profits to further invest in energy reduction projects.

Not taking advantage of this potential opportunity would reduce capital available for additional 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 and how to align our Scope 2 emission reductions with our strategy. As we work to complete these LCAs, it's 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 and suppliers 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.

**Time horizon**

Medium-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

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

Yes, an estimated range

**Potential financial impact figure (currency)**

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

500,000

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

1,360,000

**Explanation of financial impact figure**

Celanese is still assessing supplier risk management as part of our global strategy. GHG reductions of Celanese emissions and 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 CO<sub>2</sub> reductions could be traded or that renewable

energy will lower our stated annual emissions by 230,000 MT per year. 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**

250,000

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

Celanese has identified an opportunity to reduce our Scope 2 emissions as relates to supplier carbon footprint options and energy contracts up for review/renewal. In particular, we are analyzing our carbon footprint or life cycle analysis (LCA) for Celanese products to determine how best to reduce our Scope 2 emissions within our strategy.

As we develop more LCAs, it's clear 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 way is through the supplier risk management process. Through this process, we evaluate and procure lower carbon energy sources (e.g., renewable power) and work with customers on improving their product footprint, our raw material, that has an impact on our manufacturing footprint and along the value chain.

To facilitate this project, the procurement team has hired several employees to better identify and implement energy and raw material opportunities. One such opportunity is the execution of a solar energy contract for our flagship site in Clear Lake, TX where we will be procuring approximately 33% of our total electricity demand from solar power.

This has resulted in GHG reduction of approximately 66,000 MT, the equivalent of taking more than 14,500 cars off the road annually. As part of our 2030 GHG reduction strategy, we identified one key abatement strategy to be renewable energy (e.g., electricity and fuels). Therefore, we will evaluate additional sources of renewable and bio-based energy sources and work with key suppliers to reduce the impact of raw materials on our products. The initial renewable electricity opportunity we are targeting is 500 GWh which translates into approximately 230 KT of CO<sub>2</sub>e reduction per annum.

The cost for this opportunity is the added expense associated with procuring renewable power, with RECs, versus grid electricity for sites in the US. The costs provided here are associated with one full-time equivalent to track the market and negotiate service level contracts with energy providers. The cost estimates 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 expire and renewable power becomes more available, the opportunity to switch to renewable will be 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 by lowering our Scope 1 and Scope 2 emissions in line with our strategy given supplier carbon footprint options and economic considerations. This enables lower overall energy utilization and associated GHG emissions while providing opportunities to recycle. 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, reduces GHG emissions by approximately 3100 metric tonnes annually. Project Green will utilize by-product CO<sub>2</sub> from Celanese owned and operated facilities as well as by-product CO<sub>2</sub> from other external stakeholders to produce additional methanol production by the end of 2023. 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. Importantly, sustainability is now a key review criteria for all significant capital expenditures as part of the standard leadership review for capital projects which we expect will drive several aspects, including visibility and evaluation of alternative abatement solutions to advance sustainability further into the organization. Additionally, given the recent escalation of energy costs globally, we are further leveraging our Celanese Energy Council to identify, prioritize, and initiate new energy reduction projects by the end of 2022. This cross-functional energy team has begun evaluation at our major sites with the aim of identifying projects to achieve up to a 30%

reduction. The team has completed reviews at several of our major sites with final results pending review for prioritization and implementation.

**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)**

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

100,000,000

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

200,000,000

**Explanation of financial impact figure**

The range of the value provided above assumes a value of 15% to 30% of annual forecasted energy spending globally.

**Cost to realize opportunity**

250,000

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

The capital cost to implement global energy reduction projects today is unknown given we are evaluating existing and future abatement technologies to reduce energy consumption at our global manufacturing sites. Therefore, the cost to realize this opportunity is approximately the salary of a full-time employee for driving manufacturing evaluations globally.

**Comment**

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**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&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 our integrated supply chain, Celanese is uniquely situated to provide safe and sustainable solutions to help our customers achieve their sustainability objectives. For example, in 2021 we partnered with a major customer to produce a lower CO<sub>2</sub> footprint POM (POM ECO-B) product made from bio-mass balanced raw material. 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 while understanding product specifications, costs and impacts. Light weighting solutions improve fuel economy by offering up to 30% mass savings versus traditional part materials. Also, Celanese develops and offers our customers a range of materials with recycled content and lower CO<sub>2</sub> footprint by leveraging a combination of bio-based and recycled 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 recently joined Operation Clean Sweep (OCS) which is a global organization, formed to help industry implement good housekeeping and pellet containment practices to prevent plastics from entering the environment through streams, waterways or oceans. Additionally, we have developed and begun commercializing BlueRidge™, a bio-based, biodegradable, cellulosic alternative to single use plastics.

Also, Celanese acquired Elotex, a company that produces redispersible powders (RDP). 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.

We are actively working to understand the environmental impacts of our products through our internal LCA process, and we are confident we can continue to expand our product offerings to meet the demands of today and the future. We have begun scale-up activities, capital procurement, and procurement of circular raw materials, inclusive of carbon capture technology and/or bio-circular raw materials, to manufacture the sustainable POM product lines. A key result is sustainable POM product line began production in 2021 with more product offerings to come in future years.

### **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)**

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

30,000,000

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

150,000,000

**Explanation of financial impact figure**

The range of \$30 million to \$150 million is for the manufactured sustainable POM product line based on realized sales plus anticipated consumer trends while also taking into consideration specific targeted markets.

**Cost to realize opportunity**

50,000,000

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

Estimated costs and strategy to realize the opportunity consists of leveraging a combination of scale-up, capital, and procurement of circular raw materials, inclusive of carbon capture technology and/or bio-circular raw materials, to manufacture the sustainable POM product lines.

**Comment**

## C3. Business Strategy

### C3.1

**(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?**

**Row 1**

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**Transition plan**

No, our strategy has been influenced by climate-related risks and opportunities, but we do not plan to develop a transition plan within two years

**Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future**

Celanese recognizes that Scope 3 emissions are a prerequisite in order to develop a transition plan. As stated in last year’s ESG report, Celanese has begun to assess our scope 3 emissions which will enable us to take further steps. Additionally, in 2021, we began the process to develop targets for Scope 1 and Scope 2 emissions, and our Board of Directors, which has oversight responsibility for climate, approved the 2030 reduction target and plan in 2022. The 2030 reduction target and plan are discussed as part of our ongoing outreach with key external stakeholders.

**C3.2**

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

Use of climate-related scenario analysis to inform strategy	
Row 1	Yes, qualitative and quantitative

**C3.2a**

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

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
	Company-wide		Climate change is one of the most challenging and significant issues facing the world today, and at Celanese, we are committed to doing our part to make sustainable progress toward addressing the problem. We support multilateral approaches, such as the Paris Agreement, that promote ambitious efforts to address climate change holistically. <a href="https://www.celanese.com/-/media/cewebjssapp/project/documents/Climate-Policy.pdf">https://www.celanese.com/-/media/cewebjssapp/project/documents/Climate-Policy.pdf</a> Our 2023 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 to produce methanol. In this scenario, we analysed the impact of 45Q US Federal Tax Credits 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 to produce the incremental methanol requirement. Importantly, this was a cross-functional effort that included

			operations, finance, procurement, business, technology, stewardship, ESG Council, and external stakeholders.
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## C3.2b

**(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.**

### Row 1

#### Focal questions

Results of the following focal questions are pending as we are in the initial stages of implementation within the revised capital expenditure process. Review and analysis of the results will be summarized in next year's report. Examples of focal questions include:

- What is the sustainability impact of your capital project on energy, GHG emissions, waste, and water?
- Has the project considered additional abatement technologies not included in the scope of your project? What are the impacts and costs associated with these approaches?

#### Results of the climate-related scenario analysis with respect to the focal questions

## 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	Investment in low carbon product offerings such as POM Eco B to broaden portfolio to meet customer requirements.
Supply chain and/or value chain	Yes	Celanese routinely evaluates opportunities to procure renewable energy, and other forms of bio-based raw materials to lower our carbon footprint and impacts to the environment.
Investment in R&D	Yes	Celanese is developing products aligned with sustainability objectives of our customers and society including products that have increased recycled content, end of life reuse, or are bio-based. Specific products include bio-polymer

		<p>solutions such as BlueRidge® used in applications such as biodegradable straws and Clarifoil® bio films for food compliant paper packaging to replace single use plastics. We are also providing customers with the ability to purchase certain POM grades such as POM ECO-B which through a mass-balance approach reduces the product carbon footprint by approximately 50%. We also enable sustainability through producing lighter-weight thermoplastics for the auto industry for improved fuel efficiency, safety, and reliability, and have invested in an additional GUR® production line to support the growing lithium-ion battery separator demand for electric vehicles. 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.</p>
Operations	Yes	<p>Our manufacturing plants continuously evaluate opportunities to lower energy consumption for cost and emissions impact. There are several such examples across our enterprise including added cogeneration facilities at our Lanaken Belgium plant and the announced methanol expansion at our Clear Lake, Texas facility. 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 reduce GHG emissions by approximately 3100 metric tonnes per year annually. A carbon capture and use project also at our Clear Lake plant will utilize by-product CO<sub>2</sub> from Celanese owned and operated facilities as well as by-product CO<sub>2</sub> from other external site stakeholders to produce additional methanol production by the end of 2023. The reduced GHG emissions from this project are estimated at 180,000 metric tonnes per year, equivalent to emissions from approximately 39,000 cars.</p>

### 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

<p>Row 1</p>	<p>Revenues Direct costs Indirect costs Capital expenditures Capital allocation</p>	<ul style="list-style-type: none"> <li>• Revenues: At Celanese, our vision is to improve the world and everyday life through our people, chemistry, and innovation. Our vision is further aligned to six such values. Celanese values, of which, customer needs and shareholder value two. Celanese is a company that partners with its customers to develop and deliver sustainable and sustainability-enabling product offerings, at the lowest possible costs to create and deliver value for our shareholders, customers and employees through profitable performance.</li> <li>• Direct and Indirect Costs: Direct and indirect costs are a factor of helping us target key sustainability projects to drive lower energy use and emissions. One example is energy. Given the recent escalation of energy costs globally, we are further leveraging our Celanese Energy Council to identify, prioritize, and initiate new energy reduction projects by the end of 2022. This cross-functional energy team has begun evaluation at our major sites to identify projects to achieve up to a 30% reduction and associated GHG emissions. Additionally, other direct costs, for example, our raw materials, are of concern. We routinely evaluate opportunities to increase our raw material efficiencies. These examples help drive capital projects and allocations and cost reductions but also help set mindset change within our manufacturing teams that help us drive toward our goals.</li> <li>• Capital expenditures and allocation: Capital expenditures and capital allocations have been impacted through our capital review process. We establish a 5-year rolling capital budget and update it every year based on upcoming regulations, risk, maintenance requirements, and other growth projects. The annual budget is set with the Board of Directors. Additionally, we are utilizing the major expenditure request (MER) process, whereby all expenditures above a threshold value must be approved by MER review panel, which includes members of our senior leadership team. Importantly, sustainability is now a key review criterion for significant capital expenditures as part of the standard leadership review for capital projects which we expect will drive several aspects, including visibility and evaluation of alternative abatement solutions to advance sustainability further into the organization.</li> </ul>
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## 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		In 2021, our climate committee analyzed our scope 1 and 2 emissions using enhanced metrics captured in a new tracking software, industry information, and benchmarking to formulate a recommendation for a GHG reduction target. The recommendation which was informed by 50% more metrics than previously available was subsequently reviewed by our ESG Council, approved by our Executive Leadership Team, and full Board of Directors in early 2022. It was announced in February 2022 in our proxy. In the meantime, the Council has approved a Climate Policy to become the basis of a program to identify and implement sustainable and innovative solutions to reduce our carbon impact and the impact of our products for our customers. 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 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?**

Other climate-related target(s)

## C4.2b

**(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.**

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**Target reference number**

Oth 1

**Year target was set**

2021

**Target coverage**

Company-wide

**Target type: absolute or intensity**

Intensity

**Target type: category & Metric (target numerator if reporting an intensity target)**

Energy consumption or efficiency  
million Btu

**Target denominator (intensity targets only)**

unit of production

**Base year**

2021

**Figure or percentage in base year**

2.51

**Target year**

2030

**Figure or percentage in target year**

2.08

**Figure or percentage in reporting year**

2.51

**% of target achieved relative to base year [auto-calculated]**

0

**Target status in reporting year**

New

**Is this target part of an emissions target?**

No. This Energy Target is separate from the GHG target.

**Is this target part of an overarching initiative?**

No, it's not part of an overarching initiative

**Please explain target coverage and identify any exclusions**

Company- wide target of 10% reduction in "Total Net Energy Intensity". No exclusions. The intensity-based target is expressed by the amount of net energy, expressed in MBtus, per unit of production. Production used for intensity purposes includes all intercompany trade equaling a mass balance of all gross production whether internal or externally sold for all operated and owned assets. The baseline year for measuring performance against this target is 2021. Performance will be monitored at the corporate level and disclosed in our annual Sustainability Report and other relevant disclosures.

**Plan for achieving target, and progress made to the end of the reporting year**

As part of overall activities to achieve reduction targets, Celanese actively invests in energy reduction projects and sustainable sourcing for energy. We also enhance resource efficiency and provide opportunities for recycling while enabling lower overall energy utilization and associated greenhouse emissions

Celanese tracked more than 100 energy projects across 28 sites in 2021 and is pursuing significant projects in multiple areas of energy and sustainability.

Our first major renewable solar energy purchase agreement was implemented in Q4–2021, providing approximately 33% of our electricity needs for our Clear Lake, Texas, site. Two recent site acquisitions in Switzerland, and India, use renewable electricity in the form of wind, hydro and on-site rooftop solar

Our China site implemented and is optimizing world-class technology to recover heat from waste incineration that can recover up to approximately 160,000 MMBtu/year of heat equivalent to approximately 8500 MT CO2 eliminated

At our Clear Lake, TX, plant, a project to produce sustainable methanol is being constructed that aims to displace approximately 180,000 MT CO2, reducing our carbon footprint by using approximately 60% of currently vented process CO2 at the entire Clear Lake facility with startup planned in 2023.

As part of both our major and small capital project workflow, a capital project design checklist for sustainability was implemented, to document and evaluate energy efficiency, sustainability options and enhancements in new project design.

An initiative to define energy and CO2 reduction projects has been started as part of a global productivity program. At each site energy projects are being identified and prioritized. Multiple projects are being scoped, designed or in construction for future reductions in energy and CO2 including significant heat integration projects at multiple sites, improvement of reactor efficiency in Vinyl acetate processes, raw material recovery efficiency, use of bio methane for waste treatment for fuel and improved digitalization leveraging advanced process control of energy related systems.

**List the actions which contributed most to achieving this target**

**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 *)
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Under investigation		
To be implemented*	1	180,000
Implementation commenced*	4	5,491
Implemented*	13	13,274
Not to be implemented		

### C4.3b

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

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**Initiative category & Initiative type**

Energy efficiency in production processes  
Process optimization

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

3,506

**Scope(s) or Scope 3 category(ies) where emissions savings occur**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

197,000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

11-15 years

**Comment**

---

**Initiative category & Initiative type**

Energy efficiency in production processes  
Process optimization

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

3,365

**Scope(s) or Scope 3 category(ies) where emissions savings occur**

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

1,092,000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

11-15 years

**Comment**

### 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?**

No

## C5. Emissions methodology

### C5.1

**(C5.1) Is this your first year of reporting emissions data to CDP?**

No

### C5.1a

**(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?**

Row 1

**Has there been a structural change?**

Yes, an acquisition

**Name of organization(s) acquired, divested from, or merged with**

Acquired formerly owned ExxonMobil sites in Florida and Wales in Dec. 2021. Complete calendar year 2021 emissions have been included in the disclosure”.

**Details of structural change(s), including completion dates**

Acquired formerly owned ExxonMobil sites in Florida and Wales in Dec. 2021. Complete calendar year 2021 emissions have been included in the disclosure. Since 2021 emissions serve as our baseline year for our GHG reduction target we included FY 2021 emissions from these two acquired sites in our FY environmental metric disclosures.

### C5.1b

**(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?**

	<b>Change(s) in methodology, boundary, and/or reporting year definition?</b>	<b>Details of methodology, boundary, and/or reporting year definition change(s)</b>
Row 1	Yes, a change in reporting year definition	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. Example sources of Scope 1 emission sources are Celanese onsite combustion and energy sources (e.g., cogeneration units, boilers, furnaces), mobile sources, process

	emissions (e.g., Kyoto Protocol refrigerants, fugitive emissions, leaks, process emissions), landfills, onsite vent gas abatement sources, waste incinerations, and wastewater treatment plants. 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 ) eGRID 2018 factors are used), default higher heating values for purchased fuels, and global warming potential values from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report.
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### C5.1c

**(C5.1c) Have your organization’s base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?**

	Base year recalculation	Base year emissions recalculation policy, including significance threshold
Row 1	No, because the impact does not meet our significance threshold	The acquisition occurred during our base year of 2021, which is the same as this reporting year. Because our base year emissions had not been previously reported, there is no need to make any restatements.

### C5.2

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

#### Scope 1

**Base year start**

January 1, 2021

**Base year end**

December 31, 2021

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

2,375,026

**Comment**

2021 is the baseline year.

#### Scope 2 (location-based)

**Base year start**

January 1, 2021

**Base year end**

December 31, 2021

**Base year emissions (metric tons CO<sub>2</sub>e)**

1,331,805

**Comment**

**Scope 2 (market-based)**

---

**Base year start**

January 1, 2021

**Base year end**

December 31, 2021

**Base year emissions (metric tons CO<sub>2</sub>e)**

1,417,089

**Comment**

Some of our operations have electricity supplier emission factors or residual emissions factors which gives us our Market-based emissions

**Scope 3 category 1: Purchased goods and services**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 2: Capital goods**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

### **Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

### **Scope 3 category 4: Upstream transportation and distribution**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

### **Scope 3 category 5: Waste generated in operations**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

### **Scope 3 category 6: Business travel**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 7: Employee commuting**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 8: Upstream leased assets**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 9: Downstream transportation and distribution**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 10: Processing of sold products**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 11: Use of sold products**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 12: End of life treatment of sold products**

---

**Base year start**

**Base year end**

**Base year emissions (metric tons CO<sub>2</sub>e)**

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 13: Downstream leased assets**

---

**Base year start**

**Base year end**

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

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 14: Franchises**

---

**Base year start**

**Base year end**

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

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3 category 15: Investments**

---

**Base year start**

**Base year end**

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

**Comment**

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

**Scope 3: Other (upstream)**

---

**Base year start**

**Base year end**

### Base year emissions (metric tons CO<sub>2</sub>e)

#### Comment

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

### Scope 3: Other (downstream)

---

#### Base year start

#### Base year end

### Base year emissions (metric tons CO<sub>2</sub>e)

#### Comment

Celanese has initiated the process of working with a third-party to develop a roadmap to identify and quantify Scope 3 emissions.

## C5.3

### (C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

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

The Greenhouse Gas Protocol: Scope 2 Guidance

US EPA Emissions & Generation Resource Integrated Database (eGRID)

Other, please specify

US EPA Emissions & Generation Resource Integrated Database (eGRID 2018))

## C6. Emissions data

### C6.1

#### (C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO<sub>2</sub>e?

##### Reporting year

---

#### Gross global Scope 1 emissions (metric tons CO<sub>2</sub>e)

2,375,026

### Comment

Global Scope 1 GHG emissions reported are those calculated from Celanese owned or operated sources within Celanese manufacturing facilities during calendar year 2021. Scope 1 GHG emissions were determined by a mix of facility-level measurements, engineering estimates, permit references and invoices.

## C6.2

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

### Row 1

---

#### Scope 2, location-based

We are reporting a Scope 2, location-based figure

#### Scope 2, market-based

We are reporting a Scope 2, market-based figure

### Comment

Some of our sites (mainly European sites) have market-based emissions and can obtain emission factors from electricity and steam suppliers.

## C6.3

**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO<sub>2</sub>e?**

### Reporting year

---

#### Scope 2, location-based

1,331,805

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

1,417,089

### 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 2021 using site specific, published emission factors and EU residual grid emission factors (for EU facilities where supplier-specific factors were unavailable). This value excludes Scope 2 GHG emissions from administrative locations and other activities.

## C6.4

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

No

## C6.5

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

### **Purchased goods and services**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Capital goods**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order 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

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Upstream transportation and distribution**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Waste generated in operations**

---

**Evaluation status**

Relevant, not yet calculated

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Business travel

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Employee commuting

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Upstream leased assets

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Downstream transportation and distribution

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Processing of sold products

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## Use of sold products

---

### Evaluation status

Relevant, not yet calculated

### Please explain

Celanese is committed to understanding our scope 3 emissions in order 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

#### **Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Downstream leased assets**

---

#### **Evaluation status**

Relevant, not yet calculated

#### **Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Franchises**

---

#### **Evaluation status**

Relevant, not yet calculated

#### **Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Investments**

---

#### **Evaluation status**

Relevant, not yet calculated

#### **Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Other (upstream)**

---

#### **Evaluation status**

Relevant, not yet calculated

#### **Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

### **Other (downstream)**

---

#### **Evaluation status**

Relevant, not yet calculated

**Please explain**

Celanese is committed to understanding our scope 3 emissions in order to develop a roadmap to identify, quantify and collect Scope 3 emissions.

## C6.7

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

No

## C6.10

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

---

**Intensity figure**

0.000446

**Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO<sub>2</sub>e)**

3,792,115

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

8,500,000,000

**Scope 2 figure used**

Market-based

**% change from previous year**

34

**Direction of change**

Decreased

**Reason for change**

Increase in Total revenue in 2021 (the reporting year) compared to 2020

## C7. Emissions breakdowns

### C7.1

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

Yes

### C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO <sub>2</sub> e)	GWP Reference
CO <sub>2</sub>	1,959,920.4	IPCC Fifth Assessment Report (AR5 – 100 year)
CH <sub>4</sub>	40,130.2	IPCC Fifth Assessment Report (AR5 – 100 year)
N <sub>2</sub> O	1,206.2	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	7,575.4	IPCC Fifth Assessment Report (AR5 – 100 year)
Other, please specify CO <sub>2</sub> e-Air, Water, Waste Emissions	366,193.9	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 CO <sub>2</sub> e)
Belgium	64,591
Brazil	11,852
Canada	25,135
China	125,910
United Kingdom of Great Britain and Northern Ireland	3,631
Germany	45,246
India	19
Italy	1,891
Mexico	202,406
Netherlands	9,115

Singapore	2,603
Sweden	1,469
Switzerland	3,928
United States of America	1,877,075
United Kingdom of Great Britain and Northern Ireland	154

🗨️<sub>1</sub>

🗨️<sub>1</sub>just Wales

## 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 CO <sub>2</sub> e)
Acetate Tow (AT)	622,313
Emulsion Polymers (EP)	27,122
Engineered Materials (EM)	361,200
Food Ingredients (FI)	317
Intermediate Chemistry (IC)	1,346,986
Redispersible Polymer Powders – RDP	17,089

## 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 CO<sub>2</sub>e.**

	Gross Scope 1 emissions, metric tons CO <sub>2</sub> e	Comment
Chemicals production activities	2,375,026	

## C7.5

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

Country/Region	Scope 2, location-based (metric tons CO <sub>2</sub> e)	Scope 2, market-based (metric tons CO <sub>2</sub> e)
Belgium	698	592

Brazil	4,182	4,182
Canada	74,649	74,649
China	294,182	294,182
United Kingdom of Great Britain and Northern Ireland	821	1,245
Germany	361,294	370,176
India	7,157	7,157
Italy	10,448	19,765
Mexico	31,052	31,052
Netherlands	11,990	11,959
Singapore	109,714	131,191
Sweden	83	1,995
Switzerland	0	0
United States of America	425,535	441,923
United Kingdom of Great Britain and Northern Ireland	0	27,021

## 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 CO <sub>2</sub> e)	Scope 2, market-based (metric tons CO <sub>2</sub> e)
Acetate Tow (AT)	34,839	35,156
Emulsions Polymers (EP)	47,480	55,057
Engineered Materials (EM)	423,733	485,342
Food Ingredients (FI)	29,348	29,348
Intermediate Chemistry (IC)	783,219	799,011
Redispersible Polymer Powders – RDP	13,186	13,186

## 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 CO<sub>2</sub>e.

	Scope 2, location-based, metric tons CO <sub>2</sub> e	Scope 2, market-based (if applicable), metric tons CO <sub>2</sub> e	Comment
Chemicals production activities	1,331,805	1,417,089	

## 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 tCO <sub>2</sub> e 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 (CO <sub>2</sub> )	26,701	Singapore sold 14,058 MT CO <sub>2</sub> in 2021. Frankfurt sold 12,643 MT CO <sub>2</sub> in 2021.
Methane (CH <sub>4</sub> )	0	
Nitrous oxide (N <sub>2</sub> O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF <sub>6</sub> )	0	
Nitrogen trifluoride (NF <sub>3</sub> )	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	2,937	Decreased	0.08	Renewable energy from CLK and Silvassa sites
Other emissions reduction activities	13,274	Decreased	0.38	Projects and process improvement reducing CO2 emissions
Divestment	0	No change	0	no Divestment in 2021
Acquisitions	38,392	Increased	1.1	Wales & Florida acquisition
Mergers	0	No change	0	No Merger in 2021
Change in output	0	No change	0	
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	No boundary change in 2021
Change in physical operating conditions	0	No change	0	
Unidentified	0		0	
Other	0	No change	0	

## C7.9b

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

Market-based

## C8. Energy

### C8.1

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

More than 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	10,646,855	10,646,855
Consumption of purchased or acquired electricity		6,854.7	1,402,572	1,409,430

Consumption of purchased or acquired heat		0	5,052	5,052
Consumption of purchased or acquired steam		0	2,961,867	2,961,867
Consumption of purchased or acquired cooling		0	117,067	117,067
Consumption of self-generated non-fuel renewable energy		114.5		114.5
Total energy consumption		6,969.2	15,133,416	15,140,385

## C-CH8.2a

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

### Consumption of fuel (excluding feedstocks)

#### Heating value

HHV (higher heating value)

#### MWh consumed from renewable sources inside chemical sector boundary

0

#### MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

10,646,855

#### MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

#### Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

10,646,855

### Consumption of purchased or acquired electricity

#### MWh consumed from renewable sources inside chemical sector boundary

6,854.7

#### MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

1,402,575

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

1,409,430

#### **Consumption of purchased or acquired heat**

---

**MWh consumed from renewable sources inside chemical sector boundary**

0

**MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)**

5,052

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

5,025

#### **Consumption of purchased or acquired steam**

---

**MWh consumed from renewable sources inside chemical sector boundary**

0

**MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)**

2,961,867

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

2,961,867

#### **Consumption of purchased or acquired cooling**

---

**MWh consumed from renewable sources inside chemical sector boundary**

0

**MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)**

117,067

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

117,067

#### **Consumption of self-generated non-fuel renewable energy**

---

**MWh consumed from renewable sources inside chemical sector boundary**

114.5

**MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)**

0

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

114.5

#### **Total energy consumption**

---

**MWh consumed from renewable sources inside chemical sector boundary**

6,969.2

**MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)**

15,133,416

**MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary**

0

**Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary**

15,140,385

## **C8.2b**

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

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

## C8.2c

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

### Sustainable biomass

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

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

0

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

0

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

0

**Comment**

### Other biomass

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

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

0

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

0

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

0

**Comment**

**Other renewable fuels (e.g. renewable hydrogen)**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

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

0

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

0

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

0

**Comment**

**Coal**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

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

0

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

0

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

0

**Comment**

**Oil**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

18,117

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

18,117

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

0

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

0

**Comment**

#2 Fuel Oil, diesel

**Gas**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

10,566,616

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

949,694

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

8,547,248

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

1,069,674

**Comment**

Natural gas

**Other non-renewable fuels (e.g. non-renewable hydrogen)**

---

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

62,121

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

60,073

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

2,048

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

0

**Comment**

Hydrogen, propane, gasoline

For breakdown - Hydrogen used for steam - other fuels for heat

**Total fuel**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

10,646,855

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

1,027,855

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

8,549,296

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

1,069,674

**Comment**

Total fuel

## C8.2d

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

	<b>Total Gross generation (MWh)</b>	<b>Generation that is consumed by the organization (MWh)</b>	<b>Gross generation from renewable sources (MWh)</b>	<b>Generation from renewable sources that is consumed by the organization (MWh)</b>
Electricity	402,864	172,467	114.5	114.5
Heat	0	0	0	0
Steam	8,257,892	7,667,822	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.**

**Electricity**

**Total gross generation inside chemicals sector boundary (MWh)**

402,864

**Generation that is consumed inside chemicals sector boundary (MWh)**

172,467

**Generation from renewable sources inside chemical sector boundary (MWh)**

114

**Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)**

0

**Heat**

---

**Total gross generation inside chemicals sector boundary (MWh)**

0

**Generation that is consumed inside chemicals sector boundary (MWh)**

0

**Generation from renewable sources inside chemical sector boundary (MWh)**

0

**Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)**

0

**Steam**

---

**Total gross generation inside chemicals sector boundary (MWh)**

8,257,892

**Generation that is consumed inside chemicals sector boundary (MWh)**

7,667,822

**Generation from renewable sources inside chemical sector boundary (MWh)**

0

**Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)**

0

**Cooling**

---

**Total gross generation inside chemicals sector boundary (MWh)**

0

**Generation that is consumed inside chemicals sector boundary (MWh)**

0

**Generation from renewable sources inside chemical sector boundary (MWh)**

0

**Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)**

0

## C8.2e

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

---

**Sourcing method**

Direct procurement from an off-site grid- connected generator e.g. Power purchase agreement (PPA)

**Energy carrier**

Electricity

**Low-carbon technology type**

Solar

**Country/area of low-carbon energy consumption**

United States of America

**Tracking instrument used**

US-REC

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

1,840

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

United States of America

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

2,021

**Comment**

---

**Sourcing method**

Default delivered electricity from the grid (e.g. standard product offering by an energy supplier), supported by energy attribute certificates

**Energy carrier**

Electricity

**Low-carbon technology type**

Low-carbon energy mix, please specify

Hydro and wind

**Country/area of low-carbon energy consumption**

Switzerland

**Tracking instrument used**

Other, please specify

Certificate of Origin

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

5,014

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

Switzerland

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

**Comment**

---

**Sourcing method**

Other, please specify

On Site Solar self-owned

**Energy carrier**

Electricity

**Low-carbon technology type**

Solar

**Country/area of low-carbon energy consumption**

India

**Tracking instrument used**

Indian REC

**Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)**

114

**Country/area of origin (generation) of the low-carbon energy or energy attribute**

India

**Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)**

2,020

**Comment**

## C8.2g

**(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.**

---

**Country/area**

United States of America

**Consumption of electricity (MWh)**

635,359

**Consumption of heat, steam, and cooling (MWh)**

796,904

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

1,432,263

---

**Country/area**

China

**Consumption of electricity (MWh)**

143,694

**Consumption of heat, steam, and cooling (MWh)**

466,265

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

609,959

---

**Country/area**

Belgium

**Consumption of electricity (MWh)**

3,965

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

3,965

---

**Country/area**

Brazil

**Consumption of electricity (MWh)**

7,760

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

7,760

---

**Country/area**

Canada

**Consumption of electricity (MWh)**

122,632

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

122,632

---

**Country/area**

Germany

**Consumption of electricity (MWh)**

277,575

**Consumption of heat, steam, and cooling (MWh)**

1,346,930

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

1,624,505

---

**Country/area**

India

**Consumption of electricity (MWh)**

7,569

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

7,569

---

**Country/area**

Italy

**Consumption of electricity (MWh)**

40,371

**Consumption of heat, steam, and cooling (MWh)**

2,981

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

43,352

---

**Country/area**

Mexico

**Consumption of electricity (MWh)**

62,731

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

62,731

---

**Country/area**

Netherlands

**Consumption of electricity (MWh)**

16,594

**Consumption of heat, steam, and cooling (MWh)**

21,009

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

37,603

---

**Country/area**

Singapore

**Consumption of electricity (MWh)**

24,698

**Consumption of heat, steam, and cooling (MWh)**

454,740

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

479,438

---

**Country/area**

Sweden

**Consumption of electricity (MWh)**

8,962

**Consumption of heat, steam, and cooling (MWh)**

7,569

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

16,531

---

**Country/area**

Switzerland

**Consumption of electricity (MWh)**

5,014

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

5,014

---

**Country/area**

United Kingdom of Great Britain and Northern Ireland

**Consumption of electricity (MWh)**

40,207

**Consumption of heat, steam, and cooling (MWh)**

0

**Total non-fuel energy consumption (MWh) [Auto-calculated]**

40,207

## 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	0
Natural Gas	100
Coal	0
Biomass	0
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**

2.51

**Metric numerator**

Energy used

**Metric denominator (intensity metric only)**

Production volume by weight

**% change from previous year**

2.33

**Direction of change**

Decreased

**Please explain**

production increase in 2021 from 2020. 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 company 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.

## 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 & polymers)

**Production (metric tons)**

9,335,195.76

**Capacity (metric tons)**

**Direct emissions intensity (metric tons CO<sub>2</sub>e per metric ton of product)**

0.405

**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 sustainability objectives of our customers and society including products which have increased recycled content, end of life reuse, or are bio-based. Specific products include bio-polymer solutions such as BlueRidge® used in applications such as biodegradable straws and Clarifoil® bio films for food compliant paper packaging to replace single use plastics. We are also providing customers with the ability to purchase certain POM grades such as POM ECO-B which through a mass-balance approach reduces the product carbon footprint by approximately 50%. We also enable sustainability through producing lighter-weight thermoplastics for the auto industry for improved fuel efficiency, safety, and reliability, and have invested in an additional GUR® production line to support the growing lithium-ion battery separator demand for electric vehicles. 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
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## C10. Verification

### C10.1

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

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

-  IPH\_Acetaldehyde Unit 2021.pdf
-  Perstorp Emulsions Unit 2021.pdf
-  IPH\_Vinyl and Formaldehyde Units 2021.pdf
-  Lanaken Acetate Unit 2021.pdf
-  Oberhausen\_GUR Unit 2021.pdf

#### Page/ section reference

Verification reports attached

#### Relevant standard

European Union Emissions Trading System (EU ETS)

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

6

---

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

 ERMCVS-2022 CDP Climate Change Assurance Statement for Celanese.pdf

**Page/ section reference**

**Relevant standard**

ISAE3000

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

100

## C10.1b

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

---

**Scope 2 approach**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

 ERMCVS-2022 CDP Climate Change Assurance Statement for Celanese.pdf

**Page/ section reference**

**Relevant standard**

ISAE3000

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

100

## C10.2

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

No, but we are actively considering verifying within the next two years

## 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**

6

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

0

**Period start date**

January 1, 2021

**Period end date**

December 31, 2021

**Allowances allocated**

128,767

**Allowances purchased**

0

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

123,252

**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

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

No

## C11.3

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

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

## C12. Engagement

### C12.1

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

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

## C12.1a

### (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. We started to collect ESG data from our Suppliers.

#### % of suppliers by number

1

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

25

#### % 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. As we develop a formal Scope 3 inventory, we will be able to establish measures of success across our upstream supply chain

#### Comment

## C12.1b

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

---

### **Type of engagement & Details of engagement**

Education/information sharing

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

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

Celanese seeks opportunities to engage broadly with all interested customers to communicate goals and commitments on climate metrics as well as to share achievements and progress against these metrics. We also engage with customers to learn about their goals, and how our actions contribute toward transparency on climate-related objectives. There are no boundaries with whom we engage and try to be representative from a regional and size-based standpoint - gaining broad-ranging perspectives.

Engagement opportunities vary from in-depth climate-related discussions with customers, to information sharing based on our sustainability messaging which is communicated publicly on our web-site, as well as through direct interactions. In-depth discussions would include sharing product line-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. In 2021 Celanese was awarded ENERGY STAR® Partner of the Year recognition for the sixth consecutive year, and the Sustained Excellence Award for the fourth consecutive year.

### **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, new customer engagements, 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. Additionally, as we develop a formal scope 3 inventory, we will be able to establish measures of success related to value chain GHG emissions. An example of success in 2021 was a new engagement opportunity with a large U.S. consumer goods producer, where we brought together ESG representatives for dialogue and objectives sharing across the key ESG topics. Another example is the continuation in 2021 of regular, quarterly to semi-annual discussions with large multi-national companies on product-specific emissions intensities and progress toward continual improvement.

## C12.1d

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

Celanese is actively engaged in our trade associations on climate related issues. Celanese CEO is an active participant on ACC's Board Sustainability Committee which has oversight over the association's climate positions and policies. In addition, Celanese's Chief Procurement Officer (CPO) represents Celanese on the ACC Sustainability Climate Subcommittee. In the EU, Celanese is actively engaged in supporting Cefic in their joint work with the EU Commission on a "Transition Pathway for the Chemical Industry" related to the EU Green Deal. Our global energy coordinator routinely attends and speaks at trade group/agency sponsored events, webinars and conferences including DOE Better Plants, ENERGY STAR, Association of Energy Engineers and Smart Energy Decisions, 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 at all levels is actively involved in stakeholder outreach with member trade associations on their energy, climate and/or policy committees (e.g., ACC, TCC, CEFIC, VCI). Through these activities, we work directly with regulatory agencies and lawmakers to develop achievable, cost-effective, and sustainable regulatory requirements for the regulated entities.

A Celanese engineer participated in the Together For Sustainability cooperative initiative among 30+ chemical companies to develop a standard methodology for life-cycle-analysis for the chemical industry.

## C12.2

### **(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?**

No, but we plan to introduce climate-related requirements within the next two years

## C12.3

### **(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?**

## Row 1

---

### **Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate**

Yes, we engage directly with policy makers

Yes, we engage indirectly through trade associations

### **Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?**

Yes

### **Attach commitment or position statement(s)**

Yes, all advocacy has to be consistent with the Celanese climate policy statement.

<https://www.celanese.com/-/media/cwebjssapp/project/documents/Climate-Policy.pdf>

### **Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy**

At Celanese we take a multi-prong approach to ensuring that our engagement activities are consistent with our climate policy throughout the organization. The Vice President of Global Government Affairs and the EU Director of Government affairs are active members of the ESG Council and trade association positions are vetted through the ESG Council to ensure they are consistent with Celanese policy. This includes trade association positions related to climate policy and carbon border adjustment, energy efficiency targets, permit and tax incentives for renewable energy, and government support of electric vehicles. 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 ensure through our process safety steering committee that all site and corporate actions and activities are well thought-out and consider emerging regulatory requirements.

## **C12.3a**

### **(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?**

---

#### **Focus of policy, law, or regulation that may impact the climate**

Adaptation and/or resilience to climate change

**Specify the policy, law, or regulation on which your organization is engaging with policy makers**

We have supported the Infrastructure, Investment and Jobs Act because it included provisions and funding related to hardening of the power grid, tax and other incentives to support the development of electric vehicles and an extensive charging network, renewable energy projects (wind and solar credits), energy efficiency programs in homes and business, and widespread use of carbon capture, utilization and sequestration projects through Department of Energy involvement.

**Policy, law, or regulation geographic coverage**

National

**Country/region the policy, law, or regulation applies to**

United States of America

**Your organization's position on the policy, law, or regulation**

Support with minor exceptions

**Description of engagement with policy makers**

Education on the potential impact to the U.S. chemical manufacturing sector and our facilities in particular. Specific example of why government involvement is needed on research and development and incentives to promote the use of new technology and the potential impact if action isn't taken.

**Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation**

We opposed reinstatement of the Superfund tax that was included in the in the Infrastructure, Investment and Jobs Act because it adds a new fee on the advanced materials that will be needed to realize the energy reductions that are envisioned in the legislation.

**Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

## C12.3b

**(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.**

---

**Trade association**

American Chemistry Council

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Celanese actively participated at all levels of the company in the development of ACC's climate policy and complimentary policy positions to reduce emissions from the chemical sector while ensuring U.S. manufacturers continue to provide the advanced materials needed for a low carbon future. Celanese and ACC recognize that we will need technological breakthroughs, significant investments and sustained commitment with consistent nationwide policies to achieve the goal. It is going to take the public and private sectors working together to meet the challenge to increase the use of existing technologies such as increased use of combined heat and power and nuclear power, and encourage further development of newer technology such as carbon capture, utilization and storage (CCUS). In addition, biobased and recycled feedstocks are going to be an important part reducing carbon emissions in the future, and Celanese actively supported inclusion in the development of the policy priorities.

Celanese and ACC's climate positions are fully aligned. ACC believes that climate change is a global challenge that needs long-term commitment and action by every segment of society, including the chemistry sector. To that end, ACC, working with member companies like Celanese, developed and advocates for concrete policy recommendations: [file:///C:/Users/dalsnd/Downloads/ACC-Policy-Recommendations-for-a-Lower-Emissions-Future%20\(4\).pdf](file:///C:/Users/dalsnd/Downloads/ACC-Policy-Recommendations-for-a-Lower-Emissions-Future%20(4).pdf)

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

---

**Trade association**

European Chemical Industry Council (CEFIC)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Cefic is supporting the overall goals of the EU Green Deal with the objective to reach climate neutrality in the EU by 2050. Cefic is stating that the EU Chemical industry has the ambition to become climate neutral by 2050 – provided that certain enabling conditions are met for the successful transition of the sector.

<https://cefic.org/policy-matters/climate-change-and-energy/towards-implementing-the-climate-law/>

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

---

**Trade association**

German Chemical Industry Association (VCI)

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

VCI is a member of Cefic and therefore supports the Cefic climate position (see above)

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

---

**Trade association**

Other, please specify

ACC Plastics

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Yes, ACC Plastics policy position is the same as ACC, and it is where policy is developed for automotive design that will allow for increased use and accessibility of low emissions transportation. Engineered materials contribute to innovations in safety, performance and fuel efficiency. Today's polymers make up around 50 percent of the volume of new cars, but typically only 10 percent of the weight, helping to make cars lighter and more fuel-efficient. An important area where research and advancement are being made is automotive circularity to reduce the use of new material while not compromising safety.

Another area where Celanese is actively working with ACC is the acceptance of home compostable plastics.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

---

**Trade association**

Other, please specify

ACC Plastics

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Yes, ACC Plastics policy position is the same as ACC, and it is where policy is developed for automotive design that will allow for increased use and accessibility of low emissions transportation. Engineered materials contribute to innovations in safety, performance and fuel efficiency. Today's polymers make up around 50 percent of the volume of new cars, but typically only 10 percent of the weight, helping to make cars lighter and more fuel-efficient. An important area where research and advancement are being made is automotive circularity to reduce the use of new material while not compromising safety.

Another area where Celanese is actively working with ACC is the acceptance of home compostable plastics.

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

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**Trade association**

Other, please specify  
Plastics Europe

**Is your organization's position on climate change consistent with theirs?**

Consistent

**Has your organization influenced, or is your organization attempting to influence their position?**

We publicly promote their current position

**State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)**

Plastics Europe is supporting the overall goals of the EU Green Deal with the objective to reach climate neutrality in the EU by 2050. It states that many of its member companies have already committed to climate targets on their journeys to net zero, further demonstrating the industry's commitment to addressing the impacts of climate change.

<https://plasticseurope.org/sustainability/climate/>

**Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)**

**Describe the aim of your organization's funding**

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

No, we have not evaluated

## 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**

 Celanese-ESG-Report.pdf

**Page/Section reference**

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

**Content elements**

Governance  
Strategy  
Risks & opportunities  
Emissions figures

Emission targets

**Comment**

## C15. Biodiversity

### C15.1

**(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?**

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues
Row 1	No, and we do not plan to have both within the next two years

### C15.2

**(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?**

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	No, and we do not plan to do so within the next 2 years

### C15.3

**(C15.3) Does your organization assess the impact of its value chain on biodiversity?**

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	No, and we do not plan to assess biodiversity-related impacts within the next two years

### C15.4

**(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?**

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?
Row 1	No, we are not taking any actions to progress our biodiversity-related commitments

## C15.5

**(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?**

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	No	

## C15.6

**(C15.6) Have you published information about your organization’s response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
No publications		

## C16. Signoff

### C-FI

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

### C16.1

**(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	SVP, General Counsel and ESG Executive Sponsor	Chief Sustainability Officer (CSO)

## 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 factors, 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	8,537,000,000

## 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 2

**Allocation level**

Company wide

**Allocation level detail**

**Emissions in metric tonnes of CO2e**

2,448

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

6,804.6

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 6804.6 MT of tow purchased by Altria and specific Scope 2 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (primarily Narrows, VA USA) over multiple production steps.

---

**Requesting member**

British American Tobacco

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

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

12,655

**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

**Market value or quantity of goods/services supplied to the requesting member**

2,196.3

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 2196.3 MT, and specific Scope 1 emissions (tons CO<sub>2</sub> per ton of tow produced) for our U.S. manufacturing site (Narrows, VA) over multiple production steps.

---

**Requesting member**

British American Tobacco

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

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

791

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

2,196.3

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 2196.3 MT of tow purchased by BAT and specific Scope 2 emissions (tons CO<sub>2</sub> per ton of tow produced) for our U.S. manufacturing site (Narrows, VA) over multiple production steps.

---

**Requesting member**

Imperial Brands

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

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

5,381

**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

**Market value or quantity of goods/services supplied to the requesting member**

933.9

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales of 933.9 MT, and specific Scope 1 emissions (tons CO<sub>2</sub> per ton of tow produced) for our U.S. manufacturing site (Narrows, VA USA) over multiple production steps.

---

**Requesting member**

Imperial Brands

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

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

336

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

933.9

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 933.9 MT of tow purchased by Imperial Brands and specific Scope 2 emissions (tons CO<sub>2</sub> per ton of tow produced) for our U.S. manufacturing site (Narrows, VA USA) over multiple production steps.

---

**Requesting member**

JT International SA

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

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

42,699

**Uncertainty ( $\pm\%$ )**

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

**Market value or quantity of goods/services supplied to the requesting member**

7,944.1

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 7944.1 MT, and specific Scope 1 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (Belgium and U.S.) over multiple production steps.

---

**Requesting member**

JT International SA

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

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

1,914

**Uncertainty ( $\pm\%$ )**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

7,944.1

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 7944.1 MT of tow purchased by JTI and specific Scope 2 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (U.S. and Belgium) over multiple production steps.

---

**Requesting member**

Philip Morris International

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

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

186,258

**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

**Market value or quantity of goods/services supplied to the requesting member**

34,264

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 34264.0 MT, and specific Scope 1 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (USA and Belgium) over multiple production steps.

---

**Requesting member**

Philip Morris International

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

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

8,898

**Uncertainty (±%)**

20

**Major sources of emissions**

Purchased power.

**Verified**

No

**Allocation method**

Allocation based on mass of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

34,264

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 34264.0 MT of tow purchased by PMI and specific Scope 2 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (USA and Belgium) over multiple production steps.

---

**Requesting member**

Altria Group, Inc.

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

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

39,200

**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

**Market value or quantity of goods/services supplied to the requesting member**

6,804.6

**Unit for market value or quantity of goods/services supplied**

Metric tons

**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 2021 sales volume of 6804.6 MT, and specific Scope 1 emissions (tons CO<sub>2</sub> per ton of tow produced) for two manufacturing sites (primarily Narrows, VA USA) over multiple production steps.

## SC1.2

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

## SC1.3

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

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

---

**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  
Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

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### **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  
Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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**Requesting member**

Ecolab 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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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**Requesting member**

Faurecia

**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

Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

---

### **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

Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

---

**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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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**Requesting member**

Koninklijke Philips NV

**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  
Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

**Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

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### **Requesting member**

Philips Domestic Appliances

### **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

Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

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### **Requesting member**

Prysmian SpA

### **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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

---

**Requesting member**

Robert Bosch GmbH

**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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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

Other, please specify

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

### **Details of proposal**

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

---

### **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  
Unknown at this point

### **Estimated lifetime CO<sub>2</sub>e savings**

### **Estimated payback**

### **Details of proposal**

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

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### **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  
Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

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### **Requesting member**

Trelleborg AB

### **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  
Unknown at this point

### **Estimated lifetime CO2e savings**

### **Estimated payback**

### **Details of proposal**

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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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**Requesting member**

WestRock 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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

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**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

Unknown at this point

**Estimated lifetime CO2e savings**

**Estimated payback**

**Details of proposal**

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

	<b>I understand that my response will be shared with all requesting stakeholders</b>	<b>Response permission</b>
Please select your submission options	Yes	Public

**Please confirm below**