The Dow Chemical Company - Climate Change 2021

C0. Introduction

C0.1

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

Dow (NYSE: DOW) combines global breadth, asset integration and scale, focused innovation and leading business positions to achieve profitable growth. The Company's ambition is to become the most innovative, customer centric, inclusive and sustainable materials science company. Dow's portfolio of plastics, industrial intermediates, coatings and silicones businesses delivers a broad range of differentiated science-based products and solutions for its customers in high-growth market segments, such as packaging, infrastructure, mobility, and consumer care. Dow operates 106 manufacturing sites in 31 countries and employs approximately 35,700 people. Dow delivered sales of approximately $39 billion in 2020.

Dow's major manufacturing sites are located in Argentina, Brazil, Canada, China, Germany, The Netherlands, Spain, Thailand, United Kingdom, and the United States. Our portfolio includes six global businesses which are organized into the following operating segments: Packaging & Specialty Plastics (Hydrocarbons & Energy and Packaging and Specialty Plastics), Industrial Intermediates & Infrastructure (Industrial Solutions and Polyurethanes & Construction Chemicals), and Performance Materials & Coatings (Coatings & Performance Monomers and Consumer Solutions).

This report is a combined report being submitted by Dow Inc. and The Dow Chemical Company and its consolidated subsidiaries ("TDCC" and together with Dow Inc., "Dow" or the "Company").

Dow supports the Paris Agreement and is committed to achieving its goal of keeping global temperature rise well below 2°C and to pursue efforts to limit the increase to 1.5°C. As both a major user of energy, as well as a producer of technologies that are essential to a lower-carbon future, we have a responsibility to act. As a tangible demonstration of our commitment to climate protection, in 2020 Dow set the following targets:

- By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons vs. our 2019* baseline (15% reduction). By 2050, Dow aspires to be carbon neutral (scope 1 + 2 + 3 plus product benefits).

These newly announced targets are in addition to our 2025 Sustainability Goals with the following climate-related objectives:

- Dow will obtain 750 MW of its power demand from renewable sources by 2025.

- Though we will grow globally over the next 10 years, Dow's absolute greenhouse gas emissions will not exceed our 2006 baseline.

The Sustainability Team ensures progress is made on both the new commitments, and the Company's 2025 Sustainability Goals. In addition, a carbon focus team initiated in 2018 (the Carbon Program Oversight Committee (POC)), led by the Executive Leadership Team, aligns senior leadership from across Dow's businesses and functions, and drives all aspects of the Company's initiatives around carbon and emissions.

A summary of Dow's current strategy as it relates to carbon emissions is as follows:

- Optimizing our facilities and processes;

- Increasing renewables in the purchased power mix for Dow;

- Evaluating investments in Carbon Capture, Usage and Storage (CCUS). CCUS is a critical transitioning technology that would assist in the move to a low carbon economy while new low-emission technology is developed;

- Developing low carbon technologies that have the potential to enable Dow to make a step change in emission reduction; and

- Deploying materials that will help reduce emissions for customers and industries.

Dow supports CDP's efforts to promote the measurement, management, reporting, and reduction of greenhouse gas emissions. Dow also supports the recommendations made by the Task Force for Climate Related Financial Disclosure (TCFD). Dow recently released our 2020 Environmental, Social and Governance (ESG) Report. Though Dow has been committed to transparently reporting its progress on sustainability for many years, this annual report represents the first time that Dow has combined all our ESG priorities into one holistic, transparent and comprehensive report. Along with our ESG Report, Dow views the opportunity to report to CDP as a key mechanism for us to report our progress as it relates to climate.

More information on Dow can be found at www.dow.com.

*Note: Our target to reduce net annual carbon emissions by 5 million tons vs. our 2019 baseline was originally announced stating the baseline would be 2020. However, year 2020 was not representative of a typical production year due to the impact of COVID-19 on operations and production volumes. For this reason, the baseline was reassessed and 2019 was selected as the baseline year. The baseline represents Scope 1 + 2 emissions in 2019, adjusted for outliers (E.g. Abnormal number of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). The value of the baseline equals 34.7 million metric tonnes of CO_2e.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2020	December 31 2020	Yes	1 year

C0.3

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

Argentina
Brazil
Canada
China
France
Germany
Italy
Netherlands
Portugal
Spain
Thailand
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

Lower olefins (cracking)
Aromatics
Ethylene oxide & Ethylene glycol
Ethanol
Polymers

Bulk inorganic chemicals

Chlorine and Sodium hydroxide
Hydrogen
Other industrial gasses

Other chemicals

Specialty chemicals
Specialty organic chemicals

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Description of the position and explanation of how the CEO's responsibility is related to climate issues: As Chairman and Chief Executive Officer of Dow, the CEO provides leadership oversight for the entire organization, including decisions made on strategy as it relates to sustainability and climate change. The CEO is responsible for discussing company strategy, plans, results, and issues with the Board and Board committees. As Chairman of the Board, the CEO ensures that topics related to sustainability and climate change are given appropriate time on meeting agendas, and that decisions made related to the Company's strategy around sustainability and climate change are brought to consensus. The CEO is a member of the Executive Leadership Team, which oversees the efforts of Dow's Carbon Program Oversight Committee (POC) and associated Project Steering Committees. The Executive Leadership Team oversees all of Dow's efforts related to carbon emissions reduction and climate management, including but not limited to: setting targets and goals, developing strategy, reporting, advocacy, evaluation of climate risks and opportunities, technology investments, and capital planning. Example of a climate-related decision: An example of a climate-related decision made by the CEO would be approving the Company's new climate targets that were released in June 2020: By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons vs. our 2019 baseline (15% reduction). By 2050, Dow aspires to be carbon neutral (scope 1 + 2 + 3 plus product benefits).
Board-level committee	Description of the position and explanation of how the Board-level committee's responsibility is related to climate issues: The Environment, Health, Safety & Technology (EHS&T) Committee is a Board-level committee that oversees the following: environment, health, safety (EH&S), corporate social responsibility, public policy, philanthropy, corporate reputation, and science and technology. The Executive Leadership Team reports to the Board EHS&T Committee via the CEO. Responsibilities of the EHS&T Committee include, but are not limited to: - Assess current aspects of the Company's EH&S policies and performance and make recommendations to the Board and management of the Company with regard to promoting and maintaining superior standards of performance, including processes to ensure compliance with applicable laws and regulations and programs to manage risk. - Oversee and advise the Board on matters impacting corporate social responsibility, public policy, philanthropy and the Company's public reputation. - Oversee and advise the Board on the Company's sustainability efforts, including efforts to reduce carbon emissions and eliminate plastic waste. - Oversee the assessment of all aspects of the Company's science and technology capabilities in all phases of its activities in relation to its strategies and plans and make recommendations to the Board and the management of the Company with the goal of continually enhancing the Company's science and technology capabilities. Aspects of the Company's strategy as it relates to carbon and climate change are integrated into the responsibilities above. Example of a climate-related decision: An example of a climate-related decision made by the Environment, Health, Safety & Technology Committee in 2020 would be approving the Company's corporate risk factors as it relates to climate-change – for example, a primary risk is related to the potential cost of environmental compliance, as described in the Company's Annual Report on Form 10-K for the year ended December 31, 2020.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	Dow's full Board and our EHS&T Committee (Board level committee) both review climate-related topics multiple times per year. Dow held six Board meetings and the committees of the Board collectively held 25 meetings for a total of 31 meetings in 2020 during which economic, environmental, and social topics were discussed. The EHS&T Committee (which held five meetings in 2020) oversees strategy and action plans developed by Dow's Executive Leadership Team as they relate to sustainability, carbon, and climate change. Dow's Executive Leadership Team ensures attention is given to carbon, and climate related issues. The CEO, who is responsible for reporting to the Board EHS&T committee, is a member of the Executive Leadership Team, along with the Chief Financial Officer, Chief Technology Officer, VP of Investor Relations, VP of Government Affairs, Business Presidents, Senior VP of Operations, and Chief Information Officer. Under the advisement of the Executive Leadership Team, sub-teams known as Project Steering Committees direct specific efforts related to CO2 reduction and climate, such as reporting, policy advocacy, evaluating climate risks and opportunities, technology investment, and capital planning. Dow's overall carbon organization (Executive Leadership Team and Project Steering Committees) is referred to as the 'Program Oversight Committee (POC)'. Ultimately, the POC is responsible to the Board via the CEO. Primarily, discussions at the Board EHS&T committee level are focused on monitoring progress against Dow's Sustainability Goals, review of critical external reports where Dow reports on our climate efforts, such as Dow's annual Environmental, Social, and Governance (ESG) report and the oversight of major capital expenditures, acquisitions, and divestitures. For example, the Board is informed and given the opportunity to provide input into investments in mega projects above a certain dollar value that are related to addressing emissions reduction or improving operating efficiency. Although each committee is responsible for its key areas of risk and oversight, the full Board is regularly informed by a report of each committee's chair on the topics discussed and actions taken at each committee meeting, enabling the Board to coordinate oversight and the relationships among the various objectives and risks faced by Dow. In addition to assigning the Board oversight on climate-related issues, Dow, ensures that those individuals qualified to serve as Directors of the Company collectively bring a balance of relevant skills, professional experience, and diversity of background allowing them to effectively oversee the Company's business. In 2020, Dow included environmental and social impact experience as a key qualification. Currently 8/11 of Dow's Directors are individuals with environmental, sustainability and social impact experience, strengthening the Board's oversight of environmental and social policies, initiatives and reporting.

C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

C1.2a

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

The Chief Executive Officer (CEO) and Chairman of the Board is ultimately responsible for reporting to the Board on climate related risks and opportunities.

Where in the organizational structure this position lies:

The CEO is the highest-ranking position at Dow. The CEO is a member of the Executive Leadership Team, along with the Chief Financial Officer,Chief Technology Officer, VP of Investor Relations, VP of Government Affairs, Business Presidents, Senior VP of Operations, and Chief Information Officer. Under the advisement of the Executive Leadership Team, sub-teams known as Project Steering Committees direct specific efforts related to CO2 reduction and climate, such as reporting, policy advocacy, evaluating climate risks and opportunities, technology investment, and capital planning. Dow's overall carbon organization (Executive Leadership Team and Project Steering Committees) is referred to as the 'Program Oversight Committee (POC)'. Ultimately, the POC is responsible to the Board via the CEO. Under the management of the CEO and the Executive Leadership Team, the POC is responsible for putting plans in place to meet Dow's new climate targets: By 2030, Dow will reduce our net annual carbon emissions by 5 million metric tons versus our 2019 baseline (15% reduction). By 2050, Dow intends to be carbon neutral (Scopes 1 + 2 + 3 plus product benefits).

The POC meets on a bi-monthly basis, with sub-teams meeting more frequently. The focus of the bi-monthly meeting is to monitor progress from each of the Project Steering Committees in the POC. Updates on progress against our objects from the senior leaders that oversee the day-to-day activities of the POC are provided to the CEO at least bi-annually.

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	Annual compensation reviews for senior leaders with management oversight of climate-related issues include a review of progress made during the year as it relates to elements like: progress towards 2025 Sustainability Goals, execution of projects with significant impact to emissions/energy intensity, and management of climate related risks and opportunities. In 2020, the Performance Awards for all Dow employees were based not only on financial performance, but on progress towards our 2025 Sustainability Goals via an Environmental Stewardship index, which includes our climate-related targets, and is part of our World Leading Operations Index metric.

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 inventivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target Efficiency target Supply chain engagement Company performance against a climate-related sustainability index	
Chief Financial Officer (CFO)	Monetary reward	Emissions reduction target Efficiency target Supply chain engagement Company performance against a climate-related sustainability index	
Other, please specify (Senior Vice President, Operations - Manufacturing & Engineering)	Monetary reward	Energy reduction target Efficiency target Supply chain engagement Company performance against a climate-related sustainability index	
Other, please specify (Senior Vice President, Research & Development and Chief Technology Officer)	Monetary reward	Emissions reduction target Efficiency target Supply chain engagement Company performance against a climate-related sustainability index	
Other, please specify (General Counsel and Corporate Secretary)	Monetary reward	Emissions reduction target Efficiency target Supply chain engagement Company performance against a climate-related sustainability index	
All employees	Monetary reward	Company performance against a climate-related sustainability index	

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	1	5	The Company has a fiduciary responsibility to its stake holders to manage short term performance. This responsibility has both quarterly and yearly components.
Medium-term	5	10	The Company monitors market trends, and external forces that are expected to present opportunities or be disruptive to Dow. Manufacturing processes, assets and product portfolios are adjusted based on these trends.
Long-term	10	30	The chemical industry is capital intensive with long lived assets and highly valuable intellectual property. All major investment decisions, portfolio reviews, acquisitions and divestitures are reviewed in the light of long-term trends, opportunities and threats (10-30 year). Those reviews consider evolution of global trends in regulation, climate change, energy and raw material markets, and consumer demands. In addition, a long-term outlook is used to identify opportunities to design new solutions which enable lower carbon for the system and value chain our products touch.

C2.1b

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

Definition of substantive impact:

In general, Dow defines a substantive risk or opportunity as one that has the potential to impact Dow at a level of $50 million USD or more. Dow uses a number of tools to identify and prioritize risk that bring a range of financial and strategic risks to the table for discussion, and whether or not a risk or opportunity is determined to be substantive is also dependent on other factors such as where in the value chain the impact may be felt, and the likelihood, magnitude, and duration of impact.

Description of the quantifiable indicators used to define substantive impact:

We use a number of tools to identify and prioritize risks and opportunities, including a sustainability materiality assessment, a stakeholder engagement process, and our Enterprise Risk Management process. When assessing climate related risks and opportunities, the quantifiable indicators include, but are not limited to: potential impact on cost of raw materials, impact on operating cost (e.g. Energy costs, costs of complying with regulation), cost of investment in new technology to reduce emissions, impact to the price at which products can be sold, impact as a result of potential lost sales, or in the case of opportunities, market share gained, etc. In addition, there could be impacts that need to be considered that are not yet able to be quantified in a concrete manner (for example, reputational impact of certain risks are more difficult to quantify), but could still be important for discussion due to a variety of factors.

C2.2

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

Value chain stage(s) covered
Direct operations
Upstream
Downstream

Risk management process
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
Description of process: Risk management is a strategic activity for Dow. Corporate-level identification and management of risk is accomplished using an integrated Enterprise Risk Management approach. The Board of Directors ("Board") oversees this process, primarily via the Audit Committee. While the Audit Committee oversees the company's risk management process, each Board level committee is responsible for certain key areas of risk oversight. The EHS&T committee oversees the company's climate-related risk, such as emerging regulatory developments. The Audit Committee is responsible for coordinating the outcome of reviews by the other committees in their respective risk areas. While discussions regarding risks occur throughout the year, a formal review of Enterprise Risk Management is conducted annually by the Audit Committee and the Board. While the Audit Committee oversees the company's risk management process, responsibility for tactically managing risk rests with executive management. Areas of risk are categorized, with management ownership and monitoring assigned. Risk management results are regularly communicated to the Chief Financial Officer (CFO) who provides management oversight for Dow employees who carry out the Enterprise Risk Management process. With respect to climate-related risks and opportunities, the Executive Leadership Team, which includes the Chief Executive Officer and the CFO, has responsibility to understand the potential implications of risks and opportunities as they relate to carbon emissions and climate change. A change in the external environment, internal detection, or a concern by executive or Board management can trigger the evaluation of a risk. The following is evaluated by executive management based on the significance of the risk: - Financial impact - Corporate reputation damage - Environment or community impact Risks are also evaluated to determine which may cause or increase other risks, as well as which are primarily driven by external forces vs. internal decisions. This analysis is used to determine the appropriate risk mitigation actions. All risks are reviewed and reassessed on at least a semi-annual basis to identify changes in the internal or external environment which may cause certain risks to submerge or others to appear. Along with the above, Dow periodically conducts climate-related scenario analysis using an exploratory approach to evaluate potential climate policy, energy demand, fuel mix, and socio-economic trends that could contribute to a range of futures Dow could be operating in, and thus what our specific climate-related risks (both physical and transitional risks) and opportunities may be. Data provided in these scenarios, such as projected energy demand and fuel mix, allow us to then understand our potential profitability given our current portfolio mix, and where there could be opportunities to adjust our strategy to capitalize on these potential futures. In general, the time horizons evaluated under this analysis are long-term outlooks, though short term and medium-term considerations are incorporated. Fundamentally, the scenarios are used to understand how our existing or proposed strategies will perform under different potential futures. Case study that demonstrates how the risk management process has been used to identify, assess, and respond to physical risks and/or opportunities: Situation: Many of Dow's operating facilities rely on access to water resources to ensure safe operation. As a result of climate change and changing precipitation patterns, depending on the manufacturing location, there is a risk that water scarcity events become increasingly more frequent, impacting Dow's operations. Task: As a plant shutdown due to a water scarcity event could have substantive impact to Dow in the form of lost production, a rigorous evaluation of this risk as it relates to Dow's manufacturing locations and an action plan to address was warranted. Action: In order to understand this potential risk in more detail, Dow utilized a risk management approach to conduct an evaluation of our manufacturing locations, looking at elements such as the location of the site in a water-stressed watershed, water quality, and competition among users of the same watershed, in order to determine where to best direct efforts in mitigating this risk. Result: The evaluation of our sites highlighted six key water-stressed sites. The identification of a site as a key water-stressed site ensures executive leadership awareness and that appropriate resources are allocated to mitigate the risk. For example, one of our water stressed sites is our Terneuzen site in The Netherlands which utilizes water from the Biesbosch area, near the confluence of the Rivers Rhine and Meuse. To ensure water supply and minimize reliance on this watershed, Dow reached an agreement with Evides Industriewater on a new 20-year build-own-operate contract for water supply to the site. Together with Evides Industriewater, the site will collaborate on ways to optimize processes, reuse wastewater, and utilize rainwater to reduce the intake of this site. Action plans associated with other water-stressed sites have similar impact to lessening the potential for a water scarcity event. Case study that demonstrates how the risk management process has been used to identify, assess, and respond to transitional risks and/or opportunities: Situation: Dow operates manufacturing sites in 31 countries across the globe. Current approaches to climate-related regulation vary across the different countries in which Dow operates, and regulation continues to evolve. Many countries have signed onto the Paris Agreement, but pathways to achieve the goal of limiting global temperature rise to <1.5°C are varied. Task: The chemical industry is capital intensive with long lived assets. Dow is subject to regulation at all of our locations – as such, a long-term outlook on the potential for regulatory changes and their impact across a variety of scenarios is warranted for proper risk management. Action: Dow utilizes its risk management framework to understand risks associated with the cost of compliance as it relates to climate-related regulation across the jurisdictions in which we operate. Dow continuously scans the external regulatory environment for prospective changes to anticipate potential increased cost to comply. Dow also utilizes external scenarios that describe regulatory pathways to achieve the goal of limiting global temperature rise to <1.5°C in order to evaluate potential impact to our operations. Result: Anticipating increased ambition in the European Union with respect to climate change, Dow initiated several project steering teams to put capital plans in place for our sites in the EU in response to the EU's goal of cutting carbon emissions by at least 55% by 2030 (vs. 1990 levels) before this announcement was solidified via legislation.

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	Rationale for relevance: Dow operates manufacturing sites in 31 countries across the globe. Current approaches to climate-related regulation vary across the different countries in which Dow operates, but all impact the expected cost to operate our facilities. Regulations focused on the cost of carbon emissions have a variable component in that the cost of compliance may vary over time depending on elements such as available allowances and Dow's own emissions projections. Example of risk type: Climate change regulations apply to Dow's operations in Europe through the EU Emissions Trading System (ETS). The ETS results in costs at several of Dow's manufacturing facilities. From a risk management standpoint, Dow has a team that maintains long term projections on the potential impact of the ETS on Dow's operations, based on our emissions projections and projected prices of certificates. These projections are reviewed with senior leadership at least annually.
Emerging regulation	Relevant, always included	Rationale for relevance: Dow operates manufacturing sites in 31 countries across the globe. Climate change regulations are emerging and changing in different geographies where Dow has operations. Changes in governments can also bring changes to regulation that Dow needs to be aware of in order to anticipate impact to our operations. Depending on the Dow's emissions footprint in a particular geography the impact of emerging regulation may vary, but could be significant. Example of risk type: As the majority of Dow's emissions are generated in the United States, of particular relevance to Dow is the potential for carbon emission pricing mechanisms being instituted at the State or federal level of the US, resulting in increased cost to comply. For example, several carbon pricing proposals have been introduced so far in the 117th Congress (2021-2022), five of which would establish some form of carbon tax at the federal level (or carbon 'fee'). From a risk management standpoint, Dow has internal carbon pricing forecast for emission costs and forward market trading, as well as an internal shadow carbon pricing for capital project and maintenance project reviews. Dow's Government Affairs team monitors changes in regulation specifically related to climate change. These inputs are incorporated in the risk assessment and management process. Dow also utilizes carbon pricing projections in externally developed scenarios that demonstrate a pathway to mitigating the temperature rise to less than 2°C, such as the International Energy Agency (IEA) Sustainable Development Scenario. We use these scenarios to evaluate potential impact from carbon pricing schemes on Dow's operations. In general, climate change risk and opportunities related to emerging regulation is presented to the Leadership Team at least twice a year.
Technology	Relevant, always included	Rationale for relevance: Dow has mature, capital intensive assets in place that are by nature energy and emission intensive. Though Dow continuously looks for opportunities to reduce the energy and emissions intensity of our operations, many of our assets have been optimized to the point where in order to make a significant step-change in emissions, new technologies not yet economically available will need to be implemented. As a science and technology driven company, Dow ensures continuous evaluation of changes/progress related to economically available technologies that could reduce our energy or emissions intensity, or capture emissions. Example of risk type: Dow operates capital-intensive assets that currently rely largely on natural gas to generate the heat needed to run our processes (E.g. Boilers, furnaces, combined heat and power plants). Some technologies needed for the deep decarbonization of these assets, such as high temperature and high-pressure electrification and green hydrogen, are not yet available at scale. Dow is working on the acceleration of these technologies – for example, Dow and Shell have a joint development agreement to accelerate technology to electrify ethylene steam crackers - but implementation will come at a cost. For jurisdictions where there is not currently a price on carbon emissions, Dow needs to balance implementation of these technologies while maintaining regional competitiveness. For jurisdictions where there is a price on carbon emissions, Dow needs to employ its technology and project management expertise to ensure the capital needed to implement new technologies is deployed as efficiently as possible. Dow's Manufacturing & Engineering and R&D organizations continue to evaluate new and emerging technologies for application within our Operations. For example, Dow is investigating options for CCUS for its operations in The Netherlands, including options for capture technology, development of infrastructure (pipeline & storage), and working with the government to evaluate the landscape for subsidies. In addition to internal efforts, Dow engages in external working groups, such as the Gulf Coast Carbon Collaborative (GC3) to understand the landscape of technological changes. Climate change risk and opportunities, including commentary on emissions reduction technologies, are presented to the Leadership Team at least twice per year.
Legal	Relevant, sometimes included	Rationale for relevance: Failure to meet legal obligations related to climate change would have negative impacts for Dow. Since there have not been any material lawsuits on the chemical industry, this risk is only sometimes included in the assessments. Example of risk type: Dow closely monitors the development of lawsuits, such as those which have developed in the energy industry seeking to recover climate change-related damages allegedly resulting from defendant energy companies' production (gasoline, fuels). The chemical industry and energy industry are linked. As some of Dow's feedstock is a byproduct of energy production, material impact to the energy industry could have an impact to Dow. Dow is actively involved with industry groups regionally and globally to assess the legal risk from climate change.
Market	Relevant, always included	Rational for relevance: Dow has many product families under our portfolio of three operating segments and six global businesses: Packaging & Specialty Plastics Segment: Hydrocarbons & Energy and Packaging and Specialty Plastics; Industrial Intermediates & Infrastructure Segment: Industrial Solutions and Polyurethanes & Construction Chemicals; Performance Materials & Coatings Segments: Coatings & Performance Monomers and Consumer Solutions. Some of these products are sold in markets where customers and consumers have shown concern to climate change. Example of risk type: Markets that Dow serves including high-performance buildings, architectural paint, protective and functional coatings, insulation, infrastructure, heat transfer fluids, and energy have trends that demand innovation to more carbon efficient solutions. Dow products contribute to carbon emission reductions today – for example, foam made with Dow Polyurethanes helps to increase the insulation resistance factor of buildings, thereby reducing emissions associated with heating and/or cooling – but the Company needs to continue to make sure that we provide production innovative solutions to these market trends or risk losing market share. Each Dow business unit addresses the market risk individually. For example, as part of the Sustainable Chemistry Index annual internal assessment, each business reports their sustainability goals, and products that address world challenges including energy efficiency and climate change.
Reputation	Relevant, always included	Rationale for relevance: How companies are addressing risks and opportunities related to climate change is increasingly being used as a criterion to evaluate organizations by investors and customers. The investment community is strategically making sustainability an integral part of portfolio construction, with some firms vocalizing intent to limit investments in companies seen as not taking action on climate-related issues or who score poorly in third-party Environmental, Social, and Governance (ESG) rankings. Dow's customers have their own sustainability objectives that often require collaboration with their suppliers. Failure to act on climate-related issues could impact Dow from a reputational standpoint, affecting our interactions with both the investment community and current/future customers. Example of risk type: Dow has been recognized by external organizations for our sustainability efforts. For example, in 2020, Dow was named to the Dow Jones Sustainability Index for the 21st time. However, there is a risk that if Dowis perceived as not acting on climate change, Dow may not be included in these key rankings. If our competitors are, we have the potential to lose market share. Dow's Investor Relations, Public Affairs, Government Affairs and Sustainability teams monitor reports and initiatives that have the potential to impact Dow's reputation. These teams also offer input into the tangible actions we can take to improve our leadership in the climate change space.
Acute physical	Relevant, always included	Rationale for relevance: Dow has 106 manufacturing sites in 31 countries, and a globally-connected supply chain. The potential for acute impacts as a result of climate change varies across Dow's locations, but some of Dow's major manufacturing sites are located in areas that could experience more severe weather. In addition, because of Dow's interconnectivity, an impact to one location could have a resulting impact on our supply chain and subsequently impact those locations that may not experience a severe weather event directly. Example of risk type: The impact of severe weather is not only a safety risk, but also has the potential to result in production loss events. Dow has significant operations in the US Gulf Coast region and others that are likely to be impacted by acute effects of climate change including severe weather events. Hurricanes Gustav and Ike, which hit the U.S. Gulf Coast in 2008, caused temporary outages for several of the Company's Gulf Coast production facilities, resulting in $181 million in additional operating expenses. More recently, Hurricane Harvey, which hit the U.S. Gulf Coast in August and September 2017, caused widespread temporary logistics and supply chain disruptions as well as brief outages and slowdown of production rates for some of the Company's Gulf Coast facilities. To mitigate risks associated with severe weather, we have engineered the facilities to better withstand these events. Additionally, these sites have specific emergency preparedness plans that detail actions to take in the event of severe weather. Prices of finished goods may be adjusted as well. Historically, these activities and associated routine costs are driven by normal operational preparedness. Dow continues to study the long-term implications of changing climate parameters on water availability, plant siting issues, and impacts and opportunities for products.
Chronic physical	Relevant, always included	Rationale for relevance: Dow operates 106 sites in 31 countries, and a globally-connected supply chain. Some of these sites have the potential to be impacted by chronic effects of climate change such as drought, water level rise, temperature rise, and changing weather patterns. Example of risk type: Of particular importance to Dow's operations are water availability and water quality – both of which are needed for the safe operation of our plants. Without available water, Dow could experience production loss events. Understanding of the risk of impact to the water supply for our plants is important in order for Dow to put plans in place to mitigate the risk. Using the Aqueduct tool from the World Resources Institute (WRI), as well as how material a production loss event may be at a particular site, Dow has identified six key water-stressed sites that are closely monitored with respect to this risk. The key water-stressed sites are designated based on a number of factors: their location in a water-stressed watershed; water quality; competition among users of the same watershed; local knowledge of watershed challenges at the site; and long-term projections. Dow has also developed a "watch list" of sites where water challenges may occur.

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 direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
Carbon pricing mechanisms related to carbon emissions currently impacts Dow in Europe and Canada. In 2020, approximately 25% of Dow's total Scope 1 emissions were generated at our facilities in Europe that are subject to the EU Emissions Trading System (ETS). Approximately 5% of our Scope 1 emissions and a small portion of our Scope 2 emissions were generated at our facilities in Canada subject to the Alberta Technology Innovation and Emissions Reduction (TIER) regulation. Dow's main regulatory risk related to climate change is that the cost to comply with these regulations increases, either via a reduction in the number of free allowances or an increase in certificate prices, resulting in Dow experiencing an increase in cost to operate, compared to competitors who may not be subject to carbon emission pricing legislation in the jurisdictions where they operate. In addition, carbon emission pricing mechanisms result in higher electricity prices in these jurisdictions, as a result of the increased cost to operate fossil-based generators being passed on to the electricity consumer.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
200000000

Potential financial impact figure – maximum (currency)
500000000

Explanation of financial impact figure
As this particular risk involves an assessment of current regulations and their impact to Dow, the financial impact figure provided is an approximate range of how existing carbon emission pricing legislation would impact Dow based on our emissions and compliance obligations in the year 2030. We anticipate that cost to comply with the EU ETS will represent that majority of our compliance costs to 2030. Dow has a goal to reduce Scope 1 + Scope 2 emissions by 15% from our 2019 baseline. Though we expect our emissions to reduce to 2030, in the EU, we anticipate rising certificate prices. We also expect increasing carbon emission pricing in Canada, based on the Canadian federal government announcement that prices at 2030 are to be set at $170 CAD per tonne. Though there is not a current federal price on carbon in the US, we do see climate ambition increasing. The financial impact figure range is based on: total anticipated emissions at 2030 in Canada and Europe minus any free allowances, multiplied by a range of potential certificate prices at 2030.

Cost of response to risk
5000000

Description of response and explanation of cost calculation
Explanation of cost calculation: This cost of response is based on the dedicated commercial team which manages emissions trading (~10 FTE at a cost of approximately $150,000 USD per year), as well as the cost of salaries and wages for the Energy and Hydrocarbons Tech Centres (~20 FTE at a cost of $150,000 USD per year) who more closely work on large scale energy and emission reduction projects. These management efforts are already integrated into normal operations (eg. Salaries and Wages). This does not include the potential cost of implementing technologies Dow is exploring to further reduce emissions. Case Study of response to risk: Dow works to mitigate the direct cost impact of existing regulation through pursing efforts to reduce Dow's overall energy usage and GHG emissions through optimizing our facilities or implementing new projects. Currently, Dow's multidisciplinary teams are working on energy efficiency projects, R&D, and capital investment project that will reduce the Company's energy usage and carbon footprint overall. Situation: To combat climate change, The Netherlands aims to raise the EU ambition for 2030 to a 55% emission reduction, compared to 1990 levels. Dow has a facility in Terneuzen, The Netherlands, that could have an increased cost to comply if carbon emission pricing increases as a result of this objective, or available allowances are decreased. Task: Dow mitigates the cost of compliance through the implementation of CO_2 reduction projects that are less expensive to implement on a cost per tonne of carbon basis than the projected cost of carbon emissions. Ultimately, our task is to reduce emissions in the most cost-effective manner available. Action: Dow has generated a roadmap for our Terneuzen site to reduce emissions. This plan foresees the construction of a clean hydrogen plant where by-products from core production processes are converted into hydrogen and CO_2. The hydrogen would be used as clean fuel in the production process. The CO_2 would be captured and stored until alternative technologies develop, or the CO_2 can be used in processes. A preliminary investment decision on the implementation of this roadmap is expected in 2022. Result: As a result of this initial phase of the project, the site is expected to reduce CO_2 emissions by approximately 1.4 million tonnes per year (40% reduction from 2020 levels). The reduction in emissions would result in reduced cost to comply with the EU ETS.

Comment

Identifier
Risk 2

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

Risk type & Primary climate-related risk driver

Technology	Transitioning to lower emissions technology

Primary potential financial impact
Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
Dow has a goal to reduce our carbon emissions by 15% by 2030, and to become carbon neutral by 2050 (Scope 1+2+3+product benefits). In order to achieve these goals, capital investment will be required. Some of the investments required will be associated with technologies that are relatively new to application in the chemical industry at the scale required for widespread decarbonization (eg. Carbon Capture, Utilization, and Storage ("CCUS"), green hydrogen, electrified ethylene steam crackers). Dow is actively putting roadmaps in place to utilize these technologies. For example, Dow has outlined a roadmap to reduce CO2 emissions from our Terneuzen site in The Netherlands by 40% (compared to 2020), and the roadmap relies on the use of hydrogen and carbon capture. In the first phase, the plan foresees the construction of a clean hydrogen plant where by-products from core production processes would be converted into hydrogen and CO2. The hydrogen would be used as a clean fuel in the production process. The CO2 would be captured and stored until alternative technologies develop, and Dow will also look for ways to enable usage of the CO2 in its processes rather than storing it. The first phase would also include additional investments in site infrastructure for CO2 liquefaction, air separation, hydrogen distribution and CO2 transport. In the second phase, by 2030, Dow will capture CO2 from our ethylene oxide plant and replace some gas turbines with electrical motor drives. This will avoid a further 300,000 tons of CO2 emissions per year. The third and final phase of the plan will develop and implement additional breakthrough technologies to replace fuel usage in the production processes. These furnaces currently rely on fuel combustion, which makes them CO2-emission intensive when not fired on clean hydrogen. Switching to electrical cracking with clean electricity will reduce the CO2 footprint of the production process to near zero emissions. The project will have an impact in achieving Dow's carbon emissions goals, but will also result in avoided emissions cost from a regulatory standpoint. If regulations change, or allowance prices significantly decrease, the economics of the project change. The technology investment risk is specifically associated with the potential for increased annual operating costs associated with the technology, without the benefit of the avoided emissions cost.

Time horizon
Medium-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
0

Potential financial impact figure – maximum (currency)
100000000

Explanation of financial impact figure
Dow's evaluation of the economics of the project in Terneuzen associated with the transition to low emissions technology includes a value associated with the avoided emission costs as a result of the project. Dow maintains a projection on the potential cost of allowances under the European Union Emissions Tradition System (EU ETS). There is a risk that our projection over-estimates the cost of compliance in the future, which could impact the project economics. If allowances fail to increase in value, the avoided emission benefit reduces. The potential financial impact here is calculated taking into consideration the amount of emissions reduced as a result of the project, multiplied by the delta between our projected cost of allowances at 2030, and a low end estimate of the CO2 emission cost at 2030 from external scenarios that describe different pathways to decarbonization.

Cost of response to risk
3000000

Description of response and explanation of cost calculation
Explanation of Cost Calculation: Dow has a multidisciplinary team working on the proposed project in Terneuzen – some individuals are dedicated solely to this project, while others support the project in addition to other responsibilities. The cost presented here is an estimate of the annual cost associated with the range of individuals dedicated to or supporting the project (20 FTEs at approximately $150,000 USD per year). It does not include capital cost required to implement the project. Case study of response to risk: Fundamentally, Dow manages the risk of transitioning to low emission technology in many ways: improving the accuracy in projections that could influence project economics, a strong understanding of the regulatory environment, excellence in project execution (on time, on budget), and collaboration with partners (other industrials, local governments, NGOs, etc.). Situation: Some investments in low emission technology, such as hydrogen and carbon capture and storage, will require collaboration with external partners to achieve positive project economics. As these technologies often require larger infrastructure builds that may extend outside the boundaries of our sites, these technologies may require partners seeking to implement similar technologies in order to achieve the scale needed to make the projects economically feasible. Task: The goal is generally to achieve economy-wide reductions in CO2 emissions in the most cost-effective manner possible. Achieving the scale needed will require collaborations across governments and industry. Action: Dow recognizes that an element of mitigating the risk associated with transitioning to low emission technology does involve collaborations and partnerships where we can share best practices and build momentum on the adoption of these technologies in geographies where we are evaluating projects. With respect to carbon capture and storage, Dow has joined the Carbon Connect Delta, a group formed under the Smart Delta Resources network in The Netherlands. Result: The parties involved in this group collectively aim to capture up to 6.5 million tonnes of CO2 from the region by 2030. The intended result of joining such a collaborative is to implement the technology in the most cost-effective way possible in the region.

Comment

Identifier
Risk 3

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

Risk type & Primary climate-related risk driver

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact
Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
Dow has engaged S&P Trucost to evaluate the potential for acute physical impacts on our manufacturing sites. Using data from the National Oceanic and Atmospheric Administration (NOAA), as well as their own analysis, S&P Trucost highlighted the US Gulf Coast region for Dow as an area with an increased potential for hurricane impact compared to other regions. Trucost looks at the historical incidence and severity of hurricane, typhoon, or cyclone activity at a given location, weighted in favour of recent events. The specific Dow sites that have an elevated potential for exposure to severe weather events such as hurricanes, are our Plaquemine, Louisiana, St. Charles Operations, Louisiana, Freeport, Texas, Seadrift, Texas, Deer Park, Texas, Texas City, Texas, and Sabine, Texas. Along with this forward-looking evaluation from S&P Trucost, Dow has already experienced impacts from severe weather at these locations. Hurricanes Gustav and Ike that hit the U.S. Gulf Coast in 2008 caused temporary outages for several of the Company's Gulf Coast facilities, resulting in $181 million in additional operating expenses. Hurricane Harvey hit the U.S. Gulf Coast in 2017 and caused widespread temporary logistics and supply chain disruptions as well as brief outages and slowdown of production rates for some of our facilities. In addition, though not a hurricane, but still a severe weather event, winter storm Uri which hit Texas in 2021 resulted in an impact to of approximately $400 million USD in the first quarter of 2021, as a result of production loss due to unexpected plant shutdowns.

Time horizon
Short-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
0

Potential financial impact figure – maximum (currency)
400000000

Explanation of financial impact figure
The financial impact figure is intended to represent the potential annual earnings before interest & taxes (EBIT) impact due to production loss from a severe weather event. Each potential severe weather event experienced in the past has impacted Dow differently – depending on the exact location and nature of the event, Dow could be unaffected as a result of the event hitting the region, a partial shutdown of the facilities could occur, or on the high end, a full shutdown could occur. The duration of the event also affects the financial impact. The high end of the potential financial impact figure represents the impact associated with production loss due to the most recent severe weather event that impacted the US Gulf Coast region – winter storm Uri. As this storm impacted one of Dow's largest production facilities, Freeport Texas, it is a reasonable estimate for the upper limit on a potential range of financial impact. The frequency of severe weather events also impacts the total financial estimate. On the low end, there may be no severe weather events that occur in that year that impact production. On the high end of the financial range, the assumption is that one major event impacting production occurs each year.

Cost of response to risk
20000000

Description of response and explanation of cost calculation
Explanation of Cost Calculation: The cost presented here is an estimate of salaries and wages of Dow personnel in emergency services roles that support the US Gulf Coast (Approximately 200 FTEs at approximately $100,000 USD per year). It does not include costs associated with contractors who support Dow's emergency services organization, the support that other individuals not directly tied to the emergency services organization may provide, or future engineering-related costs. The cost is integrated into normal operations. Case study of response to risk: To mitigate risks associated with severe weather, we have engineered the facilities to better withstand these events. Additionally, these sites have specific emergency preparedness plans that detail actions to take in the event of severe weather. Situation: Dow has facilities in the US Gulf Coast that are at a higher risk of impact as a result of severe weather than some of our other sites. Task: Dow needs to ensure that the potential impact from severe weather on our US Gulf Coast facilities is minimized as much as possible. The first focus is on the safety of Dow employees, contractors, and the communities in which Dow operates. The second is to minimize potential production loss as a result of a severe weather event. Action: Dow maintains hurricane preparedness plans for our Gulf Coast facilities to serve as a guide for coordinating resources to ensure the safety of personnel and minimize losses during hurricanes and other tropical weather events. Dow also maintains site freeze plans that clarify site expectations to assist units, functions, and individuals in preparation for and in response to such conditions. These plans are reviewed at least annually. Result: Dow's preparedness to deal with severe weather events helps to minimize the potential impact of these events. For example, during the most recent severe weather event, winter storm Uri, some of Dow's cogeneration assets were able to continue operation during the event. Dow went from being an importer of power before the storm to an exporter in the event, as we maintained operation of our cogeneration assets as our need for on-site power was reduced, to the benefit of the whole Texas grid.

Comment

C2.4

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

C2.4a

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

Identifier
Opp1

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Primary potential financial impact
Increased revenues resulting from increased demand for products and services

Company-specific description
In 2020, Dow delivered 48% of sales from products that address world challenges, including challenges associated with climate change. Dow products can help users avoid emissions. We anticipate that there will be an increased demand for products that can enable users to reduce their carbon emissions, leading to increased revenue. Many Dow products currently have avoided emission benefits, but some specific examples are as follows: Enabling Energy-efficient buildings: - DOWSIL™ Silicone Sealants have played a key role in the construction of the world's tallest buildings, enabling design freedom and enhancing energy efficiency and safety. Silicone sealants for buildings reduce emissions ~200 kilograms carbon dioxide equivalent (CO2e) per kilogram of silicone, lowering the world's carbon emissions by an estimated 10 million metric tons. - Our polyurethanes enable higher building and energy efficiency by providing thermal insulation, lowering the carbon emissions globally by an estimated 248 million metric tons. For example, our V PLUS PERFORM™ panel insulation technology contribute to LEED v4 and BREEAM green building ratings. Enabling the use of Renewable Energy: - ENGAGE™ PV Polyolefin Elastomers (POE) contribute to exceptional long-term performance, reliability and lower overall costs for photovoltaic encapsulants. This helps solar panels last longer. Providing Automotive and Transportation Solutions: - ENGAGE™ 11000 Polyolefin Elastomers have superior impact efficiency and thermal properties that enable automotive-part lightweighting and metal replacement, contributing to improved safety, reduced CO2 emissions for conventional cars and increased range for electric vehicles. Packaging Solutions: - Lightweight packaging products made with Dow plastics enable reduced emissions associated with shipping products. In addition to other benefits, including improved food safety and security, these packaging products increase the shelf-life of food products – reducing food waste and ultimately reducing the carbon footprint of the industry Avoided emissions resulting from the use of Dow products are estimated as one of the targets for our Delivering Breakthrough Innovations 2025 Sustainability Goal. Our target is to achieve three times the greenhouse gas benefit in use than the burden of producing it. Related to this is one of Dow's new carbon targets: By 2050, Dow intends to be carbon neutral (Scopes 1 + 2 + 3 plus product benefits).

Time horizon
Medium-term

Likelihood
Very likely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
1500000000

Potential financial impact figure – maximum (currency)
3000000000

Explanation of financial impact figure
Though many Dow products aid in avoiding emissions, as Dow's Packaging & Specialty Plastics segment represented the largest portion of Dow's revenue in 2020, the potential financial impact range identified in this question is based on potential margin opportunity associated with packaging applications. Dow Packaging and Specialty Plastics Polyethylene contributes through food packaging applications that reduce food waste and contribute to resource efficiency. Financial estimates are based on an assumption that demand for products that reduce food waste, improve access to food, and contribute to resource efficiency will grow given drivers such as increased global population and increased focus on food security. Dow Packaging & Specialty Plastics products also enable improvements in other markets (medical, transportation, etc.). Sustainability-related consumer packaging grew at a CAGR of 5.2% over 2013-18. The estimate provided is based on Dow's existing revenues and potential margins related to Packaging & Specialty Plastics and assumes a similar CAGR to the 2030 timeline.

Cost to realize opportunity
150000000

Strategy to realize opportunity and explanation of cost calculation
Explanation of Cost Calculation: The cost presented here is an estimate of an increase in selling, administrative and research and development costs associated with the potential growth as described above. It does not take into consideration efficiencies in these expenses that may be experienced with scale. Fundamentally, these costs are already integrated into normal operations Case study of response to opportunity: Situation: Avoided emissions resulting from the use of Dow products are estimated as one of the targets for Delivering Breakthrough Innovations 2025 Sustainability Goal. Our target is to achieve three times the greenhouse gas benefit in use than the burden of producing it. Related to this is one of Dow's new carbon targets: By 2050, Dow intends to be carbon neutral (Scopes 1 + 2 + 3 plus product benefits). Task: In order to achieve this goal, Dow will need to elevate the understanding of the benefits of Dow's products in the use phase in avoiding emissions, expand application of our existing products, and explore opportunities for new products. Dow also needs to explore opportunities for reductions in our Scope 1+2+3 emissions. Particularly attractive opportunities for products are those that enable Dow to expand the market for our products and reduce emissions within our value chain. Action: In 2020, Dow signed a power purchase agreement with First Solar Inc. for 150 MW of solar capacity to supply solar power to our Gulf Coast Operations. The project will utilize First Solar's high-performance, eco-efficient Series 6 photovoltaic (PV) modules. The Series 6 modules that will power the project will utilize a range of advanced technologies, including Dow's ENGAGETM PV Polyolefin Elastomers, which are used as encapsulant films to enhance the module's performance and efficiency. Result: Once online, the supply of solar power to Dow's Gulf Coast Operations will reduce Dow's Scope 2 emissions by approximately 150,000 metric tonnes per year. In addition, the ENGAGETM PV product being utilized by First Solar for the system increases the power output potential of the solar panels, improves reliability, and extends the service life of the photovoltaics while reducing total systems costs. This example showcases a collaboration that results in positive economic and environmental impacts for both Dow and other partners in our value chain.

Comment

Identifier
Opp2

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

Opportunity type
Resource efficiency

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

Primary potential financial impact
Reduced direct costs

Company-specific description
Dow refers internally to the concept of resource efficiency as 'Raw Material Efficiency ("RME")'. RME is a measurement that determines the conversion of raw materials to products for operating facilities. Raw material losses during production are inherent in many technologies. Losses due to process inefficiencies, waste production, or flaring are costs to Dow that should be minimized as much as is technologically possible. Dow sees a climate-related opportunity associated with our ability to reduce raw material losses to maximize profitability. Dow has a 2025 Sustainability Goal to improve our Raw Material Efficiency Utilization index by 10 percent relative to the 2015 baseline.

Time horizon
Short-term

Likelihood
Very 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)
<Not Applicable>

Potential financial impact figure – minimum (currency)
50000000

Potential financial impact figure – maximum (currency)
100000000

Explanation of financial impact figure
The potential financial impact figure is an annual estimate based on the reduction in cost of raw materials to produce an equivalent amount of product. We do track raw material efficiency as one of the metrics that comprise the Environmental Stewardship Index, one of four indices tracked under the World- Leading Operations 2025 Sustainability Goal. To assess the raw material efficiency index, each of the Company's business envelopes determines a material efficiency metric relevant to their business, sets annual commitments for their metric translated into monetary savings, and reports regularly on progress to business and corporate leadership. In 2019, businesses achieved an estimated $65.3 million in savings through raw material efficiency efforts. In 2020, this savings was estimated at $47.5 million. The range presented here is an approximation of future annual savings based on historically determined amounts.

Cost to realize opportunity
0

Strategy to realize opportunity and explanation of cost calculation
Explanation of Cost Calculation: A key job responsibility and expectation of the Dow personnel that operate and manage our production assets is to monitor process efficiency and seek opportunities to drive improvements and minimize waste. Many efficiency improvements have been made in the past without the need for additional capital. Though there is cost associated with identifying these opportunities in the form of people-hours required, this cost is fully integrated into normal operations. It is currently expected that the cost to realize the opportunity at the scale presented here is not above and beyond our normal operating costs to run Dow's business. Efficiency improvements that require significant capital investment that may move the needle further in terms of material savings available are evaluated on a case-by-case basis. Case study of response to opportunity Situation: Dow has a 2025 Sustainability Goal to improve raw material efficiency utilization index by 10 percent relative to the 2015 baseline. Improving raw material efficiency not only helps maximize profitability, it also reduces environmental impact. Task: Flaring, though essential for safe operation, is an area that can be optimized to reduce environmental impact. Minimizing the material sent to flare at our manufacturing sites is a key lever to improve raw material efficiency, Action: In 2019, though management oversight, diligence from Operations, and monitoring of key parameters, Dow's Hydrocarbons business implemented efforts across Dow's fleet of ethylene crackers to minimize unplanned events and reduce the material sent to flare. Result: Flare reduction efforts across the ethylene crackers in Dow's fleet resulted in improved raw material efficiency, and also reduced GHG emissions by an estimated 290,000 tonnes CO2e.

Comment

Identifier
Opp3

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

Opportunity type
Energy source

Primary climate-related opportunity driver
Use of new technologies

Primary potential financial impact
Reduced direct costs

Company-specific description
Dow has a goal to reduce our carbon emissions by 15% by 2030, and to become carbon neutral by 2050 (Scope 1+2+3 plus product benefits). In order to achieve these goals, capital investment will be required. Some of the investments required will be associated with technologies that are relatively new to application in the chemical industry at the scale required for widespread decarbonization (eg. Carbon Capture, Utilization, and Storage ("CCUS"), green hydrogen, electrified ethylene steam crackers). Dow is actively putting roadmaps in place to utilize these technologies. For example, Dow has outlined a roadmap to reduce CO2 emissions from our Terneuzen site in TThe Netherlands by 40% (compared to 2020), and the roadmap relies on the use of hydrogen and carbon capture. In the first phase, the plan foresees the construction of a clean hydrogen plant where by-products from core production processes would be converted into hydrogen and CO2. The hydrogen would be used as a clean fuel in the production process. The CO2 would be captured and stored until alternative technologies develop, and Dow will also look for ways to enable usage of the CO2 in its processes rather than storing it. The first phase would also include additional investments in site infrastructure for CO2 liquefaction, air separation, hydrogen distribution and CO2 transport. In the second phase, by 2030, Dow will capture CO2 from our ethylene oxide plant and replace some gas turbines with electrical motor drives. This will avoid a further 300,000 tons of CO2 emissions per year. The third and final phase of the plan will develop and implement additional breakthrough technologies to replace fuel usage in the production processes. These furnaces currently rely on fuel combustion, which makes them CO2-emission intensive when not fired on clean hydrogen. Switching to electrical cracking with clean electricity will reduce the CO2 footprint of the production process to near zero emissions. The project will have an impact in

achieving Dow's carbon emissions goals, but will also result in avoided emissions cost from a regulatory standpoint, contributing to reduced direct costs.

Time horizon
Medium-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
0

Potential financial impact figure – maximum (currency)
250000000

Explanation of financial impact figure
Dow's evaluation of the economics of the project in Terneuzen associated with the transition to low emissions technology includes a value associated with the avoided emission costs as a result of the project. Dow maintains a projection on the potential cost of allowances under the European Union Emissions Tradition System (EU ETS). If allowances increase in value, the avoided emission benefit increases. The potential financial impact here is calculated taking into consideration the amount of emissions reduced as a result of the project, multiplied by the delta between our projected cost of allowances at 2030, and a high end estimate of the CO2 emission cost at 2030 from external scenarios that describe different pathways to decarbonization.

Cost to realize opportunity
3000000

Strategy to realize opportunity and explanation of cost calculation
Explanation of Cost Calculation: Dow has a multidisciplinary team working on the proposed project in Terneuzen – some individuals are dedicated solely to this project, while others support the project in addition to other responsibilities. The cost presented here is an estimate of the cost associated with the range of individuals dedicated to or supporting the project (20 FTEs at approximately $150,000 USD per year). It does not include the capital cost or operational changes associated with the project. Case study of response to opportunity: Fundamentally, Dow capitalizes more on the opportunity to transition to low emission technology in many ways: improving the accuracy in projections that could influence project economics, a strong understanding of the regulatory environment, excellence in project execution (on time, on budget), and collaboration with partners (other industrials, local governments, NGOs, etc.). Situation: Some investments in low emission technology, such as hydrogen and carbon capture and storage, will require collaboration with external partners to achieve increased positive project economics. As these technologies often require larger infrastructure builds that may extend outside the boundaries of our sites, these technologies may require partners seeking to implement similar technologies in order to achieve the scale needed to improve economics. Task: The goal is generally to achieve economy-wide reductions in CO2 emissions in the most cost-effective manner possible. Achieving the scale needed will require collaborations across governments and industry. Action: Dow recognizes that an element of mitigating the risk associated with transitioning to low emission technology does involve collaborations and partnerships where we can share best practices and build momentum on the adoption of these technologies in geographies where we are evaluating projects. With respect to carbon capture and storage, Dow has joined the Carbon Connect Delta, a group formed under the Smart Delta Resources network in The Netherlands. Result: The parties involved in this group collectively aim to capture up to 6.5 million tonnes of CO2 from the region by 2030. The intended result of joining such a collaborative is to implement the technology in the most cost-effective way possible in the region.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?
Yes, and we have developed a low-carbon transition plan

C3.1a

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

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, and we do not intend it to become a scheduled resolution item within the next two years	Dow provides information on our progress against our CO2 reduction targets, as well as information on our current approach to achieving these targets, on an annual basis in our Environmental, Social and Governance (ESG) Report. Dow also provides information on our climate-related efforts to third party organizations, such as CDP. In addition, Dow presents information to investors and investor coalitions on climate-related initiatives directly and indirectly when appropriate during annual governance and quarterly dialogues with large owners.

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?
Yes, qualitative and quantitative

C3.2a

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

Climate-related scenarios and models applied	Details
RCP 6 IEA Sustainable development scenario	Dow takes an exploratory approach to climate-related scenario analysis to evaluate a range of different futures. The purpose of our scenario analysis is to understand how Dow's current portfolio may perform under different possible future states, which in turn informs strategic decisions. Our most recent scenario planning study was initiated in 2020. How the selected scenarios were identified: The IEA Sustainable Development scenario (IEA SDS) is a 2°C or lower scenario. As per the recommendations from the Task Force on Climate Related Financial Disclosure (TCFD), utilizing a 2°C or lower scenario is recommended. Dow is a large consumer of energy, so scenarios that focus on trends in energy consumption are relevant to Dow. The scenarios selected were intended to span a range of potential energy futures in terms of global primary energy consumption and energy types. Dow also selected scenarios to cover a range of assumptions around policy development. The IEA SDS represents the successful scale-up of climate mitigation efforts and global alignment on climate policy. Dow also utilized the Regional Rivalry scenario described by Shared Socioeconomic Pathway (SSP3) RCP6.0. This scenario describes different primary energy demand projections, fuel mix, and carbon emission pricing from the IEA SDS. From a policy standpoint it describes an uncoordinated pathway around decarbonization. Time horizon considered and why it is relevant to our organization: Scenarios utilized for climate-related scenario analysis were evaluated on a 30 year (to 2050) timeframe. This time horizon aligns with Dow's longer term carbon related objectives (to be carbon neutral by 2050, for Scope 1+2+3 plus product benefits). Areas of organization considered as part of the scenario analysis: The study covered all Dow businesses. Dow evaluated margin impact to our upstream Hydrocarbons & Energy Business quantitatively utilizing inputs from the scenarios (energy demand, fuel mix, carbon emission prices). Dow qualitatively evaluated potential opportunities for our downstream businesses utilizing market drivers described in the scenarios. Summary of the Results and how results have informed business strategy and objectives: The result showcased risks and opportunities to Dow given our current portfolio of businesses, assets, and products. For example, higher carbon pricing informed by different scenarios present opportunities for Dow products that help reduce energy intensity and lower emissions. Products, such as DOWSILTM silicone sealants are positioned well for future possible scenarios, as these contribute to the reduction of energy use from buildings. A case study of how the results of scenario analysis have influenced business objectives and strategy: Climate-related scenarios that have been studied showcase an increase in the cost of carbon emissions, needed to achieve a <2°C temperature rise. Situation: In the case of the IEA SDS, advanced economies incorporate a $140/tonne CO2 emissions price in the power, industry, and aviation sectors. In this scenario, carbon emission pricing is incorporated in the United States. Task: Reduce emissions in a cost-effective manner in order to mitigate the potential increased cost to comply. Specifically, Dow has a goal to reduce emissions by 15% by 2030. Action: Dow has put a roadmap in place to achieve a 15% reduction in emissions by 2030 that involves further optimization of our facilities and processes, among other tactics. For example, in 2020, a project was completed that involved upgrades to some of the heat recovery units (burner replacements, installation of flowgrid technology to improve heat recovery), enabling the recovery of additional waste heat. Result: The result of this project is that steam generation has increased, without the need to consume additional fuel. If the full amount of this steam is utilized on site, it amounts to a reduction of approximately 100,000 tonnes of CO2e.

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	Description of how strategy has been influenced by climate-related risks/opportunities and the time horizon covered: Climate-related risks and opportunities have informed our strategy as it relates to our products and services across all strategic planning timeframes [short (1-5 years), medium (5-10 years), and long term (>10 years)], and include elements of both climate change adaptation and mitigation. Dow products can often reduce GHG emissions more than the footprint of manufacturing them, and we continue to align investments in our product R&D with a low-carbon future. We also evaluate our product line for resiliency in future scenarios. We see climate protection and the circular economy being inherently linked. As such, we have developed a strategic product-related goal around advancing the circular economy that by 2035, Dow will help 'close the loop' by having 100% of Dow products sold into packaging applications be reusable or recyclable. This is in addition to our climate-related targets and our other circularity target announced in 2020 to enable 1 million metric tons of plastic to be collected, reused or recycled through our direct actions and partnerships by 2030. Case study of a strategic decision made in this area: Situation: Climate protection and circular economy are inherently linked. Advancing a circular economy not only minimizes waste, but can reduce economy-wide emissions currently based largely on an extractive linear system. Task: Because of our leadership position in manufacturing and materials technology, we have the opportunity to take a leading role in supporting the development and implementation of the circular economy. Dow sees advancing the circular economy as a fundamental part of our sustainability strategy. Action: In 2020 we announced new circular economy targets, including that by 2035, Dow will help "close the loop" by having 100% of Dow products sold into packaging applications be reusable or recyclable. Result: Today we are enabling 81% of the products we sell into packaging applications to be reusable or recyclable. Additional application development, packaging redesign, and infrastructure improvements are required to deliver our 100% commitment.
Supply chain and/or value chain	Yes	Description of how strategy has been influenced by climate-related risks/opportunities and the time horizon covered: Climate-related risks and opportunities have informed our strategy as it relates to our supply chain/value chain across all strategic planning timeframes [short (1-5 years), medium (5-10 years), and long term (>10 years)], and includes elements of climate change adaptation and mitigation. Dow recognizes the need to reduce value chain emissions to mitigate climate-related risk. Dow has a goal to be carbon neutral by 2050, including Scope 3 supply chain-related emissions. Dow has developed a Green Transportation strategy in line with our CO2 reduction goals which consists of both internal activities to actively manage and reduce our impact as well as external engagement to drive and promote sustainable logistics. Case study of a strategic decision made in this area: Situation: Reducing transportation-related emissions is a focus for Dow as it falls under the umbrella of emissions associated with our goal to be carbon neutral by 2050. Task: Collaborate with members of our value chain (Suppliers, customers, logistics service providers) to identify opportunities to reduce emissions. A specific lever that can influence supply chain emissions is in the optimization and consolidation of shipments (less overall shipments generally results in reduced transportation emissions). Action: In North America, we are leveraging technology to reduce the number of trucks hauling material to customers by consolidating shipments to improve trailer utilization. A transportation optimization engine is helping identify shipment consolidations when products can be shipped together while respecting all relevant constraints, including but not limited to material compatibility, route, temperature requirements and delivery times. In 2020, more than 1,500 shipments were consolidated. Result: The result of these optimization efforts in 2020 are estimated to have reduced transportation related emissions by more than 8,000 metric tonnes of CO2e. Dow is working on identifying efforts to materially reduce our Scope 3 impact, and has a number of efforts underway to identify opportunities. For example, Dow has recently joined the CDP Supply Chain program where we will obtain climate-related information from our top suppliers in an effort to identify opportunities.
Investment in R&D	Yes	Description of how strategy has been influenced by climate-related risks/opportunities and the time horizon covered: Climate-related risks and opportunities have informed our strategy as it relates to investment in R&D across all strategic planning timeframes [short (1-5 years), medium (5-10 years), and long term (>10 years)], and includes elements of climate change adaptation and mitigation. Achieving Dow's goal to be carbon neutral by 2050 will involve the use of breakthrough technologies. Scenario analysis can provide insights into opportunities for these breakthrough technologies. Case study of a strategic decision made in this area: Situation: Today's ethylene steam crackers, which make up a large portion of Dow's asset base, rely primarily on combustion to obtain the pressures and temperature needed to operate – making these assets CO2 intensive. We know from climate-related scenario analysis that pathways to limit temperature rise to well below 2°C involve an acceleration in the use of renewable energy. As the energy grid becomes greener, using renewable electricity to heat steam cracker furnaces could become one of the breakthrough technologies to decarbonize the chemicals industry. Task: Develop a technologically and economically feasible solution for ethylene steam crackers that allows the chemicals industry to utilize renewable electricity in place of combustion. Action: In 2020, Dow and Shell announced a joint development agreement to accelerate technology to electrify ethylene steam crackers. Following the initial announcement, other collaborators joined the effort, including The Netherlands Organisation for Applied Scientific Research (TNO) and the Institute for Sustainable Process Technology (ISPT). Result: The joint program has been awarded €3.5 million (USD$4.2 million) in Mission-driven Research Development and Innovation (MOOI) scheme funding from The Netherlands government. In the first year, the program has advanced electrification solutions for today's steam crackers while also pursuing game-changing technologies for novel designs of electrified crackers in the longer-term. The companies are now evaluating construction of a multi-megawatt pilot plant, with potential start-up in 2025, subject to investment support.
Operations	Yes	Description of how strategy has been influenced by climate-related risks/opportunities and the time horizon covered: Climate-related risks and opportunities have informed our strategy as it relates to Operations across all strategic planning timeframes [short (1-5 years), medium (5-10 years), and long term (>10 years)] and includes elements around both climate change adaptation and mitigation. Dow recognizes the need to reduce emissions to mitigate climate-related risk. Dow has a goal to reduce emissions by 15% by 2030 (from 2019 baseline), and be carbon neutral by 2050 (Scope 1+2+3 plus product benefits). In addition, Dow has set 'World Leading Operations' 2025 Sustainability Goals that address a number of areas with the goal of reducing our impact on the environment: for example, reducing freshwater intake intensity, reducing our waste intensity, and reducing our GHG emissions. Situation: A key part of Dow's strategy to reduce our GHG emissions and minimize our carbon exposure is to increase the amount of renewables in our purchased power mix. We know from climate scenario analysis that renewables will play an increasingly important role in future electricity grids. Task: We have a dedicated 2025 Sustainability Goals to source 750 MW of renewable power capacity to support our sites by 2025. A portion of our goal to reduce emissions by 15% by 2030 will come from increasing the use of renewable power. Action: In 2020, Dow signed renewable power agreements for the following sites: approximately 143 MW of solar power capacity to support the Dow Aratu, Brazil site beginning in 2021, the addition of 25 MW of solar power capacity to support the Dow Carrolton, Kentucky site beginning in 2022, and 150 MW of solar power capacity to support our Texas sites beginning in 2023. Result: Once all three facilities are in operation, the combined impact will be a reduction in Scope 2 emissions of approximately 200,000 metric tonnes of CO2e.

C3.4

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Indirect costs Capital expenditures Capital allocation	Climate-related risks and opportunities influence our financial planning across short (1-5 years), medium (5-10 years), and long term (>10 years) timeframes. Case study of how climate-related risks and opportunities have influenced financial planning – Capital Allocation Situation: A climate-related risk for Dow is related to carbon emission pricing regulation. If carbon emission prices rise significantly in the jurisdictions where we operate, it could impact our cost to operate compared to competitors. Task: Ensure the potential for rising emission costs is incorporated into our capital allocation process such that the potential impact of rising emission prices are mitigated. This enables Dow to make appropriate investment decisions regarding the capital needed for decarbonization. Action: Dow has an internally defined price on carbon that is incorporated in the business process plan and in our long term division capital allocation process. We maintain a 20 year carbon price forecast for all jurisdictions in which we operate that is updated, at a minimum, on an annual basis. The business process plan is used in 1-5 year decisions (short term). The division capital allocation process is utilized to evaluate long term investments. As many assets in the chemical industry are capital intensive, long-lived assets, long-term investments are evaluated on a 20-year timeframe. The objective of defining an internal carbon price is to mitigate the risk of carbon exposure, to make the best decisions that will ensure company results longer term are in compliance with regulatory frameworks. Result: Our projected price on carbon emissions helps inform our decisions regarding the allocation of spending on internal and external resources dedicated to achieving these reduction objectives. For example, Dow's projected emissions price forecast for the EU ETS is incorporated into the project economics for our decarbonization plan for our site in Terneuzen, The Netherlands.

C3.4a

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

Climate-related risks and opportunities have a strong influence on Dow's strategy. Dow's ambition is to be the most innovative, customer centric, inclusive and sustainable materials science company in the world, and climate protection in particular is a key sustainability focus area for Dow.

This element of our strategy has been clearly demonstrated through our publicly-stated commitments, including the following new climate protection targets, which were announced in 2020:

- By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons versus its 2019* baseline (15% reduction); and

- By 2050, Dow intends to be carbon neutral (Scopes 1+2+3 plus product benefits).

Along with the goals above, several of Dow's 2025 Sustainability goals include targets related to climate change. The 2025 Sustainability Goal of "World-Leading Operations Performance" is to maintain world-leading operations performance in natural resource efficiency, environment, health and safety. To achieve that Dow tracks the following targets specifically related to climate change:

- Though we will grow globally over the next 10 years, Dow's absolute greenhouse gas emissions will not exceed our 2006 baseline.

- Dow will obtain 750 MW of its power demand from renewable sources by 2025

Dow also has the following goals that are closely linked with climate change issues:

- Dow will improve raw material efficiency utilization index by 10 percent relative to the 2015 baseline.

- Dow will achieve 1 percent per year average increase in production index from our most-utilized facilities from the 2015 baseline.

- Dow will reduce the freshwater intake intensity at key water-stressed sites by 20 percent.

- Dow will reduce its waste intensity footprint by 20 percent.

- Dow will grow, but offset emissions of priority compounds, volatile organic compounds (VOCs), and nitrogen oxides (NOx).

The examples provided in this section showcase a number of elements that contribute to Dow's overall low carbon transition plan. The primary elements of Dow's low carbon transition plan can be summarized as follows:

- Investing in advanced manufacturing with a lower carbon footprint;

- Ensuring our products are more sustainable than the alternative; and

- Collaborating towards innovative, low-carbon technology.

* Note: Our target to reduce net annual carbon emissions by 5 million tons vs. our 2019 baseline was originally announced stating the baseline would be 2020. However, year 2020 was not representative of a typical production year due to the impact of COVID-19 on operations and production volumes. For this reason, the baseline was reassessed and 2019 was selected as the baseline year. The baseline represents Scope 1 + 2 emissions in 2019, adjusted for outliers (E.g. Abnormal number of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). The value of the baseline equals 34.7 million metric tonnes of CO2e.

C4. Targets and performance

C4.1

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

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number
Abs 1

Year target was set
2020

Target coverage
Company-wide

Scope(s) (or Scope 3 category)
Scope 1+2 (market-based)

Base year
2019

Covered emissions in base year (metric tons CO2e)
34700000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year
2030

Targeted reduction from base year (%)
15

Covered emissions in target year (metric tons CO2e) [auto-calculated]
29495000

Covered emissions in reporting year (metric tons CO2e)
34722201

% of target achieved [auto-calculated]
-0.426532180595581

Target status in reporting year
New

Is this a science-based target?
No, but we anticipate setting one in the next 2 years

Target ambition
<Not Applicable>

Please explain (including target coverage)
In 2020, Dow announced the following climate protection targets: By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons vs. its 2019 baseline* (15% reduction). By 2050, Dow aspires to be carbon neutral (Scope 1 + 2 + 3 plus product benefits). These targets are in addition to our 2025 Sustainability Goals, which have the following climate-related objectives: Dow will obtain 750 MW of its power demand from renewable sources by 2025, and though we will grow globally over the next 10 years, Dow's absolute greenhouse gas (GHG) emissions will not exceed our 2006 baseline. Dow considers our target to reduce emissions by 15% compared to our 2019 baseline to be 2°C aligned, and in alignment with external scenarios that indicate the level of emission reduction required in hard-to-abate sectors. For example, under the recently released Net Zero by 2050 report from the International Energy Agency (IEA), an approximately 7.5% reduction in energy-related emissions is required by 2030 from the chemicals sector to enable net zero by 2050. *Note: Our target to reduce net annual carbon emissions by 5 million tons vs. our 2019 baseline was originally announced stating the baseline would be 2020. However, year 2020 was not representative of a typical production year due to the impact of COVID-19 on operations and production volumes. For this reason, the baseline was reassessed and 2019 was selected as the baseline year. The baseline represents Scope 1 + 2 emissions in 2019, adjusted for outliers (E.g. Abnormal number of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). The value of the baseline equals 34.7 million metric tonnes of CO2e.

Target reference number
Abs 2

Year target was set
2020

Target coverage
Company-wide

Scope(s) (or Scope 3 category)
Scope 1+2 (location-based) +3 (upstream & downstream)

Base year
2019

Covered emissions in base year (metric tons CO2e)
104700000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)
100

Target year
2050

Targeted reduction from base year (%)
100

Covered emissions in target year (metric tons CO2e) [auto-calculated]
0

Covered emissions in reporting year (metric tons CO2e)
103978831

% of target achieved [auto-calculated]
0.688795606494747

Target status in reporting year
New

Is this a science-based target?
No, but we anticipate setting one in the next 2 years

Target ambition
<Not Applicable>

Please explain (including target coverage)
Dow does not currently have an emissions target that has been approved by the Science Based Targets Initiative. We consider our target to be alignment with external scenarios that indicate the level of emission reduction required in hard-to-abate sectors. For example, under the recently released Net Zero by 2050 report from the International Energy Agency (IEA), an approximately 95% reduction in energy-related emissions is required by 2050 from the chemicals sector. In 2020, Dow announced the following climate protection targets: By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons vs. its 2019 baseline (15% reduction). By 2050, Dow aspires to be carbon neutral (Scope 1 + 2 + 3 plus product benefits). These targets are in addition to our 2025 Sustainability Goals, which have the following climate-

related objectives: Dow will obtain 750 MW of its power demand from renewable sources by 2025, and though we will grow globally over the next 10 years, Dow's absolute greenhouse gas (GHG) emissions will not exceed our 2006 baseline. *Note: Our target to reduce net annual carbon emissions by 5 million tons vs. our 2019 baseline was originally announced stating the baseline would be 2020. However, year 2020 was not representative of a typical production year due to the impact of COVID-19 on operations and production volumes. For this reason, the baseline was reassessed and 2019 was selected as the baseline year. The baseline represents Scope 1 + 2 emissions in 2019, adjusted for outliers (E.g. Abnormal number of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). The value of the Scope 1 plus Scope 2 baseline equals 34.7 million metric tonnes of CO2e. The covered emissions in base year represented here also include approximately 70 million metric tonnes of Scope 3 emissions at baseline.

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.

Target reference number
Oth 1

Year target was set
2015

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

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

Energy consumption or efficiency	Other, please specify (MW)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2015

Figure or percentage in base year
5.85

Target year
2025

Figure or percentage in target year
750

Figure or percentage in reporting year
843

% of target achieved [auto-calculated]
112.497480346704

Target status in reporting year
Underway

Is this target part of an emissions target?
One of Dow's 2025 Sustainability Goals is to procure 750 MW of renewable power capacity to support our sites by 2025. Achieving this target aligns with our efforts to reduce our emissions in that an increase in procured renewable power capacity to support our sites results in a decrease in Dow's Scope 2 emissions (as calculated using the market-based method)

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain (including target coverage)
Our ambition is to become the most innovative, customer-centric, inclusive and sustainable materials science company in the world, so that we can achieve our purpose to deliver a sustainable future for the world through our materials science expertise and collaboration with our partners. One of Dow's 2025 Sustainability Goals is to procure 750 MW of renewable power capacity to support our sites by 2025. Dow is a leading user of renewable power in our industry (Source: BNEF, PPA Top Offtakers by Capacity). Under our 2025 Sustainability Goals, Dow has committed to obtain 750 MW of renewable power capacity by 2025. Dow purchases renewable energy in Europe, Latin America and North America. Because the economics for renewables vary, we have wind, solar, hydro, biomass and landfill gas, depending on the location. All of our projects are selected based on the lowest long-term cost of power or steam from available alternatives. We support contract-based additionality of renewable power where our assets operate, helping industry and residents alike. In 2020, Dow signed agreements for 143 MW of solar power capacity to support the Dow Aratu, Brazil site beginning in 2021, 25 MW of solar power capacity to support the Dow Carrolton, Kentucky site beginning in 2022, and 150 MW of solar power capacity support our sites in Texas beginning in 2023.

Target reference number
Oth 2

Year target was set

2015

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

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

Other, please specify	Other, please specify (Dow has a 2025 Sustainability Goal to keep GHG emissions below 2006 levels.)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2006

Figure or percentage in base year
42100000

Target year
2025

Figure or percentage in target year
42100000

Figure or percentage in reporting year
34722201

% of target achieved [auto-calculated]
<Calculated field>

Target status in reporting year
Underway

Is this target part of an emissions target?
Dow set this emissions target as part of our 2025 Sustainability Goals, which were initiated in 2015. In 2020, we have made additional commitments with respect to greenhouse gas emission reductions which are described in Section 4.1a.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain (including target coverage)
Our ambition is to become the most innovative, customer-centric, inclusive and sustainable materials science company in the world, so that we can achieve our purpose to deliver a sustainable future for the world through our materials science expertise and collaboration with our partners. This absolute emissions target is to maintain emissions of all GHGs below 2006 levels through 2025, while continuing to grow our business. Dow's greenhouse gas emissions have reduced by approximately 17% since 2006.

Target reference number
Oth 3

Year target was set
2020

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

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

Engagement with suppliers	Other, please specify (Invite top suppliers in terms of spend to respond to CDP Supply Chain request)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2020

Figure or percentage in base year
0

Target year
2022

Figure or percentage in target year
50

Figure or percentage in reporting year
0

% of target achieved [auto-calculated]
0

Target status in reporting year

New

Is this target part of an emissions target?
Engagement with suppliers on projects to reduce emissions is a subset of Dow's longer term CO2 reduction efforts (target Abs 2).

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain (including target coverage)
Our ambition is to become the most innovative, customer-centric, inclusive and sustainable materials science company in the world, so that we can achieve our purpose to deliver a sustainable future for the world through our materials science expertise and collaboration with our partners. Dow recently joined the CDP Supply Chain programme and will begin receiving data from suppliers beginning in 2021.

C4.3

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

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	7	4700000
To be implemented*	2	1100000
Implementation commenced*	1	140000
Implemented*	7	400000
Not to be implemented	0	0

C4.3b

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

Initiative category & Initiative type

Low-carbon energy consumption	Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)
25000

Scope(s)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

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

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

Payback period
No payback

Estimated lifetime of the initiative
11-15 years

Comment
In 2020, we signed a Power Purchase Agreement to support our Carrollton, Kentucky site with 25 MW of solar capacity. Dow's agreement supports LG&E and KU Energy's ongoing efforts to enhance renewable offerings for residential, commercial and industrial customers to help meet their various renewable energy goals. The total project adds 200 MW of capacity to the region.

Initiative category & Initiative type

Low-carbon energy consumption	Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)
25000

Scope(s)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

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

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

Payback period
No payback

Estimated lifetime of the initiative
11-15 years

Comment
In 2020, we signed a Power Purchase Agreement to support our Aratu, Brazil site with 143 MW of solar capacity. The installed capacity of the plant is 187 MW. While Dow's Aratu site uses the majority of the energy, a portion is unclaimed and available to consumers in the region.

Initiative category & Initiative type

Low-carbon energy consumption	Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)
150000

Scope(s)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

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

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

Payback period
No payback

Estimated lifetime of the initiative
11-15 years

Comment
In 2020, we signed a Power Purchase Agreement to support our sites in Texas with 150 MW of solar capacity.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
100000

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
3800000

Investment required (unit currency – as specified in C0.4)
1000000

Payback period
<1 year

Estimated lifetime of the initiative
Ongoing

Comment
Increased recovery of waste heat from gas turbines at Freeport, Texas site.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
30000

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
1900000

Investment required (unit currency – as specified in C0.4)
11000000

Payback period
1-3 years

Estimated lifetime of the initiative
Ongoing

Comment
Reduction in propylene loss and generation of additional steam at Map Ta Phut, Thailand site.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
20000

Scope(s)
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
15000000

Investment required (unit currency – as specified in C0.4)
30000

Payback period
<1 year

Estimated lifetime of the initiative
1-2 years

Comment
Implementation of new mono/di methyl chlorosilane distillation technology resulting in energy efficiency improvements at Zhangjiagang site.

Initiative category & Initiative type

Non-energy industrial process emissions reductions	Process material substitution

Estimated annual CO2e savings (metric tonnes CO2e)
50000

Scope(s)
Scope 1

Voluntary/Mandatory
Mandatory

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

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

Payback period
Please select

Estimated lifetime of the initiative
Ongoing

Comment
Conversion of blowing agent materials to lower GWP chemicals.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Dow is subject to regulatory requirements at all of our operating facilities. Maintaining compliance with regulatory requirements and standards is an important driver for potential investments in emission reduction activities.
Financial optimization calculations	Dow strives to manage our facilities in the most cost-effective way, while continuing to ensure the safety of our employees, the environment, and the communities in which we operate. Cost of emissions, as well as cost savings that can occur during optimization projects, is factored into financial optimization evaluations for our projects.
Internal price on carbon	Dow has an internal price on carbon that is used when prioritizing capital projects.
Internal incentives/recognition programs	In 2020, Performance Awards for all Dow employees were based not only on financial performance, but on performance towards our 2025 Sustainability Goals via an Environmental Social Governance (ESG) index, which includes our climate-related targets, such as reducing emissions. In addition, Dow has other incentive programs that award individual projects. For example, the Waste Reduction Always Pays (WRAP) program awards individuals who find innovative ways to save money while proactively reducing waste or emissions at Dow.

C4.5

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

Yes

C4.5a

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

Level of aggregation

Group of products

Description of product/Group of products

Avoided emissions resulting from the use of Dow products are estimated as one of the targets for Dow's 2025 Sustainability Goal, 'Delivering Breakthrough Innovations.' Dow has a target that our products achieve three times the greenhouse gas benefit in the use of the product, than the burden to produce it. Dow continues to evaluate our product families to understand this ratio. Some examples of the largest GHG benefits of Dow materials are from polyurethanes and binders used in building insulation, ENGAGE polyolefins that are used to extend the life and performance of photovoltaic systems, and from packaging that enables less materials to be used.

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

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Addressing the Avoided Emissions Challenge- Chemicals sector

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

48

% of total portfolio value

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment

Many of Dow's products help customers and consumers avoid emissions. The 48% of revenue above is the current estimated of revenue associated with sales of Dow products that address world challenges, which include those that have an impact on climate change and energy efficiency, as well those that address other challenges such as food availability, water availability, biodiversity, energy supply, and human health. This percent is the aggregate of self-reported percentages from each of our business units assessed annually using our Sustainable Chemistry Index. We assess product families for the carbon benefit achieved through the use of the Dow product vs. an incumbent alternative, and continue to exceed our target of 3X benefit of product compared to the burden of producing them. The largest greenhouse gas benefits of Dow products are from polyurethanes and binders used in building insulation, ENGAGE polyolefins that are used to extend the life and performance of photovoltaic systems, and from packaging that enables less material to be used.

C5. Emissions methodology

C5.1

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

Scope 1

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
28600000

Comment
The baseline provided here is associated with Dow's 2030 carbon emission target to reduce emissions by 5 million metric tonnes (Scope 1 + Scope 2). Dow's baseline emissions represent emissions in 2019, adjusted for outliers (eg. Abnormal numbers of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). Dow also has a 2025 Sustainability Goal associated with greenhouse gas emissions which states that despite growing our business, our emissions at 2025 will not exceed our 2006 baseline. The 2006 baseline is 42.1 million metric tonnes CO2e (Scope 1 + 2).

Scope 2 (location-based)

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
5200000

Comment
The baseline provided here is for reference. Dow utilizes our Scope 2 (market-based) value to track progress against our targets, including Dow's 2030 carbon emission target to reduce emissions by 5 million metric tonnes (Scope 1 + Scope 2). Dow's baseline emissions represent emissions in 2019, adjusted for outliers (eg. Abnormal numbers of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). Dow also has a 2025 Sustainability Goal associated with greenhouse gas emissions which states that despite growing our business, our emissions at 2025 will not exceed our 2006 baseline. The 2006 baseline is 42.1 million metric tonnes CO2e (Scope 1 + 2).

Scope 2 (market-based)

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
6100000

Comment
The baseline provided here is associated with Dow's 2030 carbon emission target to reduce emissions by 5 million metric tonnes (Scope 1 + Scope 2). Dow's baseline emissions represent emissions in 2019, adjusted for outliers (eg. Abnormal numbers of scheduled turnarounds/outages, or unusually high production volume at a plant, etc.). Dow also has a 2025 Sustainability Goal associated with greenhouse gas emissions which states that despite growing our business, our emissions at 2025 will not exceed our 2006 baseline. The 2006 baseline is 42.1 million metric tonnes CO2e (Scope 1 + 2).

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
The Greenhouse Gas Protocol: Scope 2 Guidance
US EPA Emissions & Generation Resource Integrated Database (eGRID)

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
28164630

Start date
January 1 2020

End date
December 31 2020

Comment
Kyoto and Non-Kyoto Scope 1 emissions

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
27200000

Start date
January 1 2019

End date
December 31 2019

Comment
Kyoto and Non-Kyoto Scope 1 emissions

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
Dow tracks progress against our Sustainability Goals using the market-based method of Scope 2 accounting but reports a location-based value as well both here and in our annual Environmental, Social and Governance Report.

C6.3

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

Reporting year

Scope 2, location-based
4854698

Scope 2, market-based (if applicable)
6557571

Start date
January 1 2020

End date
December 31 2020

Comment

Past year 1

Scope 2, location-based
5200000

Scope 2, market-based (if applicable)
6070000

Start date
January 1 2019

End date
December 31 2019

Comment

C6.4

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

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

38165559

Emissions calculation methodology

Dow's Business Procurement Office provides the majority of the raw material, spending on purchased packaging, and spending on purchased services information used to calculate emissions associated with this category. For purchased goods, we account for 100% of our procured raw materials by weight. For 90 % we took specific raw materials and applied ecoinvent LCA cradle to gate emission factors to the supply of those raw materials. We then extrapolated this to the remaining 10% of our purchases. Emissions associated with purchased packaging and purchased services are also included. For purchased packaging and purchased services, we calculate the emissions impact based on spend using the economic input/output (EIO) methodology. For purchased packaging, top 90% of sources based on spend were calculated, with the remaining 10% extrapolated out.

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

0

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1759939

Emissions calculation methodology

The CO2e emissions associated with purchased goods were calculated using the Economic Input Output (EIO) method applied to 2020 dollar expenditures (invoices). This is referred to as the Material or Spend-Based Approach. 75% of the capital good materials are assumed to be steel, 25% concrete (Chemical Sector Guidance). The CO2e emissions associated with purchased goods were calculated using the US Environmentally-Extended Input-Output (USEEIO) model applied to 2019 dollar expenditures (invoices).

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

0

Please explain

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

4745020

Emissions calculation methodology

For purchased steam, we assumed the fuel source to produce this steam was natural gas, as the primary steam suppliers to Dow utilize this fuel type. From the total purchased steam (obtained from invoices and/or metering data from each site), we calculated the energy needed to produce that steam, and the equivalent mass of natural gas to produce that energy. An ecoinvent emission factor for natural gas was used to calculate CO2e. For purchased electricity, we assumed a certain global fuel/technology mix based on IEA data to estimated the amount of electricity from each type of generator (natural gas, coal, nuclear, renewable, etc.). Based on the type of generator, we calculated the energy value needed to produce that amount of electricity, and the equivalent mass of fuel (if applicable). ecoinvent emission factors were used to calculate CO2e. For emissions associated with purchased fuels, ecoinvent emission factors were used.

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

0

Please explain

Upstream transportation and distribution

Evaluation status
Relevant, not yet calculated

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain
Previously this data was being calculated using an Economic Input Output (EIO) approach based on the Company's total spending on logistics, with an assumption made on how this was split between upstream and downstream categories. Upon further investigation it was determined that this methodology does not actually represent Upstream Transportation & Distribution spending - this cost would be incorporated into the price of the raw materials. Though Dow recognizes this category as relevant to our operations, further primary data would be needed to be supplied by suppliers in order to split the cost of upstream transportation and distribution from the price of the materials itself, which was beyond reasonable accessibility for 2020.

Waste generated in operations

Evaluation status
Relevant, calculated

Metric tonnes CO2e
1745025

Emissions calculation methodology
Dow tracks all waste leaving our facilities, as well as whether or not that waste went to landfill, combustion, underground injection, energy recovery, wastewater, or other treatment. Based on the amount of waste, treatment technology, and using emission factors from ecoinvent, emissions from waste generated in operations was estimated.

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

Please explain

Business travel

Evaluation status
Relevant, calculated

Metric tonnes CO2e
5085

Emissions calculation methodology
Dow obtained the total air miles travelled, rental car days, and hotel room nights used by Dow employees in 2020 from our global travel provider. To calculate emissions from air miles, EPA emission factors for GHG inventories (2018 edition) was used. To calculate rental car days, an average mileage per day was assumed and EPA Emission factors were used to calculate emissions. For emissions associated with hotel room stays, an emission factor was provided on a per night basis from our global travel provider.

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

Please explain

Employee commuting

Evaluation status
Relevant, calculated

Metric tonnes CO2e
46220

Emissions calculation methodology
Employee commuting was calculated based on the total number of Dow employees in 2020, an average mileage per day assumed based on US behavior from AAA Foundation for Traffic Safety survey, and an assumed number for work days per year. As a result of COVID-19, many Dow employees worked from home in 2020. Using information from Dow Human Resources, this number was adjusted to reflect the reduction in employee commuting as a result of COVID-19. Emission factors associated with commuting were obtained from EPA emission factors for GHG inventories (2018 edition).

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

Please explain

Upstream leased assets

Evaluation status
Relevant, calculated

Metric tonnes CO2e
16600

Emissions calculation methodology
Emissions associated with leased assets was based on the square footage of leased assets (Dow leased offices and laboratories), with an assumed energy use/emission factor per square foot based on information from the EPA on home energy use (an assumption was made that residential and office energy use is similar).

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

Please explain

Downstream transportation and distribution

Evaluation status
Relevant, calculated

Metric tonnes CO2e
4140650

Emissions calculation methodology
Emissions associated with downstream transportation and distribution was based on primary data from our Dow logistics department. Mass weight transported per mode of transportation (road, sea, rail, etc.) was obtained internally. An estimate of average mileage per mode of transportation was obtained from external sources - for example, the US Department of Transportation. The emission factors used were from CEFIC, within chemical sector guidance.

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

Please explain

Processing of sold products

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain
Emissions associated with intermediate manufacturing were not determined; from the Greenhouse Gas Protocol: “In certain cases, the eventual end use of sold intermediate products may be unknown. For example, a company may produce an intermediate product with many potential downstream applications, each of which has a different GHG emissions profile and be unable to reasonably estimate the downstream emissions associated with the various end-users of the intermediate product. In such a case, companies may disclose and justify the exclusion of downstream emissions from categories in the report (but should not selectively exclude a subset of those categories)."

Use of sold products

Evaluation status
Relevant, calculated

Metric tonnes CO2e
6442059

Emissions calculation methodology
The majority of Dow products are inert and do not have use-phase emissions. The emissions presented here specifically represent Dow products used as fuel additives or are hydrocarbons that are sold and consumed in fuel applications. To calculate emissions, the volume of this material sold in 2020 was obtained from internal data, and an inherent CO2 emission factor was used to calculate emissions.

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

Please explain

End of life treatment of sold products

Evaluation status
Relevant, calculated

Metric tonnes CO2e
7268989

Emissions calculation methodology
Emissions associated with the end of life treatment of sold products were calculated starting with Dow product sales. The end of life fate of the products (landfill, combustion, wastewater, etc.) were determined through internal business-aligned studies, or were estimated based on a ratio approach between landfill and combustion. For the purposes of this calculation it is assumed that all of Dow's products are 'mixed plastic'. Emission factors from EPA's WARM model were used to calculate the emissions.

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

Please explain

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain
Dow does not have any materially significant downstream leased assets.

Franchises

Evaluation status
Not relevant, explanation provided

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain
Dow does not have any franchises.

Investments

Evaluation status
Relevant, calculated

Metric tonnes CO2e
4921485

Emissions calculation methodology
Investment-specific data was obtained from key contacts from most of the principal nonconsolidated affiliates that Dow has a partial ownership interest in, including: EQUATE Petrochemical Company K.S.C.C., Sadara Chemical Company, Siam Polyethylene Company Ltd., Siam Polystyrene Company Ltd., Siam Styrene Monomer Company Ltd., and Siam Synthetic Latex Company Ltd. Based on the companies reported Scope 1 and Scope 2 emissions, and Dow's ownership interest (%) in these companies, emissions were calculated. It does not include emissions associated with Dow's ownership interest in Map Ta Phut Olefins Company.

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

Please explain

Other (upstream)

Evaluation status

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain

Other (downstream)

Evaluation status

Metric tonnes CO2e
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

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

Please explain

C6.7

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

C6.7a

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

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	458000	

C6.10

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

Intensity figure
0.0009

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
34722201

Metric denominator
unit total revenue

Metric denominator: Unit total
38542000000

Scope 2 figure used
Market-based

% change from previous year
15

Direction of change
Increased

Reason for change
Dow reported net sales of $38.5 billion in 2020, down 10% from $43.0 billion in 2019, as the COVID-19 pandemic disrupted the global economy and supply and demand fundamentals. Strong demand in food packaging, health and hygiene, home care and pharma end-markets was more than offset by volume declines for products used in consumer durable good end-markets, including construction, furniture and bedding and automotive. The most significant impacts from the pandemic occurred in the first half of the year, with a gradual yet uneven recovery taking hold as the second half of the year progressed.

Intensity figure
0.55

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
29145281

Metric denominator
metric ton of product

Metric denominator: Unit total
52568330

Scope 2 figure used
Market-based

% change from previous year
5

Direction of change
Increased

Reason for change
GHG intensity on a metric ton of product basis reflects emissions solely related to the manufacture of materials, excluding emissions associated with the production of power and steam not consumed by the company. The methodology for calculating GHG intensity per ton of product was adjusted in 2020. The re-calculated intensity for 2019 using the market-based method for Scope 2 was 0.53. Despite the implementation of projects improving energy efficiency and reducing emissions, GHG intensity overall slightly increased from 2019 to 2020. Calculated GHG emissions were slightly higher in 2020 compared to 2019, while total production slightly decreased.

C7. Emissions breakdowns

C7.1

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

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	27520075	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	310560	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	210174	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	114917	IPCC Fifth Assessment Report (AR5 – 100 year)
PFCs	0	IPCC Fifth Assessment Report (AR5 – 100 year)
SF6	0	IPCC Fifth Assessment Report (AR5 – 100 year)
NF3	0	IPCC Fifth Assessment Report (AR5 – 100 year)
Other, please specify (Bromomethane, Carbon Monoxide, Carbon Tetrachloride, Dimethylether, Methylene Bromide)	8904	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	18418814
Netherlands	4200083
Germany	1830400
Canada	1148365
Spain	1034753
Argentina	735807
Brazil	296622
United Kingdom of Great Britain and Northern Ireland	175443
China	35831
Thailand	107395
Italy	77394
Portugal	50790
France	24626
Other, please specify (Rest of world)	28307

C7.3

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

By business division
By facility
By activity

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
HYDROCARBONS & ENERGY	23714014
COATINGS & PERFORMANCE MONOMERS	927786
INDUSTRIAL SOLUTIONS	597080
PACKAGING & SPECIALTY pLASTICS	1088448
CONSUMER SOLUTIONS	766341
POLYURETHANES & CONSTRUCTION CHEMICALS	720639
CORP OPERATIONS PULL SVC	350322

C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
PLAQUEMINE, LA	5270757	30.2842	-91.2406
FREEPORT, TX	5724691	28.9539	-95.3594
ST. CHARLES OPERATIONS	2817183	29.9424	-90.3964
TERNEUZEN, NLD	4187939	51.3381	3.8275
DOW CENTRAL GERMANY, DEU	1297870	51.39	11.9851
TARRAGONA, ESP	1034753	41.12	1.24
FORT SASKATCHEWAN, CAN	1105559	53.7089	-113.2124
BAHIA BLANCA, ARG	733145	-38.7144	-62.2674
SEADRIFT,TX	901633	28.415	-96.7133
STADE, DEU	519371	53.5988	9.4747
DEER PARK, TX	647341	29.705	-95.1236
TEXAS CITY, TX	98226	29.3836	-94.9025
SOUTH CHARLESTON, WV	107626	38.3683	-81.6997
CARROLLTON, KY	183795	38.6809	-85.1794
CABANGU, BRA	89739	30.289083	-91.234274
BREU BRANCO, BRA	18862	-3.771692	-49.564957
MIDLAND, MI	103921	43.6156	-84.2472
ARATU, BRA	131001	-22.3302	-42.5578
ESTARREJA, PRT	50790	40.7528	-8.5709
ZHANGJIAGANG, CHN	25918	31.8756	120.556
PARONA, ITA	41284	45.28165	8.75055
REST OF THE WORLD	544675	43.6156	-84.2472
SABINE, TX	2218338	30.066	-93.757
MT MEIGS, AL	91780	32.396	-86.073
BARRY, UK	173651	51.412	-3.24
PRENTISS, CAN	39549	52.387	-113.599
ELIZABETHTOWN, KY	5233	37.667	-85.835

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Process activities	16125585
Energy and steam stationary combustion	11924128
Blowing agents	114917

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

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

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	22553829	<Not Applicable>	Dow operates combined heat and power (CHP) plants to support our operations. At some sites, we also generate power and steam for third parties or to sell to the grid. Emissions associated with power and steam sales to third parties or to the grid are excluded from this number. In addition, a small portion of emissions would be associated with non-industrial buildings that Dow occupies. This is assumed to be a small portion of our Scope 1 emissions (approximately 0.15%).
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Germany	1994332	4438657	5148522	131
United States of America	1234102	709871	4328519	1064467
China	308700	337324	727447	0
Thailand	588780	573070	1316203	0
Canada	38772	47851	171451	0
Spain	148566	105674	609540	205286
Brazil	194213	49251	2583538	1862581
Argentina	170743	134270	383071	78076
Portugal	10645	11323	100169	0
United Kingdom of Great Britain and Northern Ireland	12729	0	55487	55487
France	3465	3355	65892	0
Netherlands	15373	15373	41800	0
Italy	6322	6322	20526	0
Other, please specify (Rest of world)	127956	125230	282464	8635

C7.6

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

By facility

C7.6b

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
STADE, DEU	1341275	3121593
DOW CENTRAL GERMANY, DEU	587207	1251214
TERNEUZEN, NLD	5012	5012
MIDLAND, MI	148939	136336
FREEPORT, TX	105995	105975
MT MEIGS, AL	53268	70057
CARROLLTON, KY	135304	78840
BAHIA BLANCA, ARG	167557	131085
PRENTISS, ALBERTA, CAN	32350	37639
TEXAS CITY, TX	206255	140452
TARRAGONA, ESP	148423	105539
ARATU, BRA	81645	11249
REST OF THE WORLD	525665	348425
ZHANGJIAGANG, CHN	279734	308358
MAP TA PHUT	588051	572342
BREU BRANCO, BRA	46151	28621
FORT SASKATCHEWAN	5474	9264
SOUTH CHARLESTON, WV	41131	24816
ESTARREJA, PRT	10645	11323
ST CHARLES OPERATIONS	28129	29451
BARRY, UK	12288	0
ELIZABETHTOWN, KY	23328	13593
PLAQUEMINE, LA	11333	11331
CABANGU, BRA	64604	5056
DEER PARK, TX	193512	0
SEADRIFT, TX	1205	0
SABINE, TX	10218	0

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

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

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	4799354	6482815	The majority of Dow's emissions are related to chemical production activities, however, a small percentage is assumed to be related to general facilities management. This amount has been excluded from the numbers presented here.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C-CH7.8

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

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Ethane	20	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Propane liquid	13	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Silicon)	6	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Propylene)	6	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Naphtha	4	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Cell effluent)	4	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Benzene)	4	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Nitrogen)	3	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Oxygen)	3	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Styrene)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Chlorine)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Propylene Oxide)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Caustic Soda)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Acetone)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Octene)	2	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Methanol	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Ethylene)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Ammonia Oxide)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Ammonia	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Acetic Acid)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Hexene)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Ethylene glycol)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Calcium Oxide)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.
Other (please specify) (Hydrochloric acid)	1	Emissions were calculated using the mass of material purchased multiplied by best representative emission factors from the ecoinvent database.

C-CH7.8a

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	
Methane (CH4)	1500000	The majority of this number is associated with natural gas that Dow purchases and resells among tenants on our sites. In Argentina, Dow has extraction and sales of natural gas. The content of methane in the natural gas was considered to generate this estimate.
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	0	

C7.9

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

Increased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	60000	Decreased	0.2	Dow's gross global emissions (Scope 1 + 2) for this reporting year are 34,722,201 metric tonnes CO2e. Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. With respect to a change in renewable energy consumption, in 2020 Dow began purchasing Guarantees of Origin (GOs) to certify the power received to certain sites in Europe was from renewable sources. In addition, in 2019 we added additional renewable capacity via a 20 MW wind power deal signed for our Bahia Blanca facility in Argentina. This project came online in September of 2019. In 2020, we had a full year of operation of this facility, increasing our consumption of renewable power. Combined, these changes amount to approximately 60,000 tonnes of Scope 2 emissions reduced. The percent change in emissions associated with a change in renewable energy consumption is calculated as 60,000 metric tonnes / 33,270,000 metric tonnes * 100% = 0.2% decrease in emissions.
Other emissions reduction activities	200000	Decreased	0.6	Dow's gross global emissions (Scope 1 + 2) for this reporting year are 34,722,201 metric tonnes CO2e. Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. With respect to emission reduction activities, Dow completed projects in 2020 that had an impact on Scope 1 emissions. The impact is estimated at 200,000 metric tonnes. The percent change in emissions associated with emission reduction projects is calculated as 200,000 metric tonnes / 33,270,000 metric tonnes * 100% = 0.6% decrease in emissions.
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output	100000	Decreased	0.3	It is estimated that 100,000 metric tons of CO2e reduced was a result of decreased production on a metric ton of product basis, compared to 2019. This number was determined using an average intensity (metric tons of CO2e/metric tons of product), multiplied by the change in production. Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. The percent change in emissions associated with a change in output is calculated as 100,000 metric tonnes / 33,270,000 metric tonnes * 100% = 0.3% decrease in emissions.
Change in methodology	670000	Increased	2	In 2020, as part of a project focused on improving accuracy and completeness of our emissions inventory to align with the requirements ofthe Task Force on Climate-related Financial Disclosures ("TCFD") Dow reviewed our Scope 1 emission calculations for a number of our large sites. The review led to some changes in methodology at the reviewed locations (e.g. using fuel compositions instead of AP-42 emission factors for natural gas). Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. The percent change in emissions associated with a change in methodology is calculated as 670,000 metric tonnes / 33,270,000 metric tonnes * 100% = 2% increase in emissions.
Change in boundary	900000	Increased	2.7	In 2020, as part of a project focused on improving accuracy and completeness of our emissions inventory to align with the requirements ofthe Task Force on Climate-related Financial Disclosures ("TCFD") Dow added facilities to our inventory that were not historically reported. Dow also added additional mobile and fugitive sources to the inventory. Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. The percent change in emissions associated with a change in boundary is calculated as 900,000 metric tonnes / 33,270,000 metric tonnes * 100% = 2.7% increase in emissions.
Change in physical operating conditions		<Not Applicable>		
Unidentified	242201	Increased	0.7	The amount reported here as 'unidentified' emissions may encompass a number of different elements, including other changes to measurement protocols for GHGs not mentioned above (eg. Updated supplier factors for Scope 2 emissions) or impacts from outages in 2019 compared to 2020. Our gross global emissions (Scope 1 + 2) for the previous year were 33,270,000 metric tonnes. The percent change in emissions denoted here is calculated as 242,201 metric tonnes / 33,270,000 metric tonnes * 100% = 0.7% increase in emissions.
Other		<Not Applicable>		

C7.9b

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

Market-based

C8. Energy

C8.1

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

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

C8.2

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

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

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	176588356	176588356
Consumption of purchased or acquired electricity	<Not Applicable>	2625115	7607345	10232460
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	649548	4952621	5602169
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	3274663	189148322	192422985

C-CH8.2a

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

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	176371661
Consumption of purchased or acquired electricity	<Not Applicable>	10112462
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	5592075
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0
Total energy consumption	<Not Applicable>	192076198

C8.2b

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

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

C8.2c

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

Fuels (excluding feedstocks)
Natural Gas

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
109560578

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

MWh fuel consumed for self-generation of heat
37250596

MWh fuel consumed for self-generation of steam
43385989

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

MWh fuel consumed for self-cogeneration or self-trigeneration
28923993

Emission factor
51.1

Unit
kg CO2e per GJ

Emissions factor source
This factor was calculated based on Alberta Environment and Parks quantification methodology document titled “Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation – Version 1.3 (February 2020)”

Comment
The emission factor Dow uses for natural gas combustion may vary depending on published guidance within the jurisdiction where Dow’s operations are located. The emission factor provided here is an example of an emission factor that Dow used in 2020 for natural gas combusted (stationary fuel combustion) at our Fort Saskatchewan site in Alberta, Canada. As Dow operates regulated facilities in Alberta under the Technology Innovation and Emissions Reduction Regulation (TIER – formerly CCIR), Dow aligns to this methodology for those sites in Alberta. The applied emission factors applied may vary site to site. For example, our US facilities may reference EPA AP-42 (120,000,234 lb CO2e per million ft3 of natural gas).

Fuels (excluding feedstocks)
Other, please specify (Process offgas)

Heating value
HHV (higher heating value)

Total fuel MWh consumed by the organization
67027778

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

MWh fuel consumed for self-generation of heat
4021667

MWh fuel consumed for self-generation of steam
36195000

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

MWh fuel consumed for self-cogeneration or self-trigeneration
26811111

Emission factor
16.4

Unit
kg CO2e per GJ

Emissions factor source
This factor was calculated based on Alberta Environment and Parks quantification methodology document titled “Quantification Methodologies for the Carbon Competitiveness Incentive Regulation and the Specified Gas Reporting Regulation – Version 1.3 (February 2020)”

Comment
The emission factor Dow uses for process offgas combustion may vary depending on published guidance within the jurisdiction where Dow’s operations are located and the exact composition of the offgas. The emission factor provided here is an example of an emission factor Dow used in 2020 for process offgas combusted (stationary fuel combustion) at our Fort Saskatchewan site in Alberta, Canada. As Dow operates regulated facilities in Alberta under the Technology Innovation and Emissions Reduction Regulation (TIER – formerly CCIR), Dow aligns to this methodology for those sites in Alberta. The emission factors applied may vary site to site. For example, our US facilities may reference EPA AP-42 (79,200,154 lb CO2e per million ft3 of process offgas, assuming process offgas is 66% natural gas).

C8.2d

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	20621701	8451676	0	0
Heat	0	0	0	0
Steam	67914690	67024678	0	0
Cooling	0	0	0	0

C-CH8.2d

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

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	20621701	8451676
Heat	0	0
Steam	67914690	67024678
Cooling	0	0

C8.2e

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

Sourcing method
Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

Low-carbon technology type
Wind

Country/area of consumption of low-carbon electricity, heat, steam or cooling
United States of America

MWh consumed accounted for at a zero emission factor
1051751

Comment

Sourcing method
Power purchase agreement (PPA) with a grid-connected generator without energy attribute certificates

Low-carbon technology type
Hydropower

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

MWh consumed accounted for at a zero emission factor
1213033

Comment

Sourcing method
Power purchase agreement (PPA) with on-site/off-site generator owned by a third party with no grid transfers (direct line)

Low-carbon technology type
Wind

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

MWh consumed accounted for at a zero emission factor
8132

Comment

Sourcing method
Power purchase agreement (PPA) with on-site/off-site generator owned by a third party with no grid transfers (direct line)

Low-carbon technology type
Solar

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

MWh consumed accounted for at a zero emission factor
503

Comment

Sourcing method
Heat/steam/cooling supply agreement

Low-carbon technology type
Biomass

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

MWh consumed accounted for at a zero emission factor
649548

Comment

Sourcing method
Power purchase agreement (PPA) with a grid-connected generator with energy attribute certificates

Low-carbon technology type
Other, please specify (Landfill gas)

Country/area of consumption of low-carbon electricity, heat, steam or cooling
United States of America

MWh consumed accounted for at a zero emission factor
12716

Comment

Sourcing method
Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type
Low-carbon energy mix

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

MWh consumed accounted for at a zero emission factor
205286

Comment

Sourcing method
Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type
Low-carbon energy mix

Country/area of consumption of low-carbon electricity, heat, steam or cooling
United Kingdom of Great Britain and Northern Ireland

MWh consumed accounted for at a zero emission factor
55487

Comment

Sourcing method
Power purchase agreement (PPA) with a grid-connected generator without energy attribute certificates

Low-carbon technology type
Wind

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

MWh consumed accounted for at a zero emission factor
78076

Comment

Sourcing method
Power purchase agreement (PPA) with on-site/off-site generator owned by a third party with no grid transfers (direct line)

Low-carbon technology type
Solar

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

MWh consumed accounted for at a zero emission factor
131

Comment

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
Naphtha

Total consumption
4049753

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
3.08

Heating value of feedstock, MWh per consumption unit
13.12

Heating value
HHV

Comment

Fuels used as feedstocks
Propane liquid

Total consumption
6236184

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
3

Heating value of feedstock, MWh per consumption unit
14.08

Heating value
HHV

Comment

Fuels used as feedstocks
Ethane

Total consumption
9470059

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
2.93

Heating value of feedstock, MWh per consumption unit
14.34

Heating value
HHV

Comment

Fuels used as feedstocks
Butane

Total consumption
275684

Total consumption unit
metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit
3.03

Heating value of feedstock, MWh per consumption unit
13.67

Heating value
HHV

Comment

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	30
Natural Gas	70
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 (Dow will improve raw material efficiency utilization index by 10 percent relative to the 2015 baseline.)

Metric value
1.21

Metric numerator
Corporate Raw Material Efficiency (RME)

Metric denominator (intensity metric only)

% change from previous year
5

Direction of change
Decreased

Please explain
Raw material efficiency (RME) is a measurement of the conversion of raw materials to products for operating facilities. Due to differences in technologies across the company, each Dow business has an RME metric that aligns best to their specific RME priorities (for example: yield, flaring quantities, etc.). Corporate RME is a compilation of RME values from each business, weighted on the production volume for each of those businesses over the total production volume for Dow. Improvements in RME impacts Dow's emissions in a number of potential ways: for example, an improved RME in some businesses may mean less feedstock required to make an equivalent amount of product - this would result in fewer purchased goods (reducing Scope 3 emissions) per pound of product produced, as well as decreased waste (reducing Scope 3 emissions as well, or potentially Scope 1 emissions if that waste is managed within Dow's operating boundary). Raw material efficiency decreased from 2019 to 2020, but was measured in 2020 at 21% above the baseline (2015 baseline Raw Material Efficiency = 1, 2025 Goal = 1.1). Every change in the index of 0.01 represents a 1% change in raw material efficiency.

Description
Other, please specify (Dow will achieve 1 percent per year average increase in production index from our most-utilized facilities from the 2015 baseline.)

Metric value
1.05

Metric numerator
Corporate Production Index

Metric denominator (intensity metric only)

% change from previous year
1

Direction of change
Increased

Please explain
The Production Index is a measure of the non-capital capacity increases for existing Dow facilities. Our production index increased from 2019 to 2020 and was measured in 2020 at 5% above the baseline (2015 baseline production index = 1, 2025 Target =1.1). Improvements in our Production Index imply increased efficiencies at our Operations, which allow us to produce more product out of our existing asset base.

Description
Other, please specify (Dow will reduce the freshwater intake intensity at key water-stressed sites by 20 percent.)

Metric value
10.63

Metric numerator
Freshwater lbs

Metric denominator (intensity metric only)
Production lbs

% change from previous year
16

Direction of change
Decreased

Please explain
Dow has identified six key water-stressed sites whose data is used for this metric. These sites are Seadrift (Texas, United States), Bahia Blanca (Argentina), Terneuzen (The Netherlands), Tarragona (Spain), Dow Central Germany (Germany), and Freeport (Texas, United States). Freshwater intake intensity decreased from 2019 to 2020. The 2015 baseline = 11.83 lbs of freshwater/lb of production, and the 2025 Goal is 8.57 lbs freshwater/lb of production.

Description
Waste

Metric value
0.03

Metric numerator
Waste lbs

Metric denominator (intensity metric only)
Production lbs

% change from previous year
0

Direction of change
No change

Please explain
Dow has a 2025 Sustainability Goal to reduce its waste intensity footprint by 20 percent. Waste intensity effectively remained the same from 2019 to 2020, and is down 9% from the 2015 baseline.

C-CH9.3a

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

Output product
High Value Chemicals (Steam cracking)

Production (metric tons)
20601931

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.57

Electricity intensity (MWh per metric ton of product)
0.12

Steam intensity (MWh per metric ton of product)
0.4

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

Comment

Output product
Aromatics extraction

Production (metric tons)
2022741

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.003

Electricity intensity (MWh per metric ton of product)
0.08

Steam intensity (MWh per metric ton of product)
0.95

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

Comment

Output product
Polymers

Production (metric tons)
13723671

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.13

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

Output product
Specialty chemicals

Production (metric tons)
1565896

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.49

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

Output product
Other base chemicals

Production (metric tons)
14654091

Capacity (metric tons)

Direct emissions intensity (metric tons CO2e per metric ton of product)
0.1

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

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	Yes Dow invests in the R&D of low-carbon products and services. The examples identified below are some the projects Dow is currently undertaking, but is not a comprehensive list of all projects Dow would consider to be associated with this objective.

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
Other, please specify (CO2 reduction and energy optimization)	Applied research and development	≤20%		
Radical process redesign	Applied research and development	≤20%		
Carbon capture, utilization and storage (CCUS)	Pilot demonstration	≤20%		
Process step integration	Applied research and development	≤20%		
Other, please specify (Process and Sustainability Innovation)	Applied research and development	≤20%		
Other, please specify (Process efficiency)	Basic academic/theoretical research	≤20%		

C10. Verification

C10.1

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

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

C10.1a

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

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
2020 ESG Report.pdf

Page/ section reference
Attached is the Dow 2020 Environmental, Social and Governance Report as of, and for the year ended December 31, 2020, including Deloitte & Touche LLP's review report (see page 196). The ESG disclosures in the GRI Index was the subject matter of the review engagement. GRI Standard disclosures 305-1 Direct (Scope 1) GHG emissions, 305-2 Energy indirect (Scope 2) GHG emissions, and 305-3 Other indirect (Scope 3) GHG emissions are included within the GRI Index.

Relevant standard
Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)
100

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
210616 Dow Chemical - TIER 2020 Final Verification Report - AEF Redacted.pdf

Page/ section reference
Dow has provided the attached example of verification associated with our emissions reported in jurisdictions where there exists a carbon emission price. The attached is the final verification report for Dow's Fort Saskatchewan, Alberta, Canada site. The verification conclusion can be found on page 38. The emissions indicated in 'Total Regulated Emissions' include both direct (Scope 1) and indirect (Scope 2) emissions.

Relevant standard
Alberta Carbon Competitiveness Incentive Regulation (CCIR)

Proportion of reported emissions verified (%)
4

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
2020 ESG Report.pdf

Page/ section reference
Attached is the Dow 2020 Environmental, Social and Governance Report as of, and for the year ended December 31, 2020, including Deloitte & Touche LLP's review report (see page 196). The ESG disclosures in the GRI Index was the subject matter of the review engagement. GRI Standard disclosures 305-1 Direct (Scope 1) GHG emissions, 305-2 Energy indirect (Scope 2) GHG emissions, and 305-3 Other indirect (Scope 3) GHG emissions are included within the GRI Index.

Relevant standard
Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)
100

Scope 2 approach
Scope 2 location-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
2020 ESG Report.pdf

Page/ section reference
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Relevant standard
Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)
100

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
Reasonable assurance

Attach the statement
210616 Dow Chemical - TIER 2020 Final Verification Report - AEF Redacted.pdf

Page/ section reference
Dow has provided the attached example of verification associated with our emissions reported in jurisdictions where there exists a carbon emission price. The attached is the final verification report for Dow's Fort Saskatchewan, Alberta, Canada site. The verification conclusion can be found on page 38. The emissions indicated in 'Total Regulated Emissions' include both direct (Scope 1) and indirect (Scope 2) emissions.

Relevant standard
Alberta Carbon Competitiveness Incentive Regulation (CCIR)

Proportion of reported emissions verified (%)
1

C10.1c

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

Scope 3 category
Scope 3 (upstream & downstream)

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
2020 ESG Report.pdf

Page/section reference
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Relevant standard
Attestation standards established by AICPA (AT105)

Proportion of reported emissions verified (%)
100

C10.2

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

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C8. Energy	Energy consumption	AICPA Attestation Standards	Dow engaged Deloitte & Touche LLP to perform a review in accordance with the attestation standards established by the American Institute of Certified Public Accountants (AICPA) of management's assertion that the ESG disclosures referenced or included within the Global Reporting Initiative Content Index ("GRI Index"), included within the Dow 2020 Environmental, Social and Governance Report as of, and for the year ended December 31, 2020 (the "2020 ESG Report") are presented in accordance with the Global Reporting Initiative Sustainability Reporting Standards under its Comprehensive option. The data points included within the CDP disclosure question C8.2a that are part of the ESG disclosures referenced or included in the GRI Index are: 1) Consumption of fuel (excluding feedstock) 2) Consumption of purchased or acquired electricity (as converted) 3) Consumption of purchased or acquired steam (as converted). ** Reference to CDP question number: C8.2a ** Type of verification and frequency: limited assurance, annual process. See page 196 of Dow's EGS Report.

2020 ESG Report.pdf

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.
Alberta Carbon Competitive Incentive Regulation (CCIR) – ETS
Canada federal fuel charge
EU ETS

C11.1b

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

Alberta Carbon Competitive Incentive Regulation (CCIR) – ETS

% of Scope 1 emissions covered by the ETS
3.83

% of Scope 2 emissions covered by the ETS
1.31

Period start date
January 1 2020

Period end date
December 31 2020

Allowances allocated
1206365

Allowances purchased
5851

Verified Scope 1 emissions in metric tons CO2e
1079142

Verified Scope 2 emissions in metric tons CO2e
86199

Details of ownership
Facilities we own and operate

Comment
100% of Dow's emissions in Alberta are covered under the Alberta CCIR. Dow's emissions covered under the Alberta CCIR represent 3.83% of the total Scope 1 from Dow, and 1.31% of Dow's total Scope 2 emissions (as per the market-based method).

EU ETS

% of Scope 1 emissions covered by the ETS
25.4

% of Scope 2 emissions covered by the ETS
0

Period start date
January 1 2020

Period end date
December 31 2020

Allowances allocated
4773189

Allowances purchased
2380991

Verified Scope 1 emissions in metric tons CO2e
7154180

Verified Scope 2 emissions in metric tons CO2e
0

Details of ownership
Facilities we own and operate

Comment
100% of Dow's Scope 1 emissions in the EU are covered by the ETS. Dow's emissions covered under the EU ETS represent 25.4% of the total Scope 1 from Dow.

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

Canada federal fuel charge

Period start date
January 1 2020

Period end date
December 31 2020

% of total Scope 1 emissions covered by tax
0

Total cost of tax paid
160000

Comment
The Canada federal fuel charge impacts Dow minimally through fuel gas purchases at our St. Clair and West Hill sites in Ontario, Canada, as well as through diesel purchases for rail cars at our Prentiss, Alberta, Canada site. The attributable Scope 1 emissions associated with the use of this fuel would be <0.01% of Dow's total Scope 1 emissions.

C11.1d

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

The trading schemes in which we participate apply to almost all segments of our business. The EU ETS covers Dow's power and steam plants, as well as chemical installations from almost all Dow business segments. The Alberta Carbon Competitiveness Incentives Regulation (CCIR) ETS (now TIER) covers Dow's power and steam plant in Fort Saskatchewan, Alberta, Canada, as well as chemical installations from Dow's Hydrocarbons & Energy Business, and Packaging and Specialty Plastics. An internal team manages Dow's participation in both schemes, including ensuring emissions regulated under each ETS are accurately measured and verified.

With respect to potential emerging regulation, Dow's Government Affairs team monitors the political landscape across all of the areas of the world where Dow operates to understand the status of emerging regulation as it relates to emissions trading schemes (ETS) or carbon taxes in order to understand any potential impact to our business.

Dow's overall strategy as it relates both to systems we are currently regulated by, as well as areas of the world where we foresee the potential for future regulation, is to actively reduce GHG emissions in the most cost-efficient way. The oversight for action as itrelates to reducing our carbon emissions lies with the Carbon Program Oversight Committee (POC), which reports to the CEO. The POC includes Senior Leaders responsible for our participation in ETS, as well as Dow's Vice President of Government Affairs and Chief Sustainability Officer.

Dow's current strategy to achieve our objectives around carbon and climate change include: implementing energy efficiency projects, sourcing cost-advantaged renewable power to support our operations, and evaluating low carbon technology options for the maximum affordable footprint reduction.

Case study of how we have applied our strategy:

Situation: Dow's Terneuzen site is located in The Netherlands. To combat climate change, the Dutch government has a goal to reduce greenhouse gas emissions by 55% by 2030, compared to 1990 levels. Dow has a carbon emission footprint associated with our facility that could result in increased cost to comply if carbon emission pricing increases as a result of this objective, available allowances are decreased, or emissions mitigation projects are not implemented.

Task: Dow mitigates the cost of compliance through the implementation of CO2 reduction projects that are less expensive to implement on a cost per tonne of carbon basis than the projected cost of carbon emissions. Dow utilizes an internal cost of carbon in order to evaluate all projects; this internal price on carbon varies depending on the location of the project. Due to projections associated with the cost to comply in the future for our sites impacted by the EU ETS, a specific steering team under the direction of the POC was created in order to drive emission reduction opportunities for Dow in the EU. Ultimately, our task is to reduce emissions in the most cost-effective manner available.

Action: Dow has generated a roadmap for our Terneuzen site to reduce emissions. This plan foresees the construction of a clean hydrogen plant where by-products from core production processes are converted into hydrogen and CO2. The hydrogen would be used as clean fuel in the production process. The CO2 would be captured and stored until alternative technologies develop, or the CO2 can be used in processes. In the second phase, Dow intends to capture CO2 from our ethylene oxide plant and replace some gas turbines with electrical motor drives. A preliminary investment decision on the implementation of this roadmap is expected in 2022.

Result: As a result of this project, the site is expected to reduce CO2 emissions by approximately 1.7 million tonnes per year (40% reduction from 2020 levels, aligned with the Dutch Climate agreement). The reduction in emissions would result in reduced cost to comply with the EU ETS.

C11.2

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

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase
Credit purchase

Project type
N2O

Project identification
N2O abatement from nitric acid production. Project 5461 : Fatima N2O Abatement Project.

Verified to which standard
CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO2e)
70000

Number of credits (metric tonnes CO2e): Risk adjusted volume
70000

Credits cancelled
Yes

Purpose, e.g. compliance
Compliance

Credit origination or credit purchase
Credit purchase

Project type
Hydro

Project identification
Project 8054 : DaKrong 2 Hydropower Project

Verified to which standard
CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO2e)
10928

Number of credits (metric tonnes CO2e): Risk adjusted volume
10928

Credits cancelled
Yes

Purpose, e.g. compliance
Compliance

Credit origination or credit purchase
Credit purchase

Project type
Wind

Project identification
Project 3649: Sungsan Wind Power Project

Verified to which standard
CDM (Clean Development Mechanism)

Number of credits (metric tonnes CO2e)
72

Number of credits (metric tonnes CO2e): Risk adjusted volume
72

Credits cancelled
Yes

Purpose, e.g. compliance
Compliance

C11.3

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

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price
Navigate GHG regulations
Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Stress test investments
Identify and seize low-carbon opportunities
Other, please specify (Manage risk, Capital planning and capital growth project evaluations)

GHG Scope
Scope 1
Scope 2

Application
Carbon pricing is used by Dow primarily in the following ways: evaluating long term capital , ensuring continued compliance with regulatory frameworks, adding additional justification for investments in energy efficiency/emission reduction projects to meet climate/carbon related internal targets, and aiding in climate change risk management. Ultimately the goal of utilizing an internal carbon price is to mitigate the risk of Dow's carbon exposure in order to ensure future resiliency.

Actual price(s) used (Currency /metric ton)
20

Variance of price(s) used
Dow does not use uniform pricing. The price provided above of $20 USD/metric ton of CO2e is a weighted cost of carbon based on regional pricing in 2020 and Dow's emissions in the different jurisdictions. Dow's carbon pricing strategy is to use regionally differentiated and evolutionary pricing. On an annual basis, Dow reviews and updates a 20-year carbon pricing forecast based on regulatory outlooks, coal-to-gas conversion costs, and clean technology development and implementation. Dow assesses that carbon policy will continue to be fragmented across the globe in the short to medium term timeframes, and as such, Dow uses a range of carbon price outlooks across the Company depending on each geography/country. Aside from the "base case" internal prices described above, for large capital allocation projects, Dow conducts a sensitivity analysis, varying the internal carbon price applied to evaluate the impact of changing carbon prices on the project economics.

Type of internal carbon price
Shadow price

Impact & implication
Company specific description on how Dow uses internal price on carbon: Utilizing a regionally differentiated and evolutionary pricing scheme for our internal carbon price allows Dow to mitigate risk and prioritize investment across its global operations. This has driven increased consideration of energy efficiency and emission reduction opportunities at our manufacturing facilities overall. Our carbon price forecasts are used when considering larger capital projects that have an impact on emissions. For example, based on our internal pricing forecasts, Dow has prioritized larger emission reduction projects and potential future mitigations in jurisdictions where there is a higher projected carbon price, such as the recently announced roadmap for our Terneuzen site that foresees the construction of a clean hydrogen plant, investments in carbon capture, and the replacement of some of our gas turbines with electrical motor drives. Carbon pricing also factors into our assessments of operational costs to run our production facilities. Based on our carbon pricing projections, and projections for emissions reductions at our sites, we can optimize our portfolio of emission allowances accordingly, in order to maximize value to Dow.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?
Yes, our suppliers
Yes, our customers
Yes, other partners in the value chain

C12.1a

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

Type of engagement
Compliance & onboarding

Details of engagement
Climate change is integrated into supplier evaluation processes

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

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

Rationale for the coverage of your engagement
Engagement with suppliers around climate change, as well as Dow's other sustainability goals, is a key part of our strategy to meet our corporate sustainability goals. By 2050, Dow intends to be carbon neutral, including our Scope 3 emissions. The largest category of our Scope 3 emissions are our purchased goods and services. Dowrecognizes that in order to have an impact on this category, Dow must work with the members of our value chain. Dow works with a variety of suppliers ranging from external manufacturers (EM), raw material, logistic service providers (LSPs) and labor service providers to capital equipment and MRO and corporate service providers. Dow has approximately 38,000 suppliers in our supply chain in approximately 100 countries, with a purchased managed spend of approximately $20 billion. We have procurement centers around the world to establish effective relationships with global and local suppliers of goods and services. We have chosen to work with our suppliers because we recognize the impact suppliers can have on the footprint of our value chain; therefore, we ensure all suppliers are educated on our Supplier Code of Conduct, which includes working with our suppliers to pursue the principles of sustainability through Responsible Care®, including those principles which align with Dow's climate-related objectives, such as energy conservation and minimizing emissions. By setting robust and tangible climate goals backed by metrics appropriate for the product or activity, we inspire our suppliers and customers to do the same for their operations - enabling Dow to meet our own scope 3 goals.

Impact of engagement, including measures of success
Through the Dow Code of Conduct, we continue to engage new suppliers globally and communicate our expectations that all suppliers are compliant with regulations and Dow's values. We also continually review and refresh the Code of Business Conduct for Suppliers, completing a full analysis of our current standards and industry best practices to ensure that we're holding our suppliers to the highest standards regarding sustainability, human rights and environmental health & safety. The requirements of the Code of Business Conduct for Suppliers are built into all new and existing supplier contracts, to ensure they are contractually enforceable. Description of measures of success: Dow reserves the right to audit supplier compliance at any time. In the case where we identify less than adequate supplier practices, we reserve the right to discontinue business with the supplier. The results of these audits are an indicator of the success of the program. Description of impact according to measure of success chosen: Annually, we've identified compliance issues in less than 0.1 percent of our supplier base, resulting in the immediate cessation of business.

Comment
Leveraging our approach to our suppliers and external manufacturing (EM) suppliers, we also set high standards for our Logistic Service Providers (LSPs) by having in place an extensive risk-based program in order to qualify providers and established periodic follow-up assessments. These assessments include reviewing health & safety practices; labor practices; environmental compliance and security and are conducted via work processes and external initiatives such as the Safety & Quality Assessment System (SQAS); Chemical Distribution Institute (CDI); Responsible Care® and Anti-Corruption Due Diligence (ACDD). We also operate a detailed Distribution Risk Review process to ensure risks are adequately mitigated.

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Climate change performance is featured in supplier awards scheme

% of suppliers by number
5

% total procurement spend (direct and indirect)
15

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

Rationale for the coverage of your engagement
By 2050, Dow intends to be carbon neutral, including our Scope 3 emissions. All scope 3 categories are included in Dow's goal, including upstream and downstream transportation. In order to have an impact on Scope 3 emissions Dow must work with the members of our value chain. The Dow S4tar Program is designed to encourage sustainable excellence of Dow supply chain partners. S4tar stands for: S4 = safety, sustainability, social responsibility, service; T=One Team; A=accountability; R=reliability. The program is intended to be a mutually beneficial initiative to promote business growth for both Dow and our Supply Chain partners in a sustainable manner. Through quarterly and annual evaluation, S4tar award presents Best Carrier; Best Warehouse; Best Freight Forwarding and Best Terminal Logistics Service Provider at the end of each year. S4tar continuously raises the bar year over year to maintain the highest standards in the industry. The sustainability pillar of the award requests information on GHG reduction and circular economy strategies to ensure Dow's logistics partners are prioritizing the environmental impacts of their operations. In addition to the sustainability award, Dow has been collaborating with Logistics Service Providers across each region through workshops, carriers events, and webinars to discuss how we can collaborate on reducing CO2 across transportation. Piloting technology advancements, encouraging partnerships with Global Logistics Emissions Council (GLEC), Smartway, etc. and opening up dialogue around the necessary data sharing needed to measure and manage CO2 reduction are just a few of the topics we have covered in 2020. On an annual basis, Dow also incentivizes logistics service providers with a sustainability award. The award varies slightly by region to accommodate geographical differences. Dow surveys and collects data on our logistics service providers' sustainability practices, such as carbon accounting, technology advancements, and sustainable driving practices and performance. Dow awards the leaders as well as the most improved year to year to continue encouraging investment and prioritization of sustainable transportation.

Impact of engagement, including measures of success
Impact is currently being measured via logistics service provide participation in the award program. 80% of our logistics service providers are participating in the award program, globally. In addition to the above metric, for climate-specific projects that we have engaged on with our suppliers, an additional measure of success includes tonnes of greenhouse gases reduced in one year compared to a baseline (eg. The previous year). Projects in 2020 associated with Logistics Service Providers (LSPs) reduced Scope 3 emissions by approximately 20,000 tonnes of CO2e. Though this is currently a small portion of our Scope 3 emissions, as additional suppliers engage in climate-related initiatives, the impact from engaging with these suppliers is expected to grow.

Comment

C12.1b

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

Type of engagement
Collaboration & innovation

Details of engagement
Other, please specify (Engage with customers on supply chain improvements that have an impact on supply chain emissions)

% of customers by number
100

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

Portfolio coverage (total or outstanding)
<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement
Dow recognizes the impact our supply chain can have on the Company's overall footprint, therefore, Dow is open to collaborating with all customers on opportunities to reduce supply chain emissions. Dow's Integrated Supply Chain (ISC) team works to identify opportunities to collaborate with customers on how to mitigate the impact of our supply chain. Depending on the customer, location, and individual supply chain challenges, these opportunities vary.

Impact of engagement, including measures of success
Description of measures of success: Dow measures success in this space by the emissions reduced through the impact of various initiatives. For example, in 2019 Dow launched an initiative to reduce the number of trucks hauling material to customers by consolidating shipments to improve trailer utilization. Dow ships millions of products packaged in totes, drums, and other packaging types in dry van trailers to customers. While some customers order full truckloads of material, often the customer requires smaller quantities that only partially fill the truck. This leads to the transportation of goods using more trucks than necessary due to the underutilization of the trailer capacity. Leveraging technology, Dow now uses a transportation optimization engine to identify when products can be shipped together while respecting all relevant constraints, including but not limited to material compatibility, route, temperature requirements, and delivery times. While consolidating shipments to reduce trucks save freight cost, it also has a positive impact on CO2 emissions; shipping the same amount of freight in less trucks means less CO2. Description of impact according to measure of success chosen: In 2020, the program reduced GHG emissions by 8000 tons of CO2eq.

Type of engagement
Education/information sharing

Details of engagement
Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number
100

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

Portfolio coverage (total or outstanding)
<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement
Dow products can often reduce GHG emissions more than the footprint of manufacturing them. Dow aspires to educate all customers and potential future customers on the positive impact our products can have on mitigating environmental impact. Through our annual Environmental, Social and Governance report, we report on our progress to Deliver Breakthrough Innovations and deliver solutions that can address world challenges. This report can be accessed by all of our current and potential customers. In addition, Dow is joining Columbia University's Center on Global Energy Policy and The Nature Conservancy in launching a new project to calculate the environmental benefits of products and technologies that reduce or eliminate greenhouse gases. The Center on Global Energy Policy will investigate the potential for new methods that quantify and measure CO2 reductions across full product life cycles. The project will engage key stakeholders representing environmental groups, industry, academia, and data and accounting firms to develop new tools for decision-makers to accelerate global progress toward 2030 and 2050 emissions targets. The Greenhouse Gas Protocol Standards developed by the World Resources Institute and the World Business Council for Sustainable Development are the most comprehensive and widely used global standards for companies to measure and report their greenhouse gas emissions. The Corporate Value Chain Scope 3 Accounting and Reporting Standards measure indirect emissions that result from activities and assets not controlled or owned by the reporting organization across its value chain. This project will study and build on existing methodologies to account for value chain emissions reduced or eliminated by innovative products and services, including the role that materials and sustainable applications can play in achieving emissions reductions. A robust framework developed in partnership with external organizations could be used to showcase to customers the positive impact Dow products can have on reducing emissions in the value chain.

Impact of engagement, including measures of success
Description of measures of success: Currently, Dow measures success by tracking the percent of our product portfolio that addresses world challenges, including climate related efforts like reducing the impact of climate change ad improving energy efficiency. To calculate this, we utilize a metric called the Sustainable Chemistry Index (SCI) as a tool to quantify the relative sustainability performance of Dow's product portfolio related to product sustainability. The SCI is a semi-quantitative metric that is intended to provide a comprehensive sustainability assessment of Dow's products. The SCI comprises a series of questions grouped into four themes: product risks, strategy and recognition, value chain engagement, and addressing world challenges through products and operations. Dow has a 2025 Sustainability Goal to improve our SCI performance and report on our progress externally. Description of impact according to measure of success chosen: In 2020, 48% of Dow sales were from products that address world challenges.

Type of engagement
Collaboration & innovation

Details of engagement
Other, please specify (Collaborate with customers to reduce emissions across the value chain)

% of customers by number

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

Portfolio coverage (total or outstanding)
<Not Applicable>

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

Dow's sustainability focus areas: climate protection, circular economy, and safer, more sustainable materials for our world, are all areas that require collaboration from external partners, including customers. On an ongoing basis, Dow is collaborating with key customers to identify opportunities to reduce emissions across the value chain. This could involve working with our customers to develop new products that enable a lower footprint in manufacturing or use, expanding the market for our existing products that enable a reduction in emissions, or partnering with customers in working groups to drive industry-wide reductions in emissions. Dow recognizes that many of our customers are setting their own ambitious emissions reduction targets that include their Scope 3 footprints associated with purchased goods, so they have a vested interest in Dow's efforts to reduce the footprint of the products we manufacture and provide to them. In addition, Dow products and technologies can often reduce the customer's Scope 3 emissions in the use-phase of their products as well, further impacting their goals. Second, collaborating with partners on opportunities to reduce emissions across the value chain has the potential to open up new markets for Dow products and solutions, as many of our products enable a reduction in emissions larger than the footprint of manufacturing them.

Impact of engagement, including measures of success

Depending on the specific collaboration, the measure of success may vary. In general, success would be measured by whether or not the initiative has a positive environmental impact (for example, reduces emissions, waste, water, or energy consumption) either in manufacturing or use on a per tonne of product basis, compared to a baseline or incumbent product. Other factors of success include improving the circularity of materials, such as increasing the recycled content utilized in manufacturing. An example of a collaboration with a customer that demonstrates these measures of success is through Dow's RENUVATM Mattress Recycling Program that enables a circular economy for polyurethanes. The program utilizes discarded mattress foam and turns it back into raw material – RENUVATM polyols – that can be used in flexible or rigid foam products, replacing virgin polyols. As such, this discarded mattress foam that would otherwise end up in landfill or incinerated, is utilized again for new materials, contributing towards approximately 30% lower CO2 emissions than the incumbent life cycle. To enable the success of this program, a customer for the RENUVATM polyol was engaged – in this case, Dow is collaborating with the Vita Group, who will produce flexible polyurethane foam utilizing the RENUVATM polyols.

C12.1d

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

Definition of who other partners in the value chain constitutes:

For the purposes of addressing this question, Dow considers 'other partners in the value chain' to mean any entity Dow may engage with on matters relating to our operations or goals that are not suppliers of a good or service to Dow, customers purchasing products from Dow, or Dow employees. Other partners in the value chain could mean, but is not limited to, organizations Dow sponsors or provides membership fees to, partners associated with investments Dow partially owns, partners in research and development of new technologies, etc.

Dow actively engages with different partners and stakeholders in the value chain to promote sustainability, which includes climate-related issues. Dow is open to collaboration with all partners in the value chain. From a climate-related perspective, Dow prioritizes efforts in this space based on the alignment of the party's objectives with ours. For example, Dow is a sponsor of the MIT Joint Program on the Science and Policy of Global Change due to the organization's focus on comprehensive analysis to understand the complexities of the impact of climate change, amongst other objectives.

Our measurements of success are ultimately rooted in the collaboration's impact on reducing emissions, either within our value chain or industry-wide. For example, we consider our partnership with Shell to advance electric steam cracking technology to be an example of an engagement with another partner in our value chain that could result in significant emissions reductions for the chemical industry as a whole if successful. Another example of a partnership would be through our multi-year collaboration with the International Olympic Committee (IOC) as the Official Carbon Partner.

Case study of climate-related engagement strategy with other partners in the value chain:

Situation: Dow's technologies are also making a positive impact on another partner in our value chain through our multi-year collaboration with the International Olympic Committee (IOC). Underlying the collaboration is both Dow and the IOC's commitment to playing a part in contributing to the United Nations (UN) General Assembly's 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs). The SDGs provide a common framework for public and private actors to implement actions to contribute to sustainable development. Both Dow's 2025 Sustainability Goals and the IOC Sustainability Strategy closely align to SDGs, including partnerships for sustainability (#17) and climate action (#13).

Task: Dow's three carbon programs as a Top Olympic Partner include Sochi 2014, Rio 2016 and the IOC programs. The latest effort – the carbon partnership with the IOC - has the goal to deliver third party verified greenhouse gas reductions – (i) to balance the operational carbon footprint of the IOC from 2017 - 2020; and (ii) deliver a positive carbon legacy by encouraging the adoption of low carbon solutions in the industry value chain.

Action: As the IOC's Official Carbon Partner, Dow has helped implement an effective carbon mitigation strategy with project partners that are designed to unlock carbon reductions along the value chains in packaging, the built environment, industry and energy, and soil and forests.

Result: To date, the cumulative third party verified GHG reductions resulting from these efforts have reached more than 5 million metric tonnes of CO2e.

C12.3

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

Direct engagement with policy makers
Trade associations
Funding research organizations
Other

C12.3a

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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support	Dow has been a member of the Task Force on Climate-related Financial Disclosures (TCFD) since its beginnings. Dow's member role has been as Data Preparers and we are currently leading TCFD's work group to define guidance on metrics for non-financial companies. Dow has voluntarily reported on our Sustainability objectives, following GRI guidance since 2003. We have also participated in CDP since 2003 when it started as the Carbon Disclosure Project. Other voluntary reporting in which we participate in are Ecovadis, Dow Jones Sustainability Index, Just Capital, amongst others. Dow supports making climate change risk and opportunities, as well as ESG reporting, mandatory. Dow is also a long-standing and active member of the World Economic Forum, particularly its initiatives addressing climate change. Dow actively participates in the WEF's Alliance of CEO Climate Leaders; mandatory carbon reporting, and TCFD are among the topics of the alliance.	As part of Dow's advocacy we have shown support when a legislative proposal on making carbon reporting mandatory has been put forward by policy makers in the regions we operate.
Cap and trade	Support	Dow engages in a number of carbon pricing and emissions-trading focused organizations, such as the International Emissions Trading Association (IETA), which promotes the development of regional as well as international frameworks for trading in GHG reductions. Dow is an active participant in IETA's regional working groups, including those in Canada, US and EU. Dow is also part of the CEO Climate Dialogue, a group of 21 companies with over $1.4 trillion in combined annual revenue and 4 leading environmental non-profit organizations that are committed to advancing climate action and durable federal climate policy in the U.S. Congress. The goal of the group is to urge the President and Congress to enact a market-based approach to climate change in accordance with their Guiding Principles for climate legislation. One of the guiding principles is an economy-wide market-based price on carbon emissions. Dow is also a long-standing and active member of the World Economic Forum, particularly its initiatives in addressing climate change. Dow actively participates in the WEF's Alliance of CEO Climate Leaders, one of the goals from this initiative is to build support for effective carbon emission markets around the world. Through Dow's participation in other trade associations such as the American Chemistry Council (ACC), National Association of Manufacturers (NAM), the European Chemical Industry Council (Cefic), among others, the company has demonstrated our long standing support for carbon emission pricing. During 2020 several Dow executives were actively participating in Webinars, panels, interviews, blogs, among other forms of public engagement on climate change making sure that our advocacy support for carbon emission pricing was communicated as one of our key advocacy pillars on climate change advocating comprehensive decarbonizing legislation.	Dow favors market-based approaches to a price on carbon emissions, like a carbon tax or emissions trading system (cap-and-trade program), because they help reduce carbon dioxide emissions at the lowest possible cost. Where possible, Dow supports an emissions trading system (cap-and-trade), but other frameworks may suffice if four key design principles are adopted, including (1) full feedstock exemption, (2) federal pre-emption of state programs,(3) the system is economy wide, and (4) it is coupled with an appropriate border adjustment mechanism that is World Trade Organization (WTO) compliant to protect global competitiveness for energy-intensive trade exposed sectors such as ours.
Energy efficiency	Support	Energy efficiency has been part of Dow's operational foundation. Dow actively engages public policy makers at many levels around the world on issues of energy efficiency and climate change advocating as a comprehensive energy plan. We have published a number of Advanced Manufacturing Plans that calls for a bold and comprehensive national energy strategy, including a strong focus on energy efficiency. These plans have been shared with numerous policymakers, NGOs, and other thought leaders in the energy and climate change area. Dow continues to support US federal energy efficiency legislation and EU energy efficiency legislation.	Dow will continue to advocate for improved energy efficiency and conservation as a first step to emission reduction across all sectors of the economy.
Clean energy generation	Support	Dow showcases engagement in this space through taking action to secure clean energy to support our operations. As part of our 2025 Sustainability Goals, Dow is advancing its vision to accelerate the development of cost-effective clean energy and reduce carbon emissions through a renewable power target of obtaining 750 MW of renewable power capacity to support our operations by 2025. For example, in 2020 we added around 300 MW of additional renewable capacity via agreements to purchase cost competitive renewable energy in Texas, Brazil, and also Kentucky. We are the leading user of renewable power in the chemical industry, and have currently secured >800 MW of renewable power from a variety of sources – wind, solar, hydro, and landfill gas - for use at Dow sites around the world, surpassing our 2025 goal.	Some clean energy sources such as wind and solar have reached cost-competitive, or even lower levelized costs when compared to traditional fossil fuel sources. Support in the shape of subsidies or feed-in tariffs are no longer needed in most geographies. When considering clean energy policy and grid design, policymakers need to account for the intermittency and peak load variability that comes along with integrating large amounts of renewable energy into the grid. We believe that a diversified grid is important for long-term energy security, and working to reduce emissions where we can. Technologies such as utility scale storage, hydrogen and carbon capture storage/utilization for fossil fuel energy generation still need support from policy to reach the cost competitive levels to be part of the grid design and portfolio of clean energy supplies. There is also a need to support policies around R&D for new clean energy technologies such as advance nuclear or thermal energy storage.

C12.3b

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

Yes

C12.3c

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

Trade association
American Chemistry Council

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association's position
The American Chemistry Council issued a set of policy recommendations to enable dramatic reductions in greenhouse gas (GHG) emissions. The plan is built around three imperatives – developing and deploying clean manufacturing technologies, pricing carbon, and promoting the adoption of emissions-reducing solutions. To support climate progress ACC calls on Congress to enact legislation to: - Increase government investment & scientific resources to develop & deploy lower emissions technologies in the manufacturing sector - Adopt transparent, predictable, technology- & revenue-neutral, market-based, economy-wide carbon price signals - Encourage adoption of emissions-avoiding solutions & technologies to reduce emissions throughout the economy to achieve significant emissions savings

How have you influenced, or are you attempting to influence their position?
Dow endeavours to participate actively in the leadership of key trade associations. With respect to the ACC, in 2020 Dow's CEO was part of ACC's Board, and our CSO was chair of the Sustainability Committee. Other Dow executives participate in the Energy and Climate Change Policy Working Groups, among other working groups within ACC. Engagement with trade and business associations, whose purpose is to promote common business interests, assists us in managing priorities relevant to Dow and the chemical industry. However, Dow may from time to time find itself in disagreement with the prevailing views of the majority of the association's membership. It is Dow's practice, and preference, to work within the association policy process to assure that Dow's views are adequately communicated and represented in association policy, strategy and tactics. In all cases, any Dow public position on a matter of public policy is the prevailing company position, irrespective of any trade association position to the contrary

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Trade association
National Association of Manufacturers (NAM)

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association's position
The National Association of Manufacturers (NAM) supports the objectives of the Paris Climate Agreement to significantly reduce the risks and impacts of global climate change. Manufacturers are committed to helping address climate change and achieving meaningful global GHG reductions in an equitable, timely, and cost-effective manner, while increasing the global competitiveness of U.S. industries. There is a clear governmental role in addressing climate change. Some of the actions recommended by NAM to address climate change include (but are not limited to): - Prevent carbon leakage by ensuring that no jurisdiction gains a competitive advantage by failing to take action to reduce carbon emissions - Drive research, development and deployment of technologies that will be needed to meet the climate challenge - Focus on GHG reductions, not fuel choice - Recognize the use of feedstocks, in both traditional and non-traditional forms, that are transformed into products rather than emitted as GHGs - Coordinate energy policy to ensure a diverse and secure supply of affordable energy and consider the impacts of energy delivery design and regulation on manufacturers - Recognize and reflect the reality that available large-scale technology options, emission abatement costs and cost sensitivity may differ widely between and within sectors - Support energy efficiency across the economy

How have you influenced, or are you attempting to influence their position?
Dow endeavours to participate actively in the leadership of key trade associations. Dow is part of NAM's Energy and Resources Policy Committee that works on Climate Change Policy. Engagement with trade and business associations, whose purpose is to promote common business interests, assists us in managing priorities relevant to Dow and the chemical industry. However, Dow may from time to time find itself in disagreement with the prevailing views of the majority of the association's membership. It is Dow's practice, and preference, to work within the association policy process to assure that Dow's views are adequately communicated and represented in association policy, strategy and tactics. In all cases, any Dow public position on a matter of public policy is the prevailing company position, irrespective of any trade association position to the contrary.

Trade association
CEFIC (European Chemistry Industry Council)

Is your position on climate change consistent with theirs?
Consistent

Please explain the trade association's position
The European Chemistry Industry Council (CEFIC) position on climate and energy policies can be summarized as follows: "Climate-neutrality by 2050 means going through a deep transformation within just one or two investment cycles. The EU chemical industry intends to grasp the opportunities arising from the transition to a climate-neutral and circular economy. To make the transition happen and to trigger the huge societal changes that it requires, CEFIC is convinced that for the longer-term a fundamental rethink of both, the legal and policy architecture, is needed when looking at EU-wide climate and energy matters. The updated framework should consider society at large and recognise the complexity of value chains and their interlinkages."

How have you influenced, or are you attempting to influence their position?
Engagement with trade and business associations, whose purpose is to promote common business interests, assists us in managing priorities relevant to Dow and the chemical industry. However, Dow may from time to time find itself in disagreement with the prevailing views of the majority of the association's membership. It is Dow's practice, and preference, to work within the association policy process to assure that Dow's views are adequately communicated and represented in association policy, strategy and tactics. In all cases, any Dow public position on a matter of public policy is the prevailing company position, irrespective of any trade association position to the contrary.

C12.3d

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

C12.3e

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

In addition to the engagement activities described above, part of Dow's emissions reduction strategy is to engage in dialogue with other external organizations that are working on reducing emissions, strategies for managing and mitigating climate change, and organizations where Dow's technologies can make a positive impact on the emissions footprint of the organization. For example, Dow engages with external organizations such as the World Business Council for Sustainable Development (WBCSD) in a number of work streams and project area, including but not limited to: the REscale team, which centers specifically on solutions to accelerate the deployment of renewables beyond average growth and transition to a low-carbon electricity system, SOS 1.5, Energy Solutions, Hydrogen and Carbon Capture, Utilization and Storage, Natural Climate Solutions, and Climate Policy. Dow is also a member of the Center for Climate and Energy Solutions (C2ES) Business Environmental Leadership Council (BELC), which is the largest US-based group of corporations focused on addressing the challenges of climate change and supporting mandatory climate policy that is operated with the following guiding principles: (1) The acceptance of the scientific consensus that climate change is occurring and that the impacts are already being felt – delaying action will increase both the risks and costs (2) Businesses can and should incorporate responses to climate change into their core corporate strategies (3) The US should significantly reduce its GHG emissions through economy-wide mandatory approaches, which may vary by economic sector and include a flexible, market-based program, and (4) Climate change is a global challenge that requires a global solution – an international climate framework must establish fair, effective, and binding commitments for all developed and major developing economies. Dow has provided support to a number of C2ES publications, such as 'Getting to Zero: A U.S. Climate Agenda', which outlines a comprehensive agenda for decarbonizing the U.S. economy by 2050, with an emphasis on priority actions needed over the coming decade. Dow is also actively engaged in organizations focused on deployment of decarbonization technologies at a regional level, such as the Gulf Coast Carbon Collaborative, of which we are a founding member.

C12.3f

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

At Dow, the issue of climate change is strategically managed by our highest executives to the rest of the organization. The Executive Leadership team, which oversees our Carbon Program Oversight Committee (POC), is tasked with key deliverables which include: the integration of a carbon outlook into the Company's growth strategy, evaluation of technologies to reduce absolute CO2 emissions, reduction of carbon intensity, development and implementation of projects, a global advocacy framework on a regional basis, and integration with long-term business and site specific strategies.

The POC is also responsible for the plans and execution of projects to meet Dow's carbon targets: By 2030, Dow will reduce our net annual carbon emissions by 5 million metric tons versus our 2019 baseline (15% reduction). By 2050, Dow intends to be carbon neutral (Scopes 1 + 2 + 3 plus product benefits).

Dow's Government Affairs team, which is comprised of public policy and advocacy professionals, are responsible for Dow's external engagement with policy makers, regulators, trade associations and NGOs. In order to ensure that any direct and indirect activities that influence policy are consistent with our overall climate change strategy, Dow's Vice President of Government Affairs and his team are an integral part of the POC and associated sub-teams. To further coordinate climate change policy and corporate initiatives across all regions, our global Government Affairs team includes dedicated professionals to lead energy and climate change strategy.

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 mainstream reports

Status
Complete

Attach the document
2020_Dow_Inc_Annual_Report.pdf

Page/Section reference
Pages 9-10, 34, 63-66

Content elements
Governance
Strategy
Risks & opportunities
Emission targets
Other metrics

Comment

Publication
In voluntary sustainability report

Status
Complete

Attach the document
2020 ESG Report.pdf

Page/Section reference
Pages 32-85

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C15. Signoff

C-FI

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

Dow appreciates the opportunity to report to CDP on our climate-related initiatives. Dow has a long history of leadership in reporting transparency and sustainability disclosures, and we see CDP as a critical report driving transparency on climate-related issues.

In 2020, building upon our 2025 Sustainability Goals, Dow launched new climate and circularity targets focused on reducing emissions and eliminating plastic waste, including: By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons vs. its 2019 baseline (15% reduction). By 2050, Dow aspires to be carbon neutral (Scope 1 + 2 + 3 plus product benefits). By 2030, Dow will help 'stop the waste' by enabling 1 million metric tons of plastic to be collected, reused or recycled through its direct actions and partnerships, and by 2035, Dow will 'close the loop' by enabling 100% of Dow products sold into packaging applications to be reusable or recyclable.

Dow is already making progress against these targets. 2020 highlights include:

- Expanded our access to renewable power by >50% to >800 MW through the addition of new renewable power purchase agreements;
- Initiated a joint development with Shell to develop electrified cracking technology, powered by clean energy;
- We are 81% to our 2035 commitment to enable 100% of Dow products sold into packaging applications to be reusable or recyclable;
- We tripled our growth in product sales based on renewable bio-based feedstocks; and
- Launched post-consumer recycled plastic resins for various applications globally.

For additional information on action we are taking on climate and sustainability, we encourage the review of our Environmental, Social and Governance (ESG) report which can be accessed at https://corporate.dow.com/en-us/esg/report.html.

Cautionary Statement about Forward-Looking Statements

Certain statements in this report are "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements often address expected future business and financial performance, financial condition, and other matters, and often contain words or phrases such as "anticipate," "believe," "estimate," "expect," "intend," "may," "opportunity," "outlook," "plan," "project," "seek," "should," "strategy," "target," "will," "will be," "will continue," "will likely result," "would" and similar expressions, and variations or negatives of these words or phrases.

Forward-looking statements are based on current assumptions and expectations of future events that are subject to risks, uncertainties and other factors that are beyond Dow's control, which may cause actual results to differ materially from those projected, anticipated or implied in the forward-looking statements and speak only as of the date the statements were made. These factors include, but are not limited to: sales of Dow's products; Dow's expenses, future revenues and profitability; the continuing global and regional economic impacts of the coronavirus disease 2019 ("COVID-19") pandemic and other public health-related risks and events on Dow's business; capital requirements and need for and availability of financing; size of the markets for Dow's products and services and ability to compete in such markets; failure to develop and market new products and optimally manage product life cycles; the rate and degree of market acceptance of Dow's products; significant litigation and environmental matters and related contingencies and unexpected expenses; the success of competing technologies that are or may become available; the ability to protect Dow's intellectual property in the United States and abroad; developments related to contemplated restructuring activities and proposed divestitures or acquisitions such as workforce reduction, manufacturing facility and/or asset closure and related exit and disposal activities, and the benefits and costs associated with each of the foregoing; fluctuations in energy and raw material prices; management of process safety and product stewardship; changes in relationships with Dow's significant customers and suppliers; changes in consumer preferences and demand; changes in laws and regulations, political conditions or industry development; global economic and capital markets conditions, such as inflation, market uncertainty, interest and currency exchange rates, and equity and commodity prices; business or supply disruptions; security threats, such as acts of sabotage, terrorism or war; weather events and natural disasters; and disruptions in Dow's information technology networks and systems.

Risks related to Dow's separation from DowDuPont Inc. include, but are not limited to: (i) Dow's inability to achieve some or all of the benefits that it expects to receive from the separation from DowDuPont Inc.; (ii) certain tax risks associated with the separation; (iii) the failure of Dow's pro forma financial information to be a reliable indicator of Dow's future results; (iv) non-compete restrictions under the separation agreement; (v) receipt of less favorable terms in the commercial agreements Dow entered into with DuPont de Nemours, Inc. ("DuPont") and Corteva, Inc. ("Corteva"), including restrictions under intellectual property cross-license agreements, than Dow would have received from an unaffiliated third party; and (vi) Dow's obligation to indemnify DuPont and/or Corteva for certain liabilities.

Where, in any forward-looking statement, an expectation or belief as to future results or events is expressed, such expectation or belief is based on the current plans and expectations of management and expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. A detailed discussion of principal risks and uncertainties which may cause actual results and events to differ materially from such forward-looking statements is included in the section titled "Risk Factors" contained in the Company's Annual Report on Form 10-K for the year ended December 31, 2020 and its subsequent reports on Form 10-Q and Form 8-K. These are not the only risks and uncertainties that Dow faces. There may be other risks and uncertainties that Dow is unable to identify at this time or that Dow does not currently expect to have a material impact on its business. If any of those risks or uncertainties develops into an actual event, it could have a material adverse effect on Dow's business. Dow assumes no obligation to update or revise publicly any forward-looking statements whether because of new information, future events, or otherwise, except as required by securities and other applicable laws.

C15.1

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

	Job title	Corresponding job category
Row 1	Vice President and Chief Sustainability Officer	Chief Sustainability Officer (CSO)