

Welcome to your CDP Climate Change Questionnaire 2022

C0. Introduction

C0.1

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

Air Products' higher purpose is to bring people together to collaborate and innovate solutions to the world's most significant energy and environmental sustainability challenges. Focused on serving energy, environment and emerging markets, we provide essential industrial gases, related equipment and applications expertise to customers in dozens of industries, including refining, chemicals, metals, electronics, manufacturing, and food and beverage. We are also the global leader in the supply of liquefied natural gas process technology and equipment. Air Products develops, engineers, builds, owns and operates some of the world's largest industrial gas projects, including gasification projects that sustainably convert abundant natural resources into syngas for the production of high-value power, fuels and chemicals; carbon capture projects; and world-scale low- and zero-carbon hydrogen projects supporting global transportation and the energy transition.

Air Products growth and sustainability strategy are one and the same, and we have announced over \$12 billion in real projects that support cleaner energy and a cleaner environment.

We supply our customers around the world with atmospheric gases (oxygen, nitrogen, argon and rare gases), process gases (hydrogen, helium, carbon dioxide, carbon monoxide, syngas), specialty gases, and equipment and services relating to the production or processing of gases. Our products are critical for scores of industries to advance their sustainability efforts and to make products that serve their customers and consumers. These products also enable our customers and their customers to avoid emissions of carbon dioxide (CO₂). In 2021, 82 million metric tons of CO₂e* were avoided by the use of our products, equivalent to the emissions from about 18 million cars and more than three times our own total direct and indirect CO₂e emissions.

In addition to supporting our customers, we are committed to improving our own environmental performance by operating safely and efficiently, incorporating environmental considerations into the design of our facilities and products, effectively managing environmental risks and communicating our results. Industrial gas manufacturing is energy intensive. Air separation requires electricity or steam to compress air so that it can be cryogenically distilled into oxygen,

nitrogen and argon. Likewise, the primary method to produce large volumes of hydrogen consumes natural gas, and in some cases, refinery off-gas. Most of our Scope 1 emissions are related to the energy we consume for hydrogen production, while our Scope 2 emissions are largely due to the energy we consume for air separation. Our Scope 3 emissions are related to the fuels we consume, the use of our products and our investments.

For over 80 years, Air Products has enabled its customers to become more productive, energy efficient and sustainable. With fiscal 2021 revenues of \$10.3 billion, operations in more than 50 countries, and more than 20,000 employees, we strive to build lasting relationships with our customers and communities based on understanding, integrity and passion. Our corporate headquarters are located in eastern Pennsylvania's Lehigh Valley, near Allentown; European headquarters are in Hersham, near London, England; South American headquarters are in Santiago, Chile; and Asian headquarters are in Shanghai, China.

This is Air Products' 20th consecutive response to CDP's climate change information request. Our emissions reporting period is January 1, 2021 to December 31, 2021.

*CO2e or carbon dioxide equivalent is a standard unit for measuring carbon footprints that considers the different global warming potentials of GHGs.

C0.2

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

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

C0.3

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

- Argentina
- Belgium
- Brazil
- Canada
- Chile
- China
- Colombia
- Ecuador
- France
- Germany
- Indonesia
- Malaysia
- Netherlands
- Oman
- Peru

Poland
Portugal
Republic of Korea
Russian Federation
Saudi Arabia
Singapore
Spain
Taiwan, China
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.

Financial control

C-CH0.7

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

Row 1

Bulk organic chemicals

Bulk inorganic chemicals

Hydrogen

Oxygen

Other industrial gasses

Other chemicals

C0.8

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

Indicate whether you are able to provide a unique identifier for your organization

Provide your unique identifier

Yes, an ISIN code	US 0091581068
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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
Board-level committee	<p>Air Products manages sustainability through an interdisciplinary approach. Our Board of Directors has accountability for oversight of environmental and safety performance, which it reviews at least quarterly. The Corporate Governance and Nominating Committee of the Board has responsibility for monitoring our response to important public policy issues, including sustainability, which the Committee reviews on a regular basis. The Company's Enterprise Risk Management (ERM) program includes the identification of risks across the company that are reported annually to the Board of Directors. Air Products' Chairman, President and CEO has leadership responsibility for the development and execution of the company's sustainability strategy.</p> <p>Two examples of climate-related decisions led by the CEO and under the oversight of the Board of Directors were Air Products' multi-billion dollar investments in hydrogen energy. The first project is a hydrogen energy complex in Alberta, Canada that will begin with a transformative net-zero hydrogen production and liquefaction facility using advanced hydrogen technology and an innovative design to deliver net-zero emissions. The new facility, which will be onstream in 2024, will capture over 95% of the CO₂ from the feedstock natural gas and store it safely back underground. The clean energy complex will help refining and petrochemical customers served by the Air Products Heartland Hydrogen Pipeline to reduce their carbon intensity. It will also make Alberta a leading supplier of liquid hydrogen to western Canada and the Pacific Northwest of the United States, with enough liquid hydrogen capacity to fuel every public transit agency across Alberta.</p> <p>Air Products is also investing \$4.5 billion (USD) to build, own and operate a clean energy complex that will produce over 750 million standard cubic feet per day of blue hydrogen in Louisiana. The blue hydrogen will be compressed and supplied to customers by our U.S. Gulf Coast hydrogen pipeline network and used to make</p>

	blue ammonia that will be transported around the globe and converted back to blue hydrogen for transportation and other markets. This megaproject will also capture and permanently sequester over 5 million metric tons per year of CO ₂ , making it the largest carbon capture for sequestration facility in the world. The Louisiana project is expected to be operational in 2026.
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C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets 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 	<p>Risk assessment and management is overseen by the Board of Directors. The Company's Enterprise Risk Management (ERM) program includes the identification of risks across the company that are reported annually to the Board of Directors. Climate-related risks and opportunities have been reviewed by and reflect the Board's input.</p> <p>The Corporate Governance and Nominating Committee reviews progress against the company's Sustainability Goals on an annual basis. In 2020, and with the Board's support, we announced a goal to reduce our CO₂ emissions intensity one-third by 2030 from a 2015 baseline. In 2022, the Company announced new goals, also supported by the Board, including Net Zero by 2050, a Scope 3 intensity reduction goal and an industry-leading capital commitment to accelerating the energy transition with more than \$15 billion in capex to be either spent or committed between 2018 and 2027 to energy transition projects.</p> <p>The Board is also engaged in discussions about company activities that could potentially impact sustainability, such as major capital projects including two major investments in low-carbon hydrogen announced in 2021, a net-zero hydrogen production and liquefaction facility in Alberta, Canada and a clean energy complex in Louisiana that will produce blue hydrogen.</p>

C1.1d

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

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	Air Products' Board possesses a broad range of qualifications and skills that facilitate strong oversight of the company's management and strategy that are applicable to climate change. Criteria related to competency on climate-related issues include leadership experience at major domestic and international companies; experience on other companies' boards, which provides an understanding of different business processes, challenges, strategies and approaches to problem-solving; and substantial experience in key aspects of our operations, finance and capital management and government relations as well as in the market sectors we serve, including the energy, electronics and chemicals industries.

C1.2

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

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

Climate change and related issues are reviewed by the following levels of the organizational structure that are described below in more detail:

- The Board of Directors
- The Corporate Governance and Nominating Committee of the Board of Directors
- Air Products' Chairman, President and Chief Executive Officer
- The Sustainability Leadership Council, which is chaired by the Vice President Investor Relations, Corporate Relations and Sustainability

- The Enterprise Risk Management Committee, which is sponsored by the Chief Operating Officer
- Regional businesses and environmental experts
- The Sustainability Team

Air Products' Board of Directors has accountability for oversight of environmental and safety performance, which it reviews at least quarterly. Risk assessment and management is overseen by the Board of Directors, with information reported annually from the Enterprise Risk Management Committee. Climate-related risks and opportunities are routinely reviewed and reflect the Board's input.

The Corporate Governance and Nominating Committee of the Board of Directors has responsibility for monitoring our response to important public policy issues, including sustainability, which the Committee reviews on a regular basis.

The Sustainability Leadership Council sets our sustainability strategy, reviews programs and performance, and is engaged in evaluating risks and opportunities related to climate change. The Council is chaired by the Vice President Investor Relations, Corporate Relations and Sustainability, who reports to the Company's Chairman, President and Chief Executive Officer of Air Products. Additional members of the Council include:

- Chief Operating Officer
- Executive Vice President, General Counsel and Secretary
- Senior Vice President and Chief Financial Officer
- Senior Vice President and Chief Human Resources Officer
- President, Europe and Africa
- Vice President, Corporate Communications
- Vice President, Hydrogen for Mobility
- Executive Director, Technology
- Executive Director, Operational Excellence
- Director, Sustainability

The Sustainability Leadership Council Chairman and Sustainability Director report on sustainability progress to the Corporate Governance and Nominating Committee at least annually.

Air Products' Enterprise Risk Management (ERM) program includes the identification of risks across the company. The ERM Committee is responsible for determining which risks are most significant; approving resource allocation for risk monitoring and improvement activities; assigning risk owners and approving action plans; reviewing and monitoring risk mitigation progress on a quarterly basis; and annually reviewing and reporting to the Company's Board of Directors.

Regional environmental experts identify and review risks (transitional and physical) related to climate change and communicate risks to potentially impacted businesses. The businesses work with environmental experts and Government Relations personnel to develop and execute strategies to address climate-related risks. Regional environmental experts report through the

regional businesses, and Government Relations team members report to the Vice President Investor Relations, Corporate Relations and Sustainability.

The Sustainability Team, comprised of the Sustainability Director and staff, supports all aspects of sustainability including climate change and reports to the Vice President Investor Relations, Corporate Relations and Sustainability.

This structure enables the communication and review of climate related risks and opportunities through management and across the Company.

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	While financial results are the primary commitment the Company makes to shareholders, our compensation program balances financial results with other Company values such as safety, diversity, sustainability and environmental stewardship. Through fiscal 2021, bonus compensation could be adjusted by +/-30 percentage points when determining a final payout factor. Beginning in fiscal 2022 the Company will link performance against our ESG objectives to its Annual Incentive Plan as follows: the current discretion of +/-30 percentage points will be replaced with an ESG modifier of a multiple of 0.8 to 1.2 of the initial payout factor; the ESG modifier will consider the executive officers' role in advancing the Company's safety, culture and diversity, and environmental performance; the ESG modifier will be "universal", meaning that the same payout adjustment will apply consistently for all executive officers; and the maximum award will increase from 230% of the initial payout factor to 240%.

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Efficiency target	While financial results are the primary commitment the Company makes to shareholders, our compensation program balances financial results with other Company values such as safety, diversity, sustainability and environmental stewardship. Through fiscal 2021, bonus

			<p>compensation could be adjusted by +/-30 percentage points when determining a final payout factor. Beginning in fiscal 2022 the Company will link performance against our ESG objectives to its Annual Incentive Plan as follows: the current discretion of +/-30 percentage points will be replaced with an ESG modifier of a multiple of 0.8 to 1.2 of the initial payout factor; the ESG modifier will consider the executive officers' role in advancing the Company's safety, culture and diversity, and environmental performance; the ESG modifier will be "universal", meaning that the same payout adjustment will apply consistently for all executive officers; and the maximum award will increase from 230% of the initial payout factor to 240%.</p> <p>Air Products' goal to reduce CO2 emissions intensity one-third by 2030 from a 2015 baseline has been considered in the above compensation program.</p> <p>"Efficiency target" was selected as the incentivized activity. These targets are also tied to our emissions reduction targets.</p>
Corporate executive team	Monetary reward	Efficiency target	<p>While financial results are the primary commitment the Company makes to shareholders, our compensation program balances financial results with other Company values such as safety, diversity, sustainability and environmental stewardship. Through fiscal 2021, bonus compensation could be adjusted by +/-30 percentage points when determining a final payout factor. Beginning in fiscal 2022 the Company will link performance against our ESG objectives to its Annual Incentive Plan as follows: the current discretion of +/-30 percentage points will be replaced with an ESG modifier of a multiple of 0.8 to 1.2 of the initial payout factor; the ESG modifier will consider the executive officers' role in advancing the Company's safety, culture and diversity, and environmental performance; the ESG modifier will be "universal", meaning that the same payout adjustment will apply consistently for all executive officers; and the maximum award will increase from 230% of the initial payout factor to 240%.</p> <p>Air Products' goal to reduce CO2 emissions intensity one-third by 2030 from a 2015 baseline has been considered in the above compensation program.</p>

			"Efficiency target" was selected as the incentivized activity. These targets are also tied to our emissions reduction targets.
Management group	Monetary reward	Efficiency target	<p>The Company's Annual Incentive Plan and Variable Pay Program provide cash compensation that rewards eligible employees for meeting established business unit goals. These goals include financial results that are influenced by the management of commercial, financial and technical risk, as well as safety and environmental performance. The Variable Pay Program reinforces Air Products' strategy to be the safest, most profitable and diverse industrial gas company in the world, providing excellent service to our customers. It links the variable portion of cash compensation to company and business unit results, providing line of sight for employees.</p> <p>"Efficiency target" was selected as the incentivized activity. These targets are also tied to our emissions reduction targets.</p>
All employees	Non-monetary reward	Other (please specify) Biennial recognition	In addition to monetary awards, the Company also recognizes individuals, teams and facilities that demonstrate leadership in Environmental, Health and Safety (EHS) and Sustainability through the Chairman's EHS Awards. Efforts that are recognized often include projects related emissions reduction and energy savings.

C2. Risks and opportunities

C2.1

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

Yes

C2.1a

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

	From (years)	To (years)	Comment
Short-term	0	2	
Medium-term	2	5	

Long-term	5	30	
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C2.1b

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

Air Products defines substantive risks as those risks that could have a material, adverse effect on the Company's business, operating results or financial condition. Material effects are identified in accordance with the U.S. Securities and Exchange Commission's definition for materiality. Substantive risks are reported each year in Air Products' Annual Report on Form 10-K and material changes to these risks are reported as needed in Air Products' Quarterly Reports on Form 10-Q. Key risk factors related to greenhouse gases (GHGs) and climate change that were reported in the 2021 Annual Report included:

1. legislative, regulatory and societal responses to global climate change;
2. potential interruptions in energy supply and price fluctuations;
3. costs and expenses resulting from compliance with environmental regulations; and,
4. catastrophic events that could disrupt operations, suppliers or customers.

As described below, the potential financial impacts of these risks range from \$10 to \$110 million USD, which represent a significant financial impact for Air Products:

1. If Air Products' Scope 1 emissions were subject to additional cap or trade schemes or carbon taxes, the potential financial impact could be \$22.2 million USD assuming a cost of \$30/metric ton of CO₂ and 95% recovery of the costs through contractual terms.
2. If energy prices were to increase due to GHG regulations, the potential financial impact could be \$110 million USD assuming a hypothetical 10% increase on energy prices and 45% recovery of the costs through contractual terms.
3. If regulatory costs doubled due to new compliance requirements, the potential financial impact could be \$16 million and \$37 million in capital and operating costs, respectively, based on Air Products' spending in 2021 for these matters.
4. The potential financial impact of catastrophic events has been estimated at \$10 million based on discussions with our insurers.

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

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

Process to determine risks

Air Products identifies, assesses and manages climate-related risks through an interdisciplinary approach. Our Board of Directors has accountability for oversight of environmental and safety performance, which it reviews at least quarterly. The Corporate Governance and Nominating Committee of the Board has responsibility for monitoring our response to important public policy issues, including sustainability, which the Committee reviews on a regular basis. The Company's Enterprise Risk Management (ERM) program includes the identification of risks across the company that are reported annually to the Board of Directors, and we review climate-related developments and the need to assess specific climate risks as part of our internal audit program. We also incorporate climate-related risks into annual financial reporting, defining substantive risks as those risks that could have a material, adverse effect on the Company's business, operating results or financial condition in accordance with the U.S. Securities and Exchange Commission's definition for materiality.

Air Products' businesses operate on a regional basis. Therefore, regional environmental experts identify and review risks (transitional and physical) related to climate change and communicate risks to potentially impacted businesses.

Transitional risks for our direct operations are primarily related to new and/or modified regulations linked to climate change, such as emissions trading systems and carbon pricing mechanisms. Although uncertain, these developments could increase our costs related to consumption of electric power and hydrogen production and application of our gasification technology. Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products. We aim to mitigate most of the increased costs through contractual terms.

Physical risks are identified and assessed for existing facilities and new facilities. This analysis includes the evaluation of risks based on facility locations, some of which may be more vulnerable to the impacts of climate change.

The transition and physical risks described above are relevant on short-term, medium-term, and long-term time horizons.

Addressing climate-related risks

Regulatory risks are managed at the regional level as regulations vary by jurisdiction. Regional environmental experts assess the risks and work with potentially impacted businesses to address them. In addition, the mitigation of costs through contractual terms, as well as our efforts to reduce the energy and emissions intensity of our

operations, are part of our strategy to address transition risks.

Physical risks are addressed through plant design and engineering aimed at minimizing severe weather impacts. For example, our facility structures and foundations are designed based on regional wind velocities that consider 50 years of climate data. Likewise, in the design and layout of our plants we evaluate how to eliminate or minimize flooding risks based on site drainage where we identify this as an issue, as well as the use of flood walls and elevation for sensitive equipment if necessary. Our Emergency Response and Business Continuity Planning processes also support the response to severe weather events that may be exacerbated by climate change.

Case study

An example of Air Products' efforts to manage regulatory risks is related to emissions trading for hydrogen in the European Union (EU).

Situation: The EU Emissions Trading System (ETS) has undergone multiple revisions, some of which included the possibility of a provision that could result in different treatments between our plants and our customers' alternative inhouse supply options for hydrogen that could lead to increased CO2 emissions.

Task: Air Products' task was to seek comparable treatment under the EU Emissions Trading System for all hydrogen producers, regardless of ownership structure, so as to not unduly disadvantage the over-the-fence supply model we use and which also enables hydrogen to be produced most efficiently and with lower emissions.

Action: We supported the quantification of potential market distortions due to EU ETS changes and how such distortions could harm the EU industrial gas industry and result in increased emissions. This information was shared through engagement with policy makers in Europe.

Result: A non-distortion principle was included in the relevant EU ETS Directive, and that principle has been upheld in subsequent rulemaking therefore enabling comparable treatment for hydrogen producers.

Value chain stage(s) covered

Upstream

Risk management process

A specific climate-related risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term

Medium-term

Description of process

Process to determine risks

Air Products identifies, assesses and manages climate-related risks through an

interdisciplinary approach. Our Board of Directors has accountability for oversight of environmental and safety performance, which it reviews at least quarterly. The Corporate Governance and Nominating Committee of the Board has responsibility for monitoring our response to important public policy issues, including sustainability, which the Committee reviews on a regular basis. The Company's Enterprise Risk Management (ERM) program includes the identification of risks across the company that are reported annually to the Board of Directors, and we review climate-related developments and the need to assess specific climate risks as part of our internal audit program. We also incorporate climate-related risks into annual financial reporting, defining substantive risks as those risks that could have a material, adverse effect on the Company's business, operating results or financial condition in accordance with the U.S. Securities and Exchange Commission's definition for materiality.

We use a specific, climate-related risk management process for evaluating upstream risks and define substantive risks as those risks that could have a material, adverse effect on the Company's business, operating results or financial condition in accordance with the U.S. Securities and Exchange Commission's definition for materiality.

Addressing climate-related risks

The production of industrial gases is energy intensive, which is why we have continually increased the energy efficiency of our ASU and hydrogen and carbon monoxide (HyCO) facilities through improved plant designs and efficient operations. These efforts also reduce CO₂ emissions and water consumption. In fact, improving energy efficiency is one of the five mechanisms we are focused on to meet our "Third by '30" CO₂ emissions intensity reduction goal.

Energy consumption is the most significant variable in the cost of our production processes. We carefully track and manage energy purchases, and our conservation programs are focused on continually improving energy efficiency across our plants, particularly larger facilities. Efficiency improvements are realized through higher plant utilization, increased production at new, larger, and more efficient facilities and through facility improvement projects. Several of our facilities have been certified to the ISO 50001 Energy Standard.

Case study

Below is an example of Air Products' efforts to improve energy efficiency and therefore reduce the potential impact of energy price fluctuations.

Situation: Air Separation Units (ASUs) use a significant amount of energy to compress air so that it can be cryogenically distilled into individual gases, specifically nitrogen, oxygen and argon.

Task: Air Products' task was to identify opportunities to improve the energy efficiency of our ASUs.

Action: Air Products' engineering and operations personnel identified process modifications for existing facilities, and design improvements for new facilities, that would enable the use of less electricity per unit of gas produced. The Company also set goals to improve energy efficiency and publicly reported on the results.

Result: Between 2007 and 2015, which was the time period for our first set of goals, Air Products improved the energy efficiency of its ASUs by 8%. During the second goal period of 2015-2020, Air Products improved ASU energy efficiency by an additional 3.3%. In 2021, Air Products continued to improve ASU energy efficiency compared to 2020. These efforts have reduced our energy consumption and resulted in avoided costs of nearly \$800 million USD.

Value chain stage(s) covered

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

Process to determine risks

Air Products identifies, assesses and manages climate-related risks through an interdisciplinary approach. Our Board of Directors has accountability for oversight of environmental and safety performance, which it reviews at least quarterly. The Corporate Governance and Nominating Committee of the Board has responsibility for monitoring our response to important public policy issues, including sustainability, which the Committee reviews on a regular basis. The Company's Enterprise Risk Management (ERM) program includes the identification of risks across the company that are reported annually to the Board of Directors, and we review climate-related developments and the need to assess specific climate risks as part of our internal audit program. We also incorporate climate-related risks into annual financial reporting, defining substantive risks as those risks that could have a material, adverse effect on the Company's business, operating results or financial condition in accordance with the U.S. Securities and Exchange Commission's definition for materiality.

The potential financial risks of legislative, regulatory and societal responses to global climate change are examined at least annually. As noted in our Annual Report, any legislation or governmental action that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products. While the Company's products enable its customers to be more energy efficient and sustainable, perceptions of some of our energy-intensive products may change as the world transitions to a lower-carbon economy.

Addressing climate-related risks

Air Products has a number of sustainable offerings that improve energy efficiency, reduce environmental impact, and/or address a societal need. Each year our Sustainability Team examines the sales of these offerings and looks for positive or negative trends. Our Sustainability Team, regional environmental experts and regional businesses also evaluate the potential for customers to deselect our products as increased customer concerns about climate risks could potentially lead to reduced product demand for certain products due to the energy intensity of company products.

Case study

In response to concerns about the potential for product deselection, Air Products has implemented several actions to improve the understanding of and communication about potential product impacts and benefits.

Situation: The energy intensity of industrial gases and resulting carbon footprints may compel companies to seek alternative gases, sources of gases or production processes.

Task: Air Products' task was to expand its evaluation of product benefits and product carbon footprints, the results of which would help customers evaluate potential impacts during product selection and for Scope 3 emissions estimates.

Action: In 2021, Air Products enhanced its process to evaluate its offerings using a consistent life-cycle derived approach that compared the offerings to equivalent benchmark technologies across key sustainability criteria such as resource use, emissions, safety, customer productivity, and societal factors, among others. Many of these offerings represent reductions in carbon intensity compared to benchmark technologies and provide the basis for our customer avoided emissions. In addition, Air Products formalized its process for estimating and communicating product carbon footprints that enables it to effectively respond to customer requests for this data for proposals and Scope 3 evaluations.

Result: Over 100 offerings have been evaluated across all segments of our businesses, and many contribute to the avoidance of CO2 emissions in our value chain. In 2021, Air Products enabled 82 million metric tons of CO2e to be avoided by our customers and their customers, which is approximately equivalent to the emissions from almost 18 million cars and more than three times our own direct and indirect CO2e emissions. Likewise, the product carbon footprint information that we have provided to customers has met their needs and supported the continued use of our gases.

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	Some of our operations are within jurisdictions that have or are developing regulatory regimes governing emissions of greenhouse gases ("GHG"), including CO2. These include existing coverage under the European Union Emission Trading System, the California Cap-and-Trade Program, China's Emission Trading Scheme and its nation-

		<p>wide expansion, and South Korea's Emission Trading Scheme. In the Netherlands, a CO2 emissions tax was enacted on 1 January 2021. In Canada, Alberta's Technology Innovation and Emission Reduction System went into effect 1 January 2020. In Ontario, Environment & Climate Change Canada's Output Based Pricing System ("OBPS") is currently in effect, however, effective 1 January 2022, Ontario's GHG Emissions Performance Standards program will be used in lieu of adherence to the OBPS. In addition, the U.S. Environmental Protection Agency ("EPA") requires mandatory reporting of GHG emissions and is regulating GHG emissions for new construction and major modifications to existing facilities. Some jurisdictions have various mechanisms to target the power sector to achieve emission reductions, which often result in higher power costs.</p> <p>Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products.</p> <p>Regulatory changes can also create business opportunities for Air Products as we help our customers improve energy efficiency and reduce environmental impact. We also see significant opportunities for gasification, carbon capture technologies and hydrogen for mobility and energy transition.</p>
Emerging regulation	Relevant, always included	Increased public concern may result in more international, U.S. federal, and/or regional requirements to reduce or mitigate the effects of GHGs. Although uncertain, these developments could increase our costs related to consumption of electric power and hydrogen production. We believe we will be able to mitigate some of the increased costs through contractual terms. Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products.
Technology	Relevant, always included	Technology innovations could impact the use of some of the Company's products. One example is hydrogen. As the world's largest supplier of hydrogen, Air Products supplies vast quantities of hydrogen to petroleum refiners to lower sulfur content and help in the making of cleaner-burning gasoline and diesel fuels that significantly reduce vehicle emissions. Technologies that enable alternative fuels, improve fuel efficiency or reduce the weight of vehicles could reduce consumption of transportation fuels that require hydrogen for processing. At the same time, we see significant opportunities to expand the use of hydrogen as a transportation fuel and energy carrier.
Legal	Relevant, always included	Some of our operations are within jurisdictions that have or are developing regulatory regimes governing emissions of greenhouse gases ("GHG"), including CO2. These include existing coverage under

		<p>the European Union Emission Trading System, the California Cap-and-Trade Program, China's Emission Trading Scheme and its nationwide expansion, and South Korea's Emission Trading Scheme. In the Netherlands, a CO2 emissions tax was enacted on 1 January 2021. In Canada, Alberta's Technology Innovation and Emission Reduction System went into effect 1 January 2020. In Ontario, Environment & Climate Change Canada's Output Based Pricing System ("OBPS") is currently in effect, however, effective 1 January 2022, Ontario's GHG Emissions Performance Standards program will be used in lieu of adherence to the OBPS. In addition, the U.S. Environmental Protection Agency ("EPA") requires mandatory reporting of GHG emissions and is regulating GHG emissions for new construction and major modifications to existing facilities. Some jurisdictions have various mechanisms to target the power sector to achieve emission reductions, which often result in higher power costs.</p> <p>Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products.</p> <p>The Company has not been subject to climate-related litigation claims.</p>
Market	Relevant, always included	<p>Air Products supplies industrial gases and related equipment that help its customers be more energy efficient and sustainable. The Company has a number of sustainable offerings that improve energy efficiency, reduce environmental impact, and/or address a societal need. Each year our Sustainability Team examines the sales of these offerings and looks for positive or negative trends.</p> <p>Over the past two years, the Company has seen an increase in customer interest in GHG emissions and product carbon footprints. Our Sustainability Team, regional environmental experts and regional businesses evaluate the potential risk of customers deselecting our products as increased customer concerns about climate risks could potentially lead to reduced product demand for certain products due to the energy intensity of company products. Some customers have indicated they are considering the inclusion of GHG emissions and carbon footprints in their supplier selection process.</p> <p>Customer interest in climate change can also create business opportunities for Air Products as we help our customers improve energy efficiency and reduce environmental impact. We also see significant opportunities for gasification, carbon capture technologies and hydrogen for mobility and energy transition.</p>

Reputation	Relevant, always included	Air Products has built a reputation for its innovative culture, operational excellence and commitment to safety and the environment. While the Company's products enable its customers to be more energy efficient and sustainable, perceptions of some of our energy-intensive products may change as the world transitions to a lower-carbon economy. We are also supporting this transition by seeking opportunities to further deploy our carbon capture technologies and scaling hydrogen production and fueling infrastructure to ensure its successful adaptation as a sustainable fuel.
Acute physical	Relevant, sometimes included	Our operations could be impacted by catastrophic events outside our control, including severe weather conditions such as hurricanes, floods and other storms. Any such event could cause a serious business disruption that could affect our ability to produce and distribute products and possibly expose us to third-party liability claims. Additionally, such events could impact our suppliers or customers, which could cause energy and raw materials to be unavailable to us, or our customers to be unable to purchase or accept our products and services. Any such occurrence could have a negative impact on our operations and financial results.
Chronic physical	Relevant, sometimes included	Air Products is monitoring several potential and chronic physical risks related to climate change, including water security, changes in precipitation patterns, higher temperatures, sea level rise and higher levels of atmospheric carbon dioxide. At the present time, the Company does not consider these to be material risks but does see a need to monitor risk developments.

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

Company-specific description

Legislative, regulatory and societal responses to global climate change create financial risk.

We are the world's leading supplier of hydrogen, the primary use of which is the production of ultra-low sulfur transportation fuels that have significantly reduced transportation emissions and helped improve human health. To make the high volumes of hydrogen needed by our customers, we use steam methane reforming, which releases carbon dioxide (CO₂).

Some of our operations are within jurisdictions that have or are developing regulatory regimes governing emissions of greenhouse gases ("GHG"), including CO₂. These include existing coverage under the European Union Emission Trading System, the California Cap-and-Trade Program, China's Emission Trading Scheme and its nationwide expansion, and South Korea's Emission Trading Scheme. In the Netherlands, a CO₂ emissions tax was enacted on 1 January 2021. In Canada, Alberta's Technology Innovation and Emission Reduction System went into effect 1 January 2020. In Ontario, Environment & Climate Change Canada's Output Based Pricing System ("OBPS") is currently in effect, however, effective 1 January 2022, Ontario's GHG Emissions Performance Standards program will be used in lieu of adherence to the OBPS. In addition, the U.S. Environmental Protection Agency ("EPA") requires mandatory reporting of GHG emissions and is regulating GHG emissions for new construction and major modifications to existing facilities. Some jurisdictions have various mechanisms to target the power sector to achieve emission reductions, which often result in higher power costs.

Increased public concern may result in more international, U.S. federal, and/or regional requirements to reduce or mitigate the effects of GHG. Although uncertain, these developments could increase our costs related to consumption of electric power and hydrogen production. We believe we will be able to mitigate some of the increased costs through contractual terms, but the lack of definitive legislation or regulatory requirements prevents an accurate estimate of the long-term impact these measures will have on our operations. Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

22,200,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The lack of definitive legislation or regulatory requirements prevents an accurate estimate of the impact these measures will have on our operations.

The estimate of \$22.2 million assumes that:

- Our direct (Scope 1) CO₂ emissions become subject to cap and trade schemes or carbon taxes
- The cost of carbon averages \$30 per metric ton of CO₂
- In excess of 95% of these costs are expected to be recovered through contractual terms

The calculation for the potential financial impact is:
 $14,800,000 \text{ MT CO}_2 \times \$30/\text{MT CO}_2 \times 5\% = \$22,200,000$

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

Description of response:

Regional environmental experts identify and review risks (transitional and physical) related to climate change and communicate risks to potentially impacted businesses. The businesses work with environmental experts and Government Relations personnel to develop and execute strategies to address climate-related risks.

Case study

An example of Air Products' efforts to manage regulatory risks is related to emissions trading for hydrogen in the European Union (EU).

Situation: The EU Emissions Trading System (ETS) has undergone multiple revisions, some of which included the possibility of a provision could result in different treatments between our plants and our customers' alternative inhouse supply options for hydrogen and that could lead to increased CO₂ emissions.

Task: Air Products' task was to seek comparable treatment under the EU Emissions Trading System for all hydrogen producers, regardless of ownership structure, so as to

not unduly disadvantage the over-the-fence supply model we use and that enables hydrogen to be produced most efficiently.

Action: We supported the quantification of potential market distortions due to EU ETS and how such distortions could harm the EU industrial gas industry and result in increased emissions. This information was shared through engagement with policy makers in Europe.

Result: A non-distortion principle in was included in the relevant EU ETS Directive, and that principle has been upheld in subsequent rulemaking therefore enabling comparable treatment for hydrogen producers. This is considered a medium-time horizon risk based on the updates of the legislation.

Explanation of cost calculation:

The Company has incurred modest additional costs to actively engage in and monitor climate change risks and opportunities. This includes the efforts of our Environmental Teams, as well as costs associated with reduction commitments and customer engagement for cost recovery through contracts. Such costs are budgeted in the normal course of business. An estimate of the scale of those costs is less than \$1 million per year, with about 40% of the costs for environmental resources, 40% for reduction commitments, and 20% for contractual recovery.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Market

Other, please specify

Increasing energy costs

Primary potential financial impact

Increased direct costs

Company-specific description

Energy, including electricity, natural gas, and diesel fuel for delivery trucks is the largest cost component of our business. Because our industrial gas facilities use substantial amounts of energy, energy price fluctuations could materially impact our revenues and earnings. A disruption in the supply of energy, components, or raw materials, whether due to market conditions, legislative or regulatory actions, natural events, or other disruption, could prevent us from meeting our contractual commitments and harm our business and financial results.

We typically contract to pass-through cost increases in energy to customers, but cost variability can still have a negative impact on our results. We may be unable to raise prices as quickly as costs rise, or competitive pressures may prevent full recovery of such costs. Increases in energy or raw material costs that cannot be passed on to customers for competitive or other reasons may negatively impact our revenues and earnings. Even where costs are passed through, price increases can cause lower sales volume.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

110,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

A hypothetical 10% increase in energy price increases due to GHG regulations would raise Air Products' energy costs by \$200 million based on our annual spend of \$2 billion for energy. If the price of energy were to increase in this way, the Company believes it would be able to recover approximately 45% of the potential costs through contractual terms.

The calculation for the potential financial impact is:

$\$2 \text{ billion} \times 10\% \times (1 - 45\%) = \110 million

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

Description of response:

Energy consumption is the most significant variable cost of Air Products' operations, and we carefully track and manage energy purchases. Our conservation programs are focused on continually improving energy efficiency across our plants, particularly our larger facilities that consume the most energy. For example, our steam methane reformers maximize energy efficiency and optimize heat integration. This reduces

energy consumed and emissions by converting more feedstock into hydrogen. Likewise, we have continually improved the energy efficiency of our air separation units, and for our plants in North America, have improved energy efficiency by 30% since 1980.

Case study

Below is an example of Air Products' efforts to improve energy efficiency and therefore reduce the potential impact of energy price fluctuations.

Situation: Air Separation Units (ASUs) use a significant amount of energy to compress air so that it can be cryogenically distilled into individual gases, specifically nitrogen, oxygen and argon.

Task: Air Products' task was to identify opportunities to improve the energy efficiency of our ASUs.

Action: Air Products' engineering and operations personnel identified process modifications for existing facilities, and design improvements for new facilities, that would enable the use of less electricity per unit of gas produced. The Company also set goals to improve energy efficiency and publicly reported on the results.

Result: Between 2007 and 2015, which was the time period for our first set of goals, Air Products improved the energy efficiency of its ASUs by 8%. During the second goal period of 2015-2020, Air Products improved ASU energy efficiency by an additional 3.3%. In 2021, Air Products continued to improve ASU energy efficiency compared to 2020. These efforts have reduced our energy consumption and resulted in avoided costs of nearly \$800 million USD.

Explanation of cost calculation:

The Company has incurred modest additional costs to actively engage in and monitor climate change risks and opportunities. This includes the efforts of our Environmental Teams, as well as costs associated with reduction commitments and customer engagement for cost recovery through contracts. Such costs are budgeted in the normal course of business. An estimate of the scale of those costs is less than \$1 million per year with about 40% for environmental resources, 40% for reduction commitments and 20% for contractual recovery.

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

Cyclone, hurricane, typhoon

Primary potential financial impact

Decreased revenues due to reduced production capacity

Company-specific description

Catastrophic events could disrupt our operations or the operations of our suppliers or customers, having a negative impact on our business, financial results, and cash flows. Our operations could be impacted by catastrophic events outside our control, including severe weather conditions such as hurricanes, floods and other storms. Any such event could cause a serious business disruption that could affect our ability to produce and distribute products and possibly expose us to third-party liability claims. Additionally, such events could impact our suppliers or customers, which could cause energy and raw materials to be unavailable to us, or our customers to be unable to purchase or accept our products and services. Any such occurrence could have a negative impact on our operations and financial results.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

10,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Air Products has significant assets in areas that are subject to weather events that may be exacerbated by climate change, particularly in the U.S. Gulf Coast. The potential financial impact of these events has been estimated at \$10 million. This figure was developed with our insurers and considers the actual impacts of past weather events. The potential risk is spread over multiple locations and mitigated to a large extent by how the Company designs its facilities, with environmental considerations such as wind, rainfall and flooding considered during plant siting and design.

Cost of response to risk

25,000,000

Description of response and explanation of cost calculation

Description of response:

Air Products ensures the resiliency of our facilities through engineering plant design. For

example, our structures and related foundations are designed based on regional wind velocities that consider 50 years of climate data. Likewise, in the design and layout of our plants we evaluate how to eliminate or minimize flooding risks based on site drainage where we identify this as an issue, as well as the use of flood walls and elevation for sensitive equipment if necessary.

Case study

Below is a recent example of an activity undertaken to address increasing rain and flooding at a Gulf Coast facility.

Situation: Storms in Texas have increased in intensity and duration in recent years, increasing the potential for flooding events that may potentially impact plant operations.

Task: Design a system to manage the increased amount of water at a new facility.

Action: The facility installed a stormwater detention/retention pond based on the 25-year storm event criteria that had been recently updated due to the increasing storms in Texas.

Result: No issues have occurred at the facility.

Explanation of cost calculation:

Engineering and equipment costs that support facility resiliency are included in the normal course of plant design. An approximation of these costs is 1% of our capital expenditures. Based on a three-year average capital expenditure of \$2.5 billion, the estimated cost for these efforts is \$25 million. The calculation for the cost of response is: \$2.5 billion x 1% = \$25 million

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

We have developed a portfolio of technologies that capture carbon dioxide (CO₂) from steam methane reforming. In Port Arthur, Texas, Air Products operates the largest CO₂ purification and capture project for enhanced oil recovery (EOR) by an industrial gas company. Air Products designed, constructed and operates the state-of-the-art system to capture CO₂ from two steam methane reformers (SMRs). The CO₂ removal technology was retrofitted to the SMRs, which produce hydrogen to assist in the making of cleaner burning transportation fuels by refinery customers on Air Products' Gulf Coast hydrogen pipeline network. Since 2013, when it initiated onstream capture operations, Air Products has captured nearly one million tons per year of CO₂ at Port Arthur that has been put to beneficial use.

Carbon capture is essential to meeting the Paris climate goals. Significant opportunities are available to capture CO₂ from gasifiers and hydrogen plants, and we can deploy our carbon capture technologies and other technologies developed by Air Products in new plants or by retrofitting existing ones.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

500,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The potential financial impact of carbon capture depends on the policies and the partnership frameworks necessary for the advancement and proliferation of this technology. Internationally, momentum is building for carbon capture across the private sector, governments and industry bodies. Experts suggest that carbon capture

deployment will need to increase by a factor of 25 by 2030 to meet the objectives of the Paris Agreement, which represents storing 850 metric tons per year, up from just 30 metric tons per year today.

In 2018 the global carbon capture and storage market was estimated to be worth nearly \$5 billion. Assuming the market size remains about the same in the near term and Air Products captures at least 10% of the market with its carbon capture technologies, the potential financial impact would be at least \$500 million. We see significant opportunities for carbon capture and expect the market size will increase accordingly.

The calculation for the potential financial impact is:
\$5 billion x 10% = \$500 million

Cost to realize opportunity

1,100,000,000

Strategy to realize opportunity and explanation of cost calculation

Strategy to realize opportunity:

We see significant opportunities to capture CO₂ from gasifiers and hydrogen plants for use in enhanced oil recovery, sequestration and dry reforming. To pursue these opportunities, Air Products has a strategic organization focused on developing and winning large-scale CO₂ capture and related technology projects around the world. We also have built on our experience and technology strengths related to carbon capture and are continuing to innovate new solutions. Likewise, we continue to explore new possible end uses for captured carbon, supporting a more circular economy.

Case study:

Below is a recent example of a recent project that illustrates the opportunity for carbon capture.

Situation: Hydrogen plays a key role in helping the world move forward with the energy transition and in building a cleaner, more sustainable future. The key now is scaling up to create the hydrogen infrastructure that businesses and governments need to make the switch to this clean energy on a major scale.

Task: Create viable projects that will enable the production of low-carbon hydrogen on a large scale.

Action: In 2018, Air Products began work on a world-scale energy complex for low-carbon hydrogen in Edmonton, Alberta, Canada. Air Products and its subsidiary Air Products Canada Ltd., designed the facility based on our advanced technologies for gasification, carbon capture and storage. We also worked closely with the Government of Canada and the Province of Alberta on this project.

Result: The facility will be onstream in 2024 and will make Edmonton, Alberta the center of western Canada's hydrogen economy and set the stage for Air Products to operate the most competitive and lowest-carbon-intensity hydrogen network in the world. Our advanced technologies and hydrogen-fueled power generation will also make it possible to operate the facility with a net-zero carbon footprint.

Explanation of cost to realize the carbon capture opportunity:

The cost to realize this opportunity is based on the investment in the net-zero hydrogen energy complex in Edmonton, Alberta, which is \$1.3 billion CAD or \$1.1 billion USD.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

As the world's largest hydrogen producer, we are an important contributor to bringing hydrogen to scale on the way to a clean energy future.

The world faces a huge challenge in making the shift toward clean, sustainable energy sources. In many ways, hydrogen is a great solution. It enables the integration of renewables into power generation, fuels and distributing energy across sectors and regions supporting the decarbonization of transportation and energy use. When used in a fuel cell, hydrogen is nearly two times more efficient than gasoline and diesel on a well-to-wheel basis and produces no emissions. Hydrogen can also be made from renewable resources.

To enable successful commercialization of hydrogen vehicles around the world, Air Products has taken a leadership position in the development of hydrogen supply and fueling infrastructure. Our plan has been to demonstrate how to build out a hydrogen market holistically. We are also supporting the development and use of hydrogen in trucks, buses, trains, river boats, cruise ships and for material handling.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

5,000,000,000

Potential financial impact figure – maximum (currency)

7,500,000,000

Explanation of financial impact figure

Air Products expects the market for hydrogen will increase to \$20-30 billion by 2030. Assuming Air Products captures 25% of this market share results in a potential financial impact of \$5-7.5 billion.

The calculation for the potential financial impact is:

\$20 billion x 25% = \$5 billion to

\$30 billion x 25% = \$7.5 billion

Cost to realize opportunity

3,700,000,000

Strategy to realize opportunity and explanation of cost calculation

Strategy to realize opportunity:

Air Products sees significant opportunities to solve sustainability challenges through hydrogen for mobility. Air Products, the leading global supplier of hydrogen to refineries to assist in producing cleaner burning transportation fuels, has significant experience in the hydrogen fueling industry on which it can build. We expect to see the global demand for hydrogen increase and are prepared to supply this valuable fuel.

Case study:

Below is a recent example of a project that illustrates the opportunity for green hydrogen. Situation: Hydrogen plays a key role in helping the world move forward with the energy transition and in building a cleaner, more sustainable future. The key now is scaling up to create the hydrogen infrastructure that businesses and governments need to make the switch to this clean energy on a major scale. Green hydrogen produced from the electrolysis of water using renewable electricity has the lowest carbon footprint of the various types of hydrogen.

Task: Create viable projects that will enable the production of green hydrogen on a large scale.

Action: In 2015, Air Products began work on a world-scale energy complex for zero carbon hydrogen in NEOM, Saudi Arabia. Air Products worked closely with NEOM and ACWA Power to develop a world-scale green hydrogen-based ammonia production facility powered by renewable energy.

Result: The joint venture project is based on proven, world-class technology and will include the innovative integration of over four gigawatts of renewable power from solar,

wind and storage; production of 650 tons per day of hydrogen by electrolysis technology; production of nitrogen by air separation using Air Products technology; and production of 1.2 million tons per year of green ammonia. Air Products will be the exclusive off-taker of the green ammonia and intends to transport it around the world to be dissociated to produce green hydrogen for the transportation market.

Explanation of cost to realize opportunity:

The \$3.7 billion opportunity cost is based on Air Products' share of the cost of the \$5 billion production facility plus our \$2 billion investment in equipment to distribute the gas to end customers:

The calculation for the financial impact is:

$\$5 \text{ billion} \times 33\% + \$2 \text{ billion} = \$3.7 \text{ billion}$

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

The potential demand for clean energy could increase demand for oxygen, one of our main products, and boost demand for our proprietary technology for delivering low-cost oxygen.

Air Products' oxy-fuel systems enable the efficient production of biodiesel, biopower/bioheat, cellulosic biofuels and synthetic gas (syngas). Oxygen can increase boiler or furnace efficiency, reduce fuel consumption due to increased available heat, enable use of lower heating value fuels, increase flame stability, and increase turndown capability. Oxygen injection using Air Products' oxy-fuel burners in boilers or furnaces can lead to lower oxygen consumption compared to general oxygen enrichment while providing the same benefits. Oxygen-enhanced gasification can convert abundant natural resources to syngas that enables the production of liquid fuels, high-end chemicals and power.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

183,000,000

Potential financial impact figure – maximum (currency)

365,000,000

Explanation of financial impact figure

Air Products has designed, built and is operating world-scale air separation units (ASUs) with capacities of 10,000 tons per day of oxygen. The potential financial impact is based on completing a project of similar scope and an oxygen price range of \$50-100 per ton.

The calculation for the potential financial impact is:

10,000 tons oxygen per day x 365 days x \$50 per ton of oxygen = \$183 million to
10,000 tons oxygen per day x 365 days x \$100 per ton of oxygen = \$365 million

Similar projects are expected, though the potential financial impact figure is not available.

Cost to realize opportunity

300,000,000

Strategy to realize opportunity and explanation of cost calculation

Strategy to realize opportunity:

We see significant opportunities to solve sustainability challenges through gasification, carbon capture technology solutions, and hydrogen for mobility and the energy transition. Gasification is one of the many tools necessary to help countries and customers meet the world's growing need for cleaner, sustainable chemicals and materials. Gasification plants typically convert low value hydrocarbons into useful chemicals and energy while significantly reducing harmful pollutants like sulfur oxides. The process produces carbon dioxide as a by-product that can be easily captured in a concentrated form, providing a pathway to reduce emissions where market conditions support carbon sequestration or utilization.

Case study:

Situation: Gasification is an effective tool for converting low value hydrocarbons into useful chemicals and energy and can be optimized to minimize emissions.

Task: Deliver gasification technology that can meet customer needs while optimizing performance.

Activity: Air Products acquired leading technologies for gasification – Shell’s Coal Gasification Process (SCGP) and GE Energy’s gasification technology – that give us the ability to process low value feedstocks more efficiently and to reduce overall emissions. At the same time, we are improving carbon conversion efficiency and scalability in gasification by enhancing the designs of our injectors, burners, and reactors. Likewise, our combustion technologists, industry engineers, and modelling specialists have developed decades of experience in oxygen-based technologies and work with customers to develop and test at full scale actual combustion and gasification systems using a full spectrum of gaseous, liquid, and solid fuels.

Result: Air Products' gasification technology has become an optimized solution for converting low-value hydrocarbon into useful chemicals and energy while significantly reducing harmful pollutants like sulfur oxides. For example, Air Products will use this technology for a world-scale coal-to-methanol production facility in Bengal, East Kalimantan, Indonesia that will help create engines of economic growth and social development.

Explanation of cost to realize opportunity:

The cost reflects Air Products' investment of \$300 million to build, own and operate world-scale ASUs that provide the oxygen needed for gasification.

Comment

C3. Business Strategy

C3.1

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

Row 1

Transition plan

Yes, we have a transition plan which aligns with a 1.5°C world

Publicly available transition plan

Yes

Mechanism by which feedback is collected from shareholders on your transition plan

We have a different feedback mechanism in place

Description of feedback mechanism

We work closely with our key stakeholders – customers, employees, investors, communities, suppliers, and government regulators – to understand and respond to their needs and collaborate for shared benefit. Meetings, presentations, and ongoing dialogue with stakeholders throughout the year provide many opportunities for collaboration on sustainability.

Frequency of feedback collection

More frequently than annually

Attach any relevant documents which detail your transition plan (optional)

C3.2

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

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

C3.2a

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

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Transition scenarios IEA B2DS	Company-wide		<p>The temperature alignment of this scenario is 1.5°C.</p> <p>The Beyond 2°C Scenario (B2DS) of the International Energy Agency (IEA) has a rapid decarbonization pathway aligned with the Paris Agreement.</p> <p>Parameters and assumptions considered for the B2DS included:</p> <ul style="list-style-type: none"> - Medium population growth to 9.7 billion people by 2050 - All available policy levers are activated in every sector worldwide, including early actions to avoid lock-in of emissions-intensive infrastructure - Reliance on fossil fuels falls by almost two-thirds; the energy sector reaches carbon neutrality by 2060 and electricity becomes the largest final energy carrier, including for transportation; oil prices increase by a factor of 1.2 and gas prices increase by factors of 1.5 and 1.0 in the U.S. and Europe, respectively (prices are based on 2016-2050 timeframe)

		<ul style="list-style-type: none"> - Moderate economic development based on GDP growth rates (compounded annual growth rate = 2.9% for the world) - Rapid deployment of low-emissions technologies; the use of carbon capture and storage accounts for 36% of the emissions reduction - Agriculture, Forestry and Other Land Use-related emissions contribute a net total of -30 GtCO₂ emissions between 2010 and 2100 <p>Analytical choices were:</p> <ul style="list-style-type: none"> - A time horizon of 2050 was chosen for the scenario (some parameters extended beyond 2050)
<p>Transition scenarios IEA 2DS</p>	<p>Company-wide</p>	<p>The temperature alignment of this scenario is 2°C.</p> <p>The 2°C Scenario (2DS) of the International Energy Agency (IEA) has a moderate decarbonization pathway.</p> <p>Parameters and assumptions considered for the 2DS included:</p> <ul style="list-style-type: none"> - Medium population growth to 9.7 billion people by 2050 - Early actions to avoid lock-in of emissions-intensive infrastructure - Reliance on fossil fuels falls by one-half; the energy sector reaches carbon neutrality by 2060; oil prices increase by a factor of 1.4 and gas prices increase by factors of 2.3 and 1.5 in the U.S. and Europe, respectively (prices are based on 2016-2050 timeframe) - Moderate economic development based on GDP growth rates (compounded annual growth rate = 2.9% for the world) - New and existing technologies to improve efficiency and optimize material use are implemented, the use of carbon capture and storage accounts for 14% of the emissions reduction - Agriculture, Forestry and Other Land Use-related emissions contribute a net total of -30 GtCO₂ emissions between 2010 and 2100 <p>Analytical choices were:</p> <ul style="list-style-type: none"> - A time horizon of 2050 was chosen for the scenario (some parameters extended beyond 2050)

<p>Physical climate scenarios RCP 2.6</p>	<p>Company-wide</p>		<p>The temperature alignment of this scenario is 0.3-1.7°C.</p> <p>In RCP 2.6, radiative forcing peaks at 3.1 W/m² before returning to 2.6 W/m² by 2100. These results are achieved through a shift to renewable energy sources and concentrations peaking by 2050 followed by a modest decline to around 490 ppm by 2100. RCPs provide essential inputs to climate models but lack associated socioeconomic and ecological data. As a result, the Shared Socioeconomic Pathway of SSP1 was combined with RCP 2.6 for use in this scenario. The scenario is also called SSP126.</p> <p>Parameters and assumptions considered for SSP126 included:</p> <ul style="list-style-type: none"> - Low to medium population growth - Improved management of issues at local and global level with tighter regulation of pollutants - Energy use changes including increasing renewable energy, lower carbon energy sources, medium growth of conventional fossil fuel resources and low growth of unconventional fossil fuel resources (e.g., shale gas) - Moderate economic development based on GDP growth rates - Rapid technological development directed toward environmentally friendly processes - Low levels of land use change <p>Analytical choices were:</p> <ul style="list-style-type: none"> - A time horizon of 2050 - Use of RCP 2.6 and SSP1 <p>Primary impacts for the RCP2.6 scenario were evaluated relative to sea level rise, atmospheric CO₂ emissions and precipitation.</p>
<p>Physical climate scenarios RCP 4.5</p>	<p>Company-wide</p>		<p>The temperature alignment of this scenario is 1.1-2.6°C.</p> <p>RCP 4.5 represents one of IPCC’s intermediate stabilization pathways in which radiative forcing is stabilized at approximately 4.5 W/m² after 2100. RCPs provide essential input to climate models but lack associated socioeconomic and ecological data. As a result, the Shared Socioeconomic Pathway of SSP2</p>

			<p>was used in this scenario. This scenario is also called SSP245.</p> <p>Parameters and assumptions considered for SSP245 included:</p> <ul style="list-style-type: none"> - Medium population growth - Environmental policies focused on local pollutants - Energy use changes including some investment in renewables but medium growth of conventional and unconventional fossil fuel resources - Moderate economic development based on GDP growth rates - Medium technological development directed toward environmentally friendly processes - Medium levels of land use change with a slow decline in deforestation rate <p>Analytical choices were:</p> <ul style="list-style-type: none"> - A time horizon of 2050 - Use of RCP 4.5 and SSP2 <p>Primary impacts for the RCP4.5 scenario were evaluated relative to sea level rise, atmospheric CO2 emissions and precipitation.</p>
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C3.2b

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

Row 1

Focal questions

Air Products has used scenario analysis to develop an understanding of how climate-related risks and opportunities might affect our businesses. Focal questions for the scenarios included:

Transition risks

1. How could climate change affect the major markets we serve?
2. How might increasing regulations impact our product sales and costs?
3. What technological opportunities might arise due to climate change?
4. How could climate change risks impact the perception of our Company by employees, customers and investors?

Physical risks

5. How could climate change risks impact our existing operating facilities and decisions regarding future projects?
6. What are the most significant operational impacts of climate change and where and when might they occur?
7. How could climate change risks impact our value chain?

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

Below are results corresponding to the focal questions.

1. Air Products serves over 30 industries. While all these industries will be impacted by climate change, those with the most significant potential for impact include automotive, bioenergy, cement, chemicals, electronics, food, hydrogen energy, hydrogen for mobility, liquefied natural gas, metals, oil and gas and power. These impacts may be detrimental and lead to product deselection, or the changes may provide opportunities that increase our customers' use of our gases, including zero- and low-carbon hydrogen for decarbonization and transportation.
2. Some of our operations are within jurisdictions that have or are developing regulatory regimes governing emissions of GHGs. Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products. Regulatory changes can also create business opportunities as we help our customers improve energy efficiency and reduce environmental impact.
3. Given developing regulations and market pressure, there will be increased demand for lower-carbon intensity energy and industrial gas products that will provide significant opportunities for gasification, carbon capture technologies and hydrogen for mobility and energy transition to positively impact climate change.
4. Industrial gases are used to make materials that go into our homes and businesses, cars and fuels, health care, food and more. Their use also helps companies in dozens of industries to improve yields, reduce energy consumption and lower emissions. However, the production of industrial gases is energy intensive and generates CO₂. We have found that sharing the benefits of our products can help address reputational concerns but recognize that some stakeholders have restrictive approaches to these issues that could impact our reputation.
5. Our operations could be impacted by catastrophic events, including severe weather conditions such as hurricanes, floods, and storms. Any such event could cause a serious business disruption that could affect our ability to produce and distribute products and possibly expose us to third-party liability claims. Any such occurrence could have a negative impact on our operations and financial results.
6. Sea level rise, atmospheric CO₂ emissions and precipitation were identified as having the potential to impact our operations, particularly in coastal and rid locations. For example, 22% of Air Products' facilities are located in areas that have high water stress and the stress is expected to increase in the majority of these areas according to the scenarios.
7. Catastrophic events could also impact our suppliers, customers, and partners, which could cause energy and raw materials to be unavailable to us, or our customers to be

unable to purchase or accept our products and services. Any such occurrence could have a negative impact on our operations and financial results.

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	<p>How our strategy has been influenced by climate-related risks and opportunities and the time horizons covered:</p> <p>The increase in customer interest in improving energy efficiency, reducing carbon emissions and complying with new or emerging regulations creates business opportunities for Air Products. This interest has been increasing over the past several years and is expected to rise in the future, particularly as long-term CO2 goals are set. Therefore, the time horizons are short, medium and long-term.</p> <p>Most substantial strategic decision(s) that have been influenced by the climate-related risks and opportunities:</p> <p>Implementing carbon capture projects and building the hydrogen economy are two strategic ways to reduce carbon emissions. We have built a strategic organization focused on developing and winning large-scale CO2 capture and related technology projects. We have also announced significant investments in hydrogen production that will enable the reduction of transportation emissions.</p> <p>Discussion At Air Products, sustainability creates our growth opportunities, and our growth opportunities support our sustainability goals and focus. We are focused on serving energy, environmental and emerging markets, all of which are important considerations for sustainability and climate change.</p> <p>Our products enable our customers to be more productive and efficient – to make more with less while reducing their impact on the environment. In 2021, our products enabled</p>

		<p>our customers and their customers to avoid the equivalent of 82 million metric tons of carbon dioxide emissions. This figure is more than three times our own direct and indirect CO2e emissions.</p> <p>Over the past five years there has been a shift in customer interest in sustainability as customers have increased their commitments to improve energy efficiency, reduce environmental impact and comply with new environmental requirements. These shifts create new opportunities for our products and technologies. One example is the increased interest in carbon capture technologies, which our team is pursuing particularly in the Americas and Europe. Likewise, we are increasing our strategic investments in hydrogen for mobility as demonstrated by our green and blue hydrogen projects in Saudi Arabia, Canada and the U.S.</p>
Supply chain and/or value chain	Yes	<p>How our strategy has been influenced by climate-related risks and opportunities and the time horizons covered:</p> <p>Industrial gas manufacturing is energy intensive. To reduce our exposure to potential risks related to the energy we purchase we have reduced the emissions intensity of our products, increased our sources of renewable energy and instituted contractual clauses to address energy cost increases due to climate regulations. These actions have been taken over the past several years and will continue in the short, medium and long-term.</p> <p>Most substantial strategic decision(s) that have been influenced by the climate-related risks and opportunities:</p> <p>Over the past several years we have increased the percentage of renewable electricity used, particularly in Europe and the U.S., and implemented several projects to produce renewable electricity.</p> <p>Discussion</p> <p>Energy is the primary raw material purchased to manufacture industrial gases, particularly electricity and steam for our air separation units and natural gas for our hydrogen plants. Because our industrial gas facilities use substantial amounts of energy, a disruption in the supply of energy, components, or raw materials, whether due to market conditions, legislative or regulatory actions, natural events, or other disruption, could prevent us from meeting</p>

		<p>our contractual commitments and harm our business and financial results.</p> <p>We look for opportunities to work with our suppliers on renewable energy. Air Products increased its percentage of renewable energy use in 2021 to 27%, an increase of 14% compared to the prior year, as we continued our journey to identify green energy sources that can reduce our energy costs and environmental footprint. We purchase renewable electricity directly through our energy suppliers or by buying Renewable Energy Certificates (RECs) that link our power consumption to a specific asset that generates renewable electricity. We have worked with suppliers to install solar arrays at several of our production and office facilities, generating electricity for internal consumption.</p>
Investment in R&D	Yes	<p>How our strategy has been influenced by climate-related risks and opportunities and the time horizons covered:</p> <p>The world faces a huge challenge in making the shift towards clean, sustainable energy sources. This shift presents opportunities for Air Products to build on its product and technology portfolio and develop new offerings today, tomorrow and for the future. The time horizons for these efforts are short, medium and long-term depending on the R&D efforts underway.</p> <p>Most substantial strategic decision(s) that have been influenced by the climate-related risks and opportunities:</p> <p>In 2020 and 2021, we announced multi-billion dollar investments in projects to produce and deliver zero- and low-carbon hydrogen to power buses and trucks around the world.</p> <p>Discussion Our research groups are aligned with our businesses and focus on improving our processes and helping our customers. In 2021, nearly 70% of our R&D budget of \$93.5 million supported products and processes that are enabling zero- and low-carbon energy, improving energy efficiency and/or benefitting the environment.</p> <p>In 2021, Air Products continued to increase its focus on three key innovation areas that are also opportunities to enhance the sustainability of our customers:</p>

		<p>Gasification Countries and large companies around the world continue to look at gasification as a way to use abundant natural resources to make synthetic gas. Gasification also provides a solution for refineries that need to find a use for high sulfur bottom-of-the-barrel liquids that can no longer be used as fuel for ships, and for petroleum coke.</p> <p>Carbon Capture Carbon capture is a high-impact opportunity to help tackle climate change and will be essential to meet the Paris climate goals. We see significant opportunities to capture CO2 from gasifiers and hydrogen plants for use in sequestration, enhanced oil recovery and productive use of CO2. Likewise, we continue to explore new possible end uses for captured carbon, supporting a more circular economy.</p> <p>Hydrogen and the Energy Transition As the world’s largest hydrogen producer, we are an important contributor to bringing hydrogen to scale on the way to a clean energy future. We are increasing our production of lower-carbon hydrogen and investing in new, clean hydrogen solutions for our customers.</p>
Operations	Yes	<p>How our strategy has been influenced by climate-related risks and opportunities and the time horizons covered:</p> <p>Industrial gas manufacturing is energy intensive. To reduce our exposure to potential risks related to the energy we purchase we have reduced the emissions intensity of our products through efficiency improvements and energy/emissions reduction goals. The time horizons for these efforts are short, medium and long-term as we strive to improve efficiency year over year and have set a goal to reduce our CO2 emissions intensity, which is directly related to energy consumption, and has a 2030 target date.</p> <p>Most substantial strategic decision(s) that have been influenced by the climate-related risks and opportunities:</p> <p>We established our “Third by ‘30” CO2 intensity reduction goal to reduce our CO2 emissions intensity by one-third by the year 2030 from a 2015 baseline. We plan to deliver on our CO2 intensity reduction goal through five mechanisms:</p>

		<p>executing carbon capture projects, producing carbon free hydrogen, executing low-carbon projects, continuing to improve our operations, and increasing our use of renewable energy.</p> <p>Discussion Industrial gas manufacturing is energy intensive. We carefully track and manage energy purchases, and our conservation programs are focused on continually improving energy efficiency across our plants, particularly larger facilities. We have a goal to reduce CO2 emissions intensity.</p> <p>We have continued our efforts to modernize our fleets with new, more efficient trucks that have increased fuel efficiencies. Distribution efficiency has also been improved through the addition of trailers with higher payloads. In 2021, we announced our intention to convert our own fleet to run on hydrogen and partnered with Cummins, Inc. on the equipment.</p>
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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 Capital expenditures	<p>Our business strategy focuses on creating value in the markets we serve, particularly energy, environmental and emerging markets. Our business planning process is completed annually for each fiscal year. The process considers growth opportunities, including those related to climate change and the energy transition, as well as climate risk management through energy efficiency and GHG emissions reduction efforts. Below are some examples of these considerations.</p> <p>Revenues Air Products' sustainable offerings are products that improve energy efficiency, reduce environmental impact, and/or address a societal need. Each year we examine our revenues related to our sustainable offerings, which represented 56% of our revenues in 2021. As we look forward, we see significant opportunities for gasification, carbon capture technologies and hydrogen for mobility and the transition to a low carbon economy in the medium and long-term. Potential revenues for these businesses have been considered in our financial planning, however the details are confidential.</p>

		<p>Direct Costs GHG emissions from industrial gas manufacturing are driven by energy consumption. Air separation units require electricity or steam to compress air so it can be cryogenically distilled into oxygen, nitrogen and argon. Likewise, the production of hydrogen consumes hydrocarbons as a feedstock and/or fuel in the production process. Energy consumption is the most significant variable cost of Air Products' operations, and we carefully track and manage energy purchases. Our conservation programs are focused on continually improving energy efficiency across our plants to reduce energy consumption and GHG emissions. Each year as part of our business planning cycle the efficiencies of our operations are examined, and business objectives are set to improve energy efficiency. Our efforts in this area are focused on the short and medium-term.</p> <p>Capital Expenditures Capital expenditures is the area in which we currently see the most impact of climate change on our financial planning. This is due to our multi-billion dollar investments in zero- and low-carbon hydrogen projects that will help the world transition to cleaner energy sources. These medium and long term projects include:</p> <p>Our landmark hydrogen energy complex in Alberta, Canada that includes a transformative net-zero hydrogen production and liquefaction facility expected to come onstream in 2024. Air Products will deploy advanced hydrogen technology and an innovative design to deliver net-zero emissions. The new facility will capture over 95 percent of the CO₂ from the feedstock natural gas and store it safely back underground. Hydrogen-fueled electricity will offset the remaining five percent of emissions. The clean energy complex will help refining and petrochemical customers served by the Air Products Heartland Hydrogen Pipeline to reduce their carbon intensity. The complex also marks a first in the wider use of hydrogen in Alberta, enabling the production of liquid hydrogen to be an emissions-free fuel in the transportation sector, and to generate clean electricity. This facility will make Alberta a leading supplier of liquid hydrogen to western Canada and the Pacific Northwest of the United States, with enough liquid hydrogen capacity to fuel every public transit agency across Alberta.</p> <p>Air Products' \$4.5 billion (USD) investment to build, own and operate a clean energy complex that will produce over 750 million standard cubic feet per day of blue hydrogen in Louisiana. A portion of the blue hydrogen will be compressed and supplied to customers by our U.S. Gulf Coast hydrogen pipeline network – the world's largest. The balance will be used to make blue ammonia that will be transported around the</p>
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		<p>globe and converted back to blue hydrogen for transportation and other markets. The Louisiana project is expected to be operational in 2026. This megaproject will also capture and permanently sequester over five million metric tons per year of CO₂, making it the largest carbon capture for sequestration facility in the world. Numerous studies have shown that Louisiana’s geology is among the best in the world for permanent geologic sequestration.</p> <p>Our multi-billion dollar investment in NEOM, a new model for sustainable living located in Saudi Arabia and site of our transformative and innovative project that represents a massive change in how the world gets its energy for mobility, specifically carbon-free hydrogen to power buses and trucks around the world. The joint venture project with NEOM and ACWA Power is based on proven, world-class technology and will include: the integration of around four gigawatts of renewable power through solar, wind and storage; production of 650 tons per day of hydrogen by electrolysis; production of nitrogen by air separation using Air Products’ technology; and production of 1.2 million tons per year of carbon-free ammonia using Haldor Topsoe technology through Air Products’ global alliance agreement. The project is scheduled to be onstream in 2025. Air Products will be the exclusive off-taker of the green ammonia and plans to invest an additional \$2 billion downstream, bringing Air Products’ total investment to \$3.7 billion. Air Products expects to transport the green ammonia around the world to be dissociated to produce green hydrogen for the transportation market with the potential to eliminate three million tons per year of CO₂ emissions as well as smog-forming emissions and other pollutants from the equivalent of over 700,000 cars.</p>
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C3.5

(C3.5) In your organization’s financial accounting, do you identify spending/revenue that is aligned with your organization’s transition to a 1.5°C world?

No, but we plan to in the next two years

C4. Targets and performance

C4.1

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

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2020

Target coverage

Company-wide

Scope(s)

Scope 1

Scope 2

Scope 2 accounting method

Location-based

Scope 3 category(ies)

Intensity metric

Other, please specify

CO2 intensity is the total Scope 1 and 2 CO2e emissions (measured in kilograms (kg) CO2e) divided by to the amount of energy equivalents produced at the same facilities and calendar year (measured in millions of British Thermal Units (MM BTUs)).

Base year

2015

Intensity figure in base year for Scope 1 (metric tons CO2e per unit of activity)

0.056

Intensity figure in base year for Scope 2 (metric tons CO2e per unit of activity)

0.036

Intensity figure in base year for Scope 3 (metric tons CO2e per unit of activity)

Intensity figure in base year for all selected Scopes (metric tons CO2e per unit of activity)

0.092

% of total base year emissions in Scope 1 covered by this Scope 1 intensity figure

100

% of total base year emissions in Scope 2 covered by this Scope 2 intensity figure

100

% of total base year emissions in Scope 3 (in all Scope 3 categories) covered by this Scope 3 intensity figure

% of total base year emissions in all selected Scopes covered by this intensity figure

100

Target year

2030

Targeted reduction from base year (%)

33

Intensity figure in target year for all selected Scopes (metric tons CO₂e per unit of activity) [auto-calculated]

0.06164

% change anticipated in absolute Scope 1+2 emissions

10

% change anticipated in absolute Scope 3 emissions

10

Intensity figure in reporting year for Scope 1 (metric tons CO₂e per unit of activity)

0.054

Intensity figure in reporting year for Scope 2 (metric tons CO₂e per unit of activity)

0.035

Intensity figure in reporting year for Scope 3 (metric tons CO₂e per unit of activity)

Intensity figure in reporting year for all selected Scopes (metric tons CO₂e per unit of activity)

0.089

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

9.8814229249

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

Through our “Third by ‘30” CO2 intensity reduction goal we aim to reduce our CO2 emissions intensity by one-third by the year 2030 from a 2015 baseline. The goal is fully aligned with our business strategy, is near-term and measurable. We plan to deliver on our CO2 intensity reduction goal through five mechanisms: executing carbon capture projects, producing carbon free hydrogen, executing low-carbon projects, continuing to improve our operations, and increasing our use of renewable energy.

CO2 intensity is our total Scope 1 and 2 CO2e emissions divided by the amount of energy equivalents produced at the same facilities over the same calendar year. The CO2 emissions are measured in kilograms and the energy equivalents in million (MM) British Thermal Units (BTUs):

$CO2\ Intensity = (Scope\ 1 + Scope\ 2)\ (kg\ CO2e) / Energy\ Equivalents\ (MM\ BTU)$

Scope 1 and Scope 2 intensities are provided above for completeness, but the numerator of goal is the combination of the two scopes.

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

We plan to deliver on our CO2 intensity reduction goal through five mechanisms: executing carbon capture projects, producing carbon-free hydrogen, executing low-carbon projects, continuing to improve our operations, and increasing our use of renewable energy. We have announced several zero- and low-carbon hydrogen projects that will support this goal, including:

- Our landmark hydrogen energy complex in Alberta, Canada that includes a transformative net-zero hydrogen production and liquefaction facility.
- Our \$4.5 billion (USD) investment to build, own and operate a clean energy complex in Louisiana that will produce over 750 million standard cubic feet per day of blue hydrogen for transportation and other markets and also capture and permanently sequester over five million metric tons per year of CO₂, making it the largest carbon capture for sequestration facility in the world.
- We continued work on our multi-billion dollar investment in NEOM, Saudi Arabia that will make green ammonia that will be transported around the world and dissociated to produce green hydrogen for the transportation market with the potential to eliminate three million tons per year of CO2 emissions as well as smog-forming emissions and other pollutants from the equivalent of over 700,000 cars.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

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

No other climate-related targets

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO ₂ e savings in metric tonnes CO ₂ e (only for rows marked *)
Under investigation	0	0
To be implemented*	0	0
Implementation commenced*	42	106,000
Implemented*	87	220,000
Not to be implemented	0	0

C4.3b

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

Initiative category & Initiative type

Energy efficiency in production processes
Process optimization

Estimated annual CO₂e savings (metric tonnes CO₂e)

152,000

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

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

8,200,000

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

1,000,000

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Each year, Air Products undertakes improvement projects to increase energy efficiency and reduce CO₂ emissions. These projects are tracked in a database that includes active and completed projects by year. The database does not include projects under investigation, to be implemented or not to be implemented. Emissions are estimated by multiplying energy savings due to efficiency improvements by relevant emissions factors. In 2021, the energy efficiency projects supported Air Products' "Third by '30" CO₂ emissions intensity reduction goal that is aimed at reducing the Company's CO₂ emissions intensity by one-third by 2030 from a 2015 baseline. The estimated lifetime of the initiatives is ongoing because process changes, such as the optimization of energy efficiency, are maintained until they are re-evaluated.

Initiative category & Initiative type

Non-energy industrial process emissions reductions
Process material efficiency

Estimated annual CO₂e savings (metric tonnes CO₂e)

2,000

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

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

3,200,000

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

3,400,000

Payback period

1-3 years

Estimated lifetime of the initiative

Ongoing

Comment

Each year, Air Products undertakes improvement projects to improve process material efficiency. These projects are tracked in a database that includes active and completed projects by year. The database does not include projects under investigation, to be implemented or not to be implemented. Emissions are estimated based on process materials saved multiplied by the embedded carbon footprints of the materials. These projects supported Air Products' "Third by '30" CO2 emissions intensity reduction goal that is aimed at reducing the Company's CO2 emissions intensity by one-third by 2030 from a 2015 baseline. The estimated lifetime of the initiatives is ongoing because process changes, such as the optimization of product recovery methods, are maintained until they are re-evaluated.

Initiative category & Initiative type

Transportation
Company fleet vehicle efficiency

Estimated annual CO2e savings (metric tonnes CO2e)

66,000

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

Scope 1

Voluntary/Mandatory

Voluntary

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

9,100,000

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

290,000

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Each year, Air Products undertakes improvement projects to improve distribution efficiency and reduce CO2 emissions. These projects are tracked in a database that includes active and completed projects by year. The database does not include projects under investigation, to be implemented or not to be implemented. Emissions are

estimated by multiplying energy savings due to efficiency improvements by relevant emissions factors. In 2021, the energy efficiency projects supported Air Products' "Third by '30" CO2 emissions intensity reduction goal that is aimed at reducing the Company's CO2 emissions intensity by one-third by 2030 from a 2015 baseline. The estimated lifetime of the initiatives is ongoing because process changes, such as the optimization of delivery routes, are maintained until they are re-evaluated.

C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Regulatory risks are managed at the regional level as regulations vary by jurisdiction. Regional experts assess the risks and work with potentially impacted businesses to address them.
Employee engagement	Air Products has a robust productivity improvement process. Employee recommendations to improve productivity frequently focus on energy conservation and emissions reduction projects. These ideas are tracked in a global, central database that includes quantified costs and benefits. Data from this system was used to respond to previous questions (C4.3a and C4.3b).
Internal incentives/recognition programs	Employees are recognized for progress against achieving our climate change objectives, developing new commercial offerings that yield cost-effective solutions to our customers' GHG emission reduction needs and bringing such solutions to the marketplace, and implementing effective work processes to compile the GHG inventory and satisfy regulatory compliance and reporting requirements. Efforts are recognized through existing compensation and awards programs, such as our Chairman's Environmental, Health and Safety Awards.
Partnering with governments on technology development	Air Products seeks opportunities to collaborate with governments on technology developments. For example, the Company has employed novel CO2 capture technology for one of the largest carbon capture and storage demonstration projects in the world by working with the U.S. Department of Energy.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation

Product or service

Taxonomy used to classify product(s) or service(s) as low-carbon

No taxonomy used to classify product(s) or service(s) as low carbon

Type of product(s) or service(s)

Hydrogen

Other, please specify

Low-carbon hydrogen produced by steam methane reforming with carbon capture

Description of product(s) or service(s)

Air Products produces low-carbon hydrogen in Port Arthur, Texas, where we operate the largest CO₂ purification and capture project for enhanced oil recovery (EOR) by an industrial gas company. Air Products designed, constructed and operates the state-of-the-art system to capture CO₂ from two steam methane reformers (SMRs). The CO₂ removal technology was retrofitted to the SMRs, which produce hydrogen to assist in the making of cleaner burning transportation fuels by refinery customers on Air Products' Gulf Coast hydrogen pipeline network. Since 2013, when it initiated onstream capture operations, Air Products has captured nearly one million tons per year of CO₂ at Port Arthur that has been put to beneficial use.

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Yes

Methodology used to calculate avoided emissions

Other, please specify

Calculations are based on guidance and factors from the California Air Resources Board (CARB) and the Low Carbon Fuel Standard (LCFS) Regulation

Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Cradle-to-grave

Functional unit used

Metric tonnes of hydrogen

Reference product/service or baseline scenario used

Truck or bus transportation using diesel fuel

Life cycle stage(s) covered for the reference product/service or baseline scenario

Cradle-to-grave

Estimated avoided emissions (metric tons CO₂e per functional unit) compared to reference product/service or baseline scenario

16

Explain your calculation of avoided emissions, including any assumptions

Assumptions:

The calculations use factors from the California Air Resources Board (CARB) and Low Carbon Fuel Standard (LCFS) with the exception of the carbon intensity (CI) for hydrogen that has been estimated by Air Products.

Basis of calculations:

Estimated avoided emissions represent the difference in transportation CO₂e emissions when using hydrogen (H₂) in a fuel cell electric vehicle (FCEV) compared to diesel used in an internal combustion engine using diesel. Emissions depend on each fuels' carbon intensity (CI), fuel energy density (FED) and fuel efficiency (FE).

Calculations:

Emissions avoided in kg CO₂e per kg of hydrogen =

$$[(CI \text{ diesel} \times FED \text{ diesel}) / (FE \text{ diesel} \times 1000 \text{ g/kg})] - (CI \text{ H}_2 \times FED \text{ H}_2) / (FE \text{ H}_2 \times 1000 \text{ g/kg}) \times FE \text{ H}_2$$

Where

CI diesel = 100.45 gCO₂e/MJ

FED diesel = 134.47 MJ/gal

FE diesel = 4.24 mpg for buses and 6.4 mpg for trucks

CI H₂ = 40 gCO₂e/MJ

FED H₂ = 120 MJ/kg

FE H₂ = 7.2 mi/kg for buses and 10.9 mi/kg for trucks

Note that the math shown results in a value in kg CO₂e per kg hydrogen which is the same value for MT CO₂e per MT hydrogen.

In addition, please note the revenue generated through sales of this hydrogen is Company confidential so a value of 1% has been included in the box below.

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

1

C5. Emissions methodology

C5.1

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

No

C5.1a

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

Row 1

Has there been a structural change?

No

C5.1b

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

Change(s) in methodology, boundary, and/or reporting year definition?	
Row 1	No

C5.2

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

Scope 1

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

14,600,000

Comment

These are the base year (2015), Scope 1 emissions used in Air Products' "Third by '30" CO₂ intensity reduction goal.

Scope 2 (location-based)

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

9,600,000

Comment

These are the base year (2015), Scope 2 (location based) emissions used in Air Products' "Third by '30" CO₂ intensity reduction goal.

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 2, market-based

Scope 3 category 1: Purchased goods and services

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 1 because the emissions do not meet our materiality threshold.

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 2 because the emissions do not meet our materiality threshold.

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

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO2e)

4,160,000

Comment

In 2022, Air Products established a "Third by '30" CO2 intensity goal for Scope 3. For this goal, CO2 intensity is defined as the total Scope 3 CO2e emissions for three categories (measured in kilograms (kg) CO2e) divided by to the amount of energy equivalents produced at the same facilities and calendar year (measured in millions of British Thermal Units (MM BTUs)). The three Scope 3 categories for which emissions are totaled and included in the goal are Category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2); Category 11: Use of sold products; and Category 15: Investments.

Scope 3 category 4: Upstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable - Air Products does not report Scope 3 category 4 because the emissions do not meet our materiality threshold.

Scope 3 category 5: Waste generated in operations

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable - Air Products does not report Scope 3 category 5 because the emissions do not meet our materiality threshold.

Scope 3 category 6: Business travel

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 6 because the emissions do not meet our materiality threshold.

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 7 because the emissions do not meet our materiality threshold.

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 8 because the emissions do not meet our materiality threshold.

Scope 3 category 9: Downstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 9 because the emissions do not meet our materiality threshold.

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 10 because our gases are consumed in our customers' processes and emissions from the processing of these products cannot be reliably estimated.

Scope 3 category 11: Use of sold products

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO₂e)

3,480,000

Comment

In 2022, Air Products established a "Third by '30" CO₂ intensity goal for Scope 3. For this goal, CO₂ intensity is defined as the total Scope 3 CO₂e emissions for three categories (measured in kilograms (kg) CO₂e) divided by to the amount of energy equivalents produced at the same facilities and calendar year (measured in millions of British Thermal Units (MM BTUs)). The three Scope 3 categories for which emissions are totaled and included in the goal are Category 3: Fuel-and-energy-related activities

(not included in Scope 1 or 2); Category 11: Use of sold products; and Category 15: Investments.

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

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 12 because most gaseous products are fully consumed or incorporated into other products and do not require end of life treatment.

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 13 because it does not have downstream leased assets.

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO₂e)

Comment

Not applicable - Air Products does not report Scope 3 category 14 because it does not have franchises.

Scope 3 category 15: Investments

Base year start

January 1, 2015

Base year end

December 31, 2015

Base year emissions (metric tons CO2e)

1,980,000

Comment

In 2022, Air Products established a "Third by '30" CO2 intensity goal for Scope 3. For this goal, CO2 intensity is defined as the total Scope 3 CO2e emissions for three categories (measured in kilograms (kg) CO2e) divided by the amount of energy equivalents produced at the same facilities and calendar year (measured in millions of British Thermal Units (MM BTUs)). The three Scope 3 categories for which emissions are totaled and included in the goal are Category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2); Category 11: Use of sold products; and Category 15: Investments.

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable - Air Products does not have additional upstream Scope 3 emissions.

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Not applicable - Air Products does not have additional downstream Scope 3 emissions.

C5.3

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

- China Corporate Energy Conservation and GHG Management Programme
- European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations
- IEA CO2 Emissions from Fuel Combustion
- Korea GHG and Energy Target Management System Operating Guidelines
- The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
- US EPA Mandatory Greenhouse Gas Reporting Rule
- Other, please specify
- US Environmentally-Extended Input-Output (USEEIO) Technical Content

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)

14,800,000

Comment

Our direct (Scope 1) and indirect (Scope 2) CO₂ emissions are related to the energy we consume. In 2021, our Scope 1 GHG emissions, which are primarily from our hydrogen/carbon monoxide (HyCO) operations were 14.8 million metric tons (MT), representing a 1.5 percent decrease from the prior year.

C6.2

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

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

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

Comment

Air Products does not report a market-based figure due to difficulties in acquiring reliable and accurate emissions factors in a timely manner.

C6.3

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

Reporting year

Scope 2, location-based

9,400,000

Comment

Our direct (Scope 1) and indirect (Scope 2) CO₂ emissions are related to the energy we consume. In 2021, our Scope 2 emissions, which are due in large part to the electricity and steam we consume in our air separation units, were 9.4 million MT in 2021, which was a 2.4 percent increase from 2020 due to production increases as our customers continued to recover from COVID-19.

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

Not relevant, explanation provided

Please explain

The principal raw materials for making atmospheric gases and hydrogen are air, electricity, steam and natural gas. Scope 3 emissions related to the electricity, steam and natural gas used as a fuel are covered below under category 3, fuel-and-energy-related activities (not included in Scope 1 or 2).

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to other goods and services purchased were estimated in prior years (2016 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Capital goods

Evaluation status

Not relevant, explanation provided

Please explain

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to capital goods purchased have been estimated in prior years (2016 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

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

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

3,000,000

Emissions calculation methodology

Fuel-based method

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

100

Please explain

Fuel consumption values were determined for each facility and summed by country or region as the embedded carbon in fuels vary by country or region. Cradle-to-gate emissions factors related to the production of each fuel type were obtained from life-cycle assessment databases for each country or region. For each fuel type, the amount of fuel consumed was multiplied by the fuel's cradle-to-gate emissions factor specific to the country or region to calculate the emissions. These emissions were subsequently summed to determine the total emissions.

Fuel usage was determined primarily from supplier invoices or invoice-quality data. The fuel and energy related emissions were subject to limited assurance by GHD Limited (see 2021 Greenhouse Gas Inventory Verification at <https://www.airproducts.com/-/media/airproducts/files/en/sustainability/2021-greenhouse-gas-inventory-verification.pdf>).

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

The principal raw materials for making atmospheric gases and hydrogen are air, electricity, steam and natural gas. Distribution emissions related to electricity, steam and natural gas are included in category 3.

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to upstream transportation and distribution for other materials have been estimated in prior years (2016 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Please explain

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to waste have been estimated in prior years (2015 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Business travel

Evaluation status

Not relevant, explanation provided

Please explain

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to business travel have been estimated in prior years (2018 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Employee commuting

Evaluation status

Not relevant, explanation provided

Please explain

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to employee commuting have been estimated in prior years (2016 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to upstream leased assets have been estimated in prior years (2015 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

Emissions related to the distribution of company products using Air Products' fleet are included in our Scope 1 emissions.

Air Products has applied a 2% materiality threshold to its Scope 3 emissions for 2021. This threshold is 151,000 metric tons of CO₂e. Emissions related to downstream transportation and distribution using vehicles not owned or controlled by Air Products have been estimated in prior years (2018 and earlier) and did not meet the 2% materiality threshold. As a result, the emissions are considered not relevant.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Air Products manufactures a variety of gases that are used in over 30 industries. Most company products are gases that are consumed in our customers' processes. Emissions from the processing of these products cannot be reliably estimated.

Use of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

2,500,000

Emissions calculation methodology

Other, please specify

Emissions are based on sales of certain gases into specific applications and global warming potentials of the gases.

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

0

Please explain

Most gaseous products are fully consumed or incorporated into other products. Exceptions include carbon dioxide used for food and beverages, nitrous oxide used for

medical purposes, and refrigerants. Emissions related to these products and applications were estimated based on sales volumes, assuming the gases would ultimately be emitted to the atmosphere and applying the applicable global warming potential.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

Most gaseous products are fully consumed or incorporated into other products and do not require end of life treatment.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Air Products does not have downstream leased assets.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Air Products does not have franchises

Investments

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO₂e)

2,100,000

Emissions calculation methodology

Hybrid method

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

100

Please explain

Most of our investments are non-publicly traded ventures with other companies in the industrial gases business. Emissions related to joint ventures that are consolidated in our financial statements are included in our Scope 1 and 2 emissions reported herein.

Investment emissions are estimated for equity affiliates and investments not under Air

Products' control. Emissions per unit revenue are calculated for Air Products' businesses as part of our annual GHG inventory process. These factors are applied to the incomes from the equity affiliates and investments by business type to estimate emissions based on revenue. These emissions are subsequently summed to estimate the total emissions for equity affiliates and investments.

Emissions are estimated based on the incomes reported by our equity affiliates and investments, so 100 percent of the calculated emissions are based on data from value chain partners.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Please explain

No additional upstream Scope 3 emissions

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

No additional downstream Scope 3 emissions.

C6.7

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

No

C6.10

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

Intensity figure

2.3

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

24,200,000

Metric denominator

unit total revenue

Metric denominator: Unit total

10,323,000,000

Scope 2 figure used

Location-based

% change from previous year

14

Direction of change

Decreased

Reason for change

Total Scope 1 and 2 emissions were flat year-on-year while production increased by 9% (on a weight basis) and revenues increased 17%. Emissions were flat primarily due to efficiency improvements and increased use of renewable electricity.

Intensity figure

1,201

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

24,200,000

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

20,136

Scope 2 figure used

Location-based

% change from previous year

6

Direction of change

Decreased

Reason for change

In 2021, Air Products added ~2,000 colleagues to its ranks, many of whom are working on large-scale projects in line with our sustainability strategy. In addition, total Scope 1 and 2 emissions were flat in 2021 compared to 2020, even though production increased and because of efficiency projects and increased use of renewable electricity.

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	14,790,000	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	4,400	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	4,200	IPCC Fourth Assessment Report (AR4 - 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Americas	13,400,000
Other, please specify Asia	200,000
Europe, the Middle East, Africa and Russia (EMEAR)	1,200,000

C7.3

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

By activity

C7.3c

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

Activity	Scope 1 emissions
----------	-------------------

	(metric tons CO2e)
<p>Hydrogen and export steam production</p> <p>Air Products supplies vast quantities of hydrogen (H2) to petroleum refiners to lower sulfur content and help in the making of cleaner-burning gasoline and diesel fuels that significantly reduce vehicle emissions. Export steam is a co-product of H2 manufacturing and has a significant energy efficiency advantage.</p> <p>The majority of Air Products' Scope 1 emissions are related to hydrogen and steam production.</p>	14,400,000
<p>Product distribution</p> <p>We have trucking fleets around the world that are focused on safely and efficiently delivering our products to our customers. To improve our distribution efficiency and reduce our Scope 1 CO2 emissions, we have many initiatives underway, including investments in new trucks, trailers, technology, and facilities.</p>	200,000

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	Comment
Chemicals production activities	14,600,000	<p>Hydrogen and export steam production</p> <p>Air Products supplies vast quantities of hydrogen (H2) to petroleum refiners to lower sulfur content and help in the making of cleaner-burning gasoline and diesel fuels that significantly reduce vehicle emissions. Export steam is a co-product of H2 manufacturing and has a significant energy efficiency advantage.</p> <p>The majority of Air Products' Scope 1 emissions are related to hydrogen and steam production.</p> <p>Product distribution</p> <p>We have trucking fleets around the world that are focused on safely and efficiently delivering our products to our customers. To improve our distribution efficiency and reduce our Scope 1 CO2 emissions, we have many initiatives underway, including investments in new trucks, trailers, technology, and facilities.</p>

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)
Americas	2,400,000	
Other, please specify Asia	6,100,000	
Europe, the Middle East, Africa and Russia (EMEAR)	900,000	

C7.6

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

By activity

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
<p>Production of air gases (nitrogen, oxygen and argon) Emissions are associated with the electricity and steam used to compress air so it can be cryogenically distilled into oxygen, nitrogen and argon in air separation units.</p> <p>The majority of Air Products' Scope 2 emissions are related to air gas production.</p> <p>Air Products has operations where we are able to access some electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure.</p>	8,500,000	
<p>Other electricity consumption Air Products' facilities that make products other than air gases also consume electricity in their operations.</p> <p>Air Products has operations where we are able to access some electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure.</p>	800,000	

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 CO ₂ e	Scope 2, market-based (if applicable), metric tons CO ₂ e	Comment
Chemicals production activities	9,400,000		<p>Production of air gases (nitrogen, oxygen and argon) Emissions are associated with the electricity and steam used to compress air so it can be cryogenically distilled into oxygen, nitrogen and argon in air separation units.</p> <p>The majority of Air Products' Scope 2 emissions are related to air gas production.</p> <p>As indicated in question 6.2, Air Products has operations where we are able to access some electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure.</p>

C-CH7.8

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

Purchased feedstock	Percentage of Scope 3, Category 1 tCO ₂ e from purchased feedstock	Explain calculation methodology
Natural gas	85	Natural gas consumption for each facility was summed by country or region as the embedded carbon in natural gas can vary by location. Cradle-to-gate emissions factors related to the production of natural gas were obtained from life-cycle assessment databases for each country or region. For each country or region, the amount of natural gas consumed was multiplied by its cradle-to-gate emissions factor and the products were summed to determine the total emissions related to natural gas. These emissions were added to other emissions

		<p>estimated for Scope 3, Category 1 to obtain the total emissions for this category. Emissions related to natural gas were divided by the total and represent 85% of the emissions.</p> <p>Air Products does not disclose the amount of natural gas used as a feedstock because it would enable the estimation of the Company's hydrogen production volume, which is company confidential.</p>
Other (please specify) Industrial gases	15	Air Products purchases various industrial gases that it sells directly, and/or purifies and sells, and/or repackages and sells. These gases represent the remaining Scope 3, Category 1 emissions.

C-CH7.8a

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

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	Air Products provides CO2 to customers for a variety of applications including beverages, chemicals, food and horticulture. Sales volumes of CO2 are considered company confidential. Scope 3 emissions related to the use of CO2 are included in the response to question C6.5 under the Use of Sold Products category.
Methane (CH4)	0	Air Products sells small quantities of methane in cylinders and/or gas mixes. Sales volumes are considered company confidential.
Nitrous oxide (N2O)	0	Nitrous oxide is used as an inhalant anesthetic and analgesic drug with other anesthetic agents and oxygen. It is also used in liquid form to create a source of cold in cryotherapy, among other uses. Sales volumes of N2O are considered company confidential. Scope 3 emissions related to the use of N2O are included in the response to question C6.5 under Use of Sold Products category.
Hydrofluorocarbons (HFC)	0	Air Products sells small volumes of refrigerants. Sales volumes of refrigerants are considered company confidential. Scope 3 emissions related to the use of CO2 are included in the response to question C6.5 under the Use of Sold Products category.
Perfluorocarbons (PFC)	0	Air Products does not sell PFCs.
Sulphur hexafluoride (SF6)	0	Air Products sells small quantities of sulfur hexafluoride in cylinders and/or gas mixes. Sales volumes are considered company confidential.

Nitrogen trifluoride (NF3)	0	Air Products sells small quantities of nitrogen trifluoride in cylinders and/or gas mixes. Sales volumes are considered company confidential.
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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?

Remained the same overall

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	337,000	Decreased	1.4	<p>Increasing our renewable energy use is a key mechanism in progressing toward our “Third by ‘30” CO2 emissions intensity reduction goal. In 2021, we increased global procurement of renewable electricity by 14 percent compared to 2020. We purchase renewable electricity directly through our energy suppliers or by buying Renewable Energy Certificates (RECs) that link our power consumption to a specific asset that generates renewable electricity. For example, in 2021 we began receiving electricity purchased from a new large-scale solar plant in the southwest U.S. for a large ASU. In Poland we signed a virtual power purchase agreement for wind energy, the CO2 savings from which equate to the emissions of 8,500 passenger cars driven over one year or CO2 sequestered by over 650,000 trees in 10 years. We have also installed solar arrays at facilities around the world.</p> <p>To estimate the amount of CO2 saved</p>

				<p>through the use of renewable electricity, we multiplied the amount of renewable electricity consumed by an emissions factor:</p> $\text{CO2 Saved (MT CO2e)} = \text{Renewable Electricity Purchased (MWh)} * \text{Emissions Factor (MT CO2e/MWh)}$ <p>Because emissions factors vary around the world, we calculated an emissions factor specific to Air Products and based on our fleet of facilities:</p> $\text{Emissions Factor (MT CO2e/MWh)} = \frac{\text{Scope 2 Emissions (MT CO2e)}}{\text{Non-Renewable Electricity Consumed (MWh)}}$ <p>The values for the MWh of renewable electricity purchased and the emissions factor are considered confidential.</p> <p>The emissions value percentage was calculated as the emissions saved divided by Air Products' total emissions in 2020, or:</p> $337,000 \text{ MT} / 24,200,000 \text{ MT} = 1.4\%$
Other emissions reduction activities	220,000	Decreased	0.9	<p>Each year, Air Products undertakes improvement projects to increase energy efficiency, improve process material efficiency, optimize distribution and reduce CO2 emissions. These projects are tracked in a database that includes active and completed projects by year. In 2021, xx projects were implemented and saved an estimated 220,000 metric tons of CO2 (as reported in the response to questions 4.3a and 4.3b). Emissions were estimated by multiplying energy savings due to project improvements by relevant emissions factors.</p>

				<p>The emissions value percentage was calculated as the emissions saved divided by Air Products' total emissions in 2020, or:</p> $220,000 \text{ MT} / 24,200,000 \text{ MT} = 0.9\%$
Divestment	0	No change	0	Air Products did not make any divestitures in 2021.
Acquisitions	0	No change	0	Air Products did not make any acquisitions in 2021.
Mergers	0	No change	0	Air Products was not involved in any mergers in 2021.
Change in output	559,000	Increased	2.3	<p>Customer demand for certain products increased in 2021 as industry began to recover from the impacts of the COVID-19 pandemic. To meet this increased demand, more energy was used in 2021 compared to 2020 and as a result, CO2 emissions increased. The amount of additional CO2 has been based on production volumes and emissions per production volume:</p> $\text{CO}_2 \text{ (MT CO}_2\text{e)} = \text{Production Volume Increase (MT)} * \text{Emissions per Production Volume (MT CO}_2\text{e/MT production)}$ <p>Both the production volume increase and emissions per production volume were estimated based on 2021 operating data and are company confidential.</p> <p>The emissions value percentage was calculated as the emissions divided by Air Products' total emissions in 2020, or:</p> $559,000 \text{ MT} / 24,200,000 \text{ MT} = 2.3\%$
Change in methodology	0	No change	0	Air Products did not change its methodologies for GHG emissions in 2021.
Change in boundary	0	No change	0	Air Products did not change its boundary for GHG emissions in 2021.

				The Company continues to report using the financial control approach.
Change in physical operating conditions	0	No change	0	Air Products did not experience any changes in physical operating conditions in 2021.
Unidentified	0	No change	0	All changes in emissions have been accounted for in the above categories.
Other	0	No change	0	All changes in emissions have been accounted for in the above categories.

C7.9b

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

Location-based

C8. Energy

C8.1

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

More than 25% but less than or equal to 30%

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)	LHV (lower heating value)	0	31,160,000	31,160,000
Consumption of purchased or acquired electricity		4,400,000	11,898,000	16,298,000
Consumption of purchased or acquired steam		0	5,230,000	5,230,000
Consumption of self-generated non-fuel renewable energy		2,000		2,000
Total energy consumption		4,402,000	48,288,000	52,690,000

C-CH8.2a

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

Consumption of fuel (excluding feedstocks)

Heating value

LHV (lower heating value)

MWh consumed from renewable sources inside chemical sector boundary

0

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

31,160,000

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

0

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

31,160,000

Consumption of purchased or acquired electricity

MWh consumed from renewable sources inside chemical sector boundary

4,402,000

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

11,898,000

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

0

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

16,298,000

Consumption of purchased or acquired steam

MWh consumed from renewable sources inside chemical sector boundary

0

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

5,230,000

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

0

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

5,230,000

Consumption of self-generated non-fuel renewable energy

MWh consumed from renewable sources inside chemical sector boundary

2,000

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

0

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

0

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

2,000

Total energy consumption

MWh consumed from renewable sources inside chemical sector boundary

4,402,000

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

48,288,000

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

0

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

52,690,000

C8.2b

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

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

C8.2c

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

Sustainable biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Air Products does not use biomass. The "unable to confirm heating value" option was selected for data completeness.

Other biomass

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Air Products does not use biomass. The "unable to confirm heating value" option was selected for data completeness.

Other renewable fuels (e.g. renewable hydrogen)

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Air Products does not use other renewable fuels. The "unable to confirm heating value" option was selected for data completeness.

Coal

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Air Products does not use coal. The "unable to confirm heating value" option was selected for data completeness.

Oil

Heating value

Unable to confirm heating value

Total fuel MWh consumed by the organization

0

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Air Products does not use oil. The "unable to confirm heating value" option was selected for data completeness.

Gas

Heating value

LHV

Total fuel MWh consumed by the organization

30,400,000

MWh fuel consumed for self-generation of electricity

1,000,000

MWh fuel consumed for self-generation of heat

92,000

MWh fuel consumed for self-generation of steam

29,308,000

Comment

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

Heating value

LHV

Total fuel MWh consumed by the organization

760,000

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Comment

Fuel used for transportation of products.

Total fuel

Heating value

LHV

Total fuel MWh consumed by the organization

31,160,000

MWh fuel consumed for self-generation of electricity

1,000,000

MWh fuel consumed for self-generation of heat

92,000

MWh fuel consumed for self-generation of steam

29,308,000

Comment

760,000 MWh of fuel was consumed for transportation of products.

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	1,000,000	0	0	0
Heat	92,000	92,000	0	0
Steam	29,308,000	14,600,000	0	0
Cooling	0	0	0	0

C-CH8.2d

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

Electricity

Total gross generation inside chemicals sector boundary (MWh)

1,000,000

Generation that is consumed inside chemicals sector boundary (MWh)

0

Generation from renewable sources inside chemical sector boundary (MWh)

0

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

0

Heat

Total gross generation inside chemicals sector boundary (MWh)

92,000

Generation that is consumed inside chemicals sector boundary (MWh)

92,000

Generation from renewable sources inside chemical sector boundary (MWh)
0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)
0

Steam

Total gross generation inside chemicals sector boundary (MWh)
29,308,000

Generation that is consumed inside chemicals sector boundary (MWh)
14,600,000

Generation from renewable sources inside chemical sector boundary (MWh)
0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)
0

Cooling

Total gross generation inside chemicals sector boundary (MWh)
0

Generation that is consumed inside chemicals sector boundary (MWh)
0

Generation from renewable sources inside chemical sector boundary (MWh)
0

Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)
0

C8.2g

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

Country/area

Other, please specify
Americas

Consumption of electricity (MWh)
6,734,000

Consumption of heat, steam, and cooling (MWh)

0

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

6,734,000

Country/area

Other, please specify

Europe, Middle East and Africa

Consumption of electricity (MWh)

2,730,000

Consumption of heat, steam, and cooling (MWh)

0

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

2,730,000

Country/area

Other, please specify

Asia

Consumption of electricity (MWh)

6,834,000

Consumption of heat, steam, and cooling (MWh)

5,230,000

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

12,064,000

C-CH8.3

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

Yes

C-CH8.3a

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

Fuels used as feedstocks

Natural gas

Total consumption

170,000,000

Total consumption unit

thousand cubic feet

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

0.05

Heating value of feedstock, MWh per consumption unit

0.08

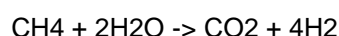
Heating value

LHV

Comment

Natural gas consumption is on an annual basis and calculated from Air Products' hydrogen capacity of 9,000 tons per day. Air Products does not disclose actual hydrogen volumes, or the amount of natural gas used as a feedstock for hydrogen production, because hydrogen volumes are company confidential.

Consumption was estimated based on the conversion of natural gas (as CH₄) to hydrogen (H₂) using the chemical equation:



Based on this equation, one mole of CH₄ produces 4 moles of H₂, therefore 2 kg of CH₄ are needed for each kg of H₂ produced:

$$(1 \text{ mole CH}_4 / 4 \text{ moles H}_2) * (16 \text{ g CH}_4/\text{mole CH}_4) * (\text{mole H}_2 / 2 \text{ g H}_2) = 2 \text{ kg CH}_4/\text{kg H}_2$$

For the above results, Air Products' hydrogen capacity was converted to kg per year and multiplied by 2 kg CH₄/kg H₂ to determine the weight of CH₄ needed. The weight of CH₄ was subsequently converted to thousand cubic feet per year.

Air Products uses publicly available global warming potentials and emissions factors, primarily from the Intergovernmental Panel on Climate Change, International Energy Agency, and U.S. Energy Information Administration. The emissions factor used for natural gas is from the U.S. Energy Information Administration (https://www.eia.gov/environment/emissions/co2_vol_mass.php).

C-CH8.3b

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

	Percentage of total chemical feedstock (%)
Oil	0
Natural Gas	100
Coal	0
Biomass	0
Waste (non-biomass)	0
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

0.99

Metric numerator

Energy usage in MWh

Metric denominator (intensity metric only)

Production in metric tonnes

% change from previous year

0.1

Direction of change

Decreased

Please explain

The production of industrial gases is energy intensive, which is why we Air Products has continuously increased the energy efficiency of our air separation units and hydrogen and carbon monoxide (HyCO) facilities through improved plant designs and efficient

operations. These efforts also reduce CO2 emissions and water consumption. In fact, improving energy efficiency is one of the five mechanisms we are focused on to meet our “Third by ‘30” CO2 emissions intensity reduction goal.

The metric is calculated as the energy consumed in the current year per unit of production, divided by the energy consumed per unit production of the prior year:

$$\text{Energy use} = [(MWh\ 2021 / \text{production}\ 2021) / (MWh\ 2020 / \text{production}\ 2020)]$$

This approach enables the improvement to be shown but does not disclose production, which is considered company confidential.

Description

Other, please specify

Water use

Metric value

0.84

Metric numerator

Water consumption in gallons

Metric denominator (intensity metric only)

Production in metric tonnes

% change from previous year

16

Direction of change

Decreased

Please explain

The production of industrial gases is energy intensive, which is why we Air Products has continuously increased the energy efficiency of our air separation units and hydrogen and carbon monoxide (HyCO) facilities through improved plant designs and efficient operations. These efforts also reduce water consumption.

The metric is calculated as the water consumed in the current year per unit of production, divided by the energy consumed per unit production of the prior year:

$$\text{Water use} = [(\text{gallons}\ 2021 / \text{production}\ 2021) / (\text{gallons}\ 2020 / \text{production}\ 2020)]$$

This approach enables the improvement to be shown but does not disclose production, which is considered company confidential.

C-CH9.3a

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

Output product

Other, please specify

Hydrogen

Production (metric tons)

3,000,000

Capacity (metric tons)

3,000,000

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

8.9

Electricity intensity (MWh per metric ton of product)

0.3

Steam intensity (MWh per metric ton of product)

0

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

0.3

Comment

Production and capacity are based on Air Products' publicly stated capacity of 9,000 tons per day. Actual annual production is considered confidential. Direct emissions intensity, electricity intensity and steam/heat recovered are based on life cycle assessments published by third-parties. Air Products' values are considered confidential. Steam intensity is included as part of the direct emissions intensity and not separately reported.

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	

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 R&D for technologies supporting the energy transition	Full/commercial-scale demonstration	21 - 40%		<p>Our R&D strategy reflects our support of the global energy transition by emphasizing the optimization and integration of technologies needed for the success of our world-scale energy projects. Specifically, our R&D teams are focused on developing and enhancing technologies related to hydrogen, gasification, electrolysis, and ammonia as a hydrogen carrier, which are key to executing our business strategy. In addition to our significant R&D efforts, Air Products continues to innovate through new projects, particularly through the commercialization of cutting edge green and blue hydrogen production technology and carbon capture technologies.</p> <p>In 2021, nearly 70% of our R&D budget of \$93.5 million supported products and processes that are enabling zero- and low-carbon hydrogen energy, improving energy efficiency and/or benefitting the environment.</p>

<p>Other, please specify</p> <p>Process improvements related to technologies and equipment</p>	<p>Large scale commercial deployment</p>	<p>21 - 40%</p>	<p>Our research groups are aligned with our businesses and focus on improving our processes and helping our customers. Research and Development (R&D) concentrates on new and improved processes and equipment for the production and delivery of industrial gases and new or improved applications for industrial gas products that help our customers improve sustainability.</p> <p>In 2021, nearly 70% of our R&D budget of \$93.5 million supported products and processes that are enabling zero- and low-carbon hydrogen energy, improving energy efficiency and/or benefitting the environment.</p>
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C10. Verification

C10.1

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

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

 2021 Greenhouse Gas Inventory Verification.pdf

 Air Products 2021 Verification Statement.pdf

Page/ section reference

Page 4: Scope 1, Scope 2, and Scope 3 Category 3 Emissions

GHD verified the methodologies used for calculating emissions are reasonable and appropriate and were determined to be reasonable and accurate. GHD did not identify any errors, omissions, or discrepancies that exceeded the materiality threshold. Based on GHD's review the reported emissions are materially correct.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope 2 approach

Scope 2 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

 2021 Greenhouse Gas Inventory Verification.pdf

Page/ section reference

Page 4: Scope 1, Scope 2, and Scope 3 Category 3 Emissions
GHD verified the methodologies used for calculating emissions are reasonable and appropriate and were determined to be reasonable and accurate. GHD did not identify any errors, omissions, or discrepancies that exceeded the materiality threshold. Based on GHD's review the reported emissions are materially correct.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

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

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

 2021 Greenhouse Gas Inventory Verification.pdf

Page/section reference

Page 4: Scope 1, Scope 2, and Scope 3 Category 3 Emissions
GHD verified the methodologies used for calculating emissions are reasonable and appropriate and were determined to be reasonable and accurate. GHD did not identify any errors, omissions, or discrepancies that exceeded the materiality threshold. Based on GHD's review the reported emissions are materially correct.

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.2

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

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

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

Alberta TIER - ETS
California CaT - ETS
Canada federal Output Based Pricing System (OBPS) - ETS
EU ETS
Guangdong pilot ETS
Korea ETS
Tianjin pilot ETS

C11.1b

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

Alberta TIER - ETS

% of Scope 1 emissions covered by the ETS

14

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased, as well as verified Scope 1 emissions for this program, are considered Company confidential.

California CaT - ETS

% of Scope 1 emissions covered by the ETS

14

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased are considered Company confidential. Verified emissions are publicly reported by the California Air Resources Board (see <https://ww2.arb.ca.gov/mrr-data>).

Canada federal OBPS - ETS

% of Scope 1 emissions covered by the ETS

4

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased, as well as verified Scope 1 emissions for this program, are considered Company confidential.

EU ETS

% of Scope 1 emissions covered by the ETS

8

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

1,190,895

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

1,190,895

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Data for allowances and verified emissions has been provided because it is available in the public domain (see https://ec.europa.eu/clima/policies/ets/registry_en). EU ETS is related to Scope 1 emissions, therefore values for Scope 2 emissions have been set to zero. No allowances were purchased, therefore the allowances purchased value has also been set to zero.

Guangdong pilot ETS

% of Scope 1 emissions covered by the ETS

0

% of Scope 2 emissions covered by the ETS

1

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased, as well as verified Scope 2 emissions for this program, are considered Company confidential.

Korea ETS

% of Scope 1 emissions covered by the ETS

0

% of Scope 2 emissions covered by the ETS

8

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased, as well as verified Scope 2 emissions for this program, are considered Company confidential.

Tianjin pilot ETS

% of Scope 1 emissions covered by the ETS

0

% of Scope 2 emissions covered by the ETS

1

Period start date

January 1, 2021

Period end date

December 31, 2021

Allowances allocated

0

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO₂e

0

Verified Scope 2 emissions in metric tons CO₂e

0

Details of ownership

Facilities we own and operate

Comment

Allowances allocated and purchased, as well as verified Scope 2 emissions for this program, are considered Company confidential.

C11.1d

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

Our current strategy regarding allowance trading under the various emission trading schemes is to properly manage the compliance obligations of each of our facilities. Air Products pursues operating efficiency improvements wherever possible to minimize our compliance obligation. Where necessary, Air Products will purchase allowances/compliance instruments to satisfy its compliance obligations. For example, under the European Union's Emissions Trading Scheme (EU ETS) in 2021, Air Products was allocated credits equivalent to what was required and did not need to purchase allowances. If allowances allocated to the Company exceed the current compliance obligations, allowances will be retained for future compliance needs. Air Products is not trading allowances speculatively.

C11.2

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

No

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Drive low-carbon investment

GHG Scope

Scope 1

Scope 2

Scope 3

Application

CDP guidance notes that internal carbon pricing is used to manage risks, reveal potential opportunities in the transition to a low-carbon economy and incentivize low-carbon activities. The guidance also states that the growth in internal carbon pricing is largely driven by the development of regulations that directly or indirectly price carbon and increasing pressure from stakeholders.

Air Products uses carbon intensity as a surrogate for carbon pricing to support carbon risk and opportunity management and incentivize low-carbon activities. The Company believes this approach has advantages over internal carbon pricing in assessing climate benefits and better supports our efforts to drive the energy transition through zero- and low-carbon hydrogen projects. In addition, Air Products is able to mitigate some carbon costs through contractual terms, which dampens the potential impacts of carbon pricing.

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

0

Variance of price(s) used

Air Products uses carbon intensity as a surrogate for carbon pricing to support carbon risk and opportunity management and incentivize low-carbon activities. The carbon intensities of projects are estimated as the amount of CO₂ emitted per unit of gas production. The carbon intensity can be converted to a cost basis using differentiated carbon pricing or pricing specific to the region where the project will be located. If a carbon price is not set for the region of interest, evolutionary pricing as considered in scenario analyses can be used. Because these prices can vary and a range cannot be used in the reporting form, a value of zero has been inserted above for the price used.

Type of internal carbon price

Other, please specify

Air Products uses carbon intensity as a surrogate for carbon pricing when evaluating potential project opportunities that support the transition to the low-carbon economy.

Impact & implication

Air Products has announced an industry-leading capital commitment of \$15 billion to accelerate the energy transition. The company has committed \$11 billion to zero- and low-carbon hydrogen projects and expects to commit at least \$4 billion more to additional zero- and low-carbon hydrogen projects over the next five years.

Many factors are considered when evaluating these projects and their potential climate benefits. Carbon intensity, which is a surrogate for carbon pricing, is one such factor. Specifically, the use of carbon intensity enables Air Products to understand the impacts of projects, make changes to projects if necessary, and allocate capital resources to the most impactful projects. This approach also enables Air Products to evaluate other factors such as permitting and regulatory considerations, as well as long term liabilities and incentives.

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

C12.1a

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

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

1

% total procurement spend (direct and indirect)

67

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

25

Rationale for the coverage of your engagement

Each year our Sustainability Team reviews the sustainability programs of suppliers that comprise a portion of our procurement spend to understand the suppliers' approach to sustainable supply and actions being taken to address climate change. Of these purchases, more than 77% on a cost basis were made from vendors with sustainability programs, including 95% of our largest energy suppliers. The Company has over 30,000 suppliers globally, which results in the low percentage of suppliers by number.

Impact of engagement, including measures of success

Measure of success

The measure of success for engaging with our suppliers is an increase in renewable energy procured and/or produced. The threshold for this measure is a year-over-year increase in the percentage of renewable electricity used by the Company including electricity procured or produced from renewable sources.

Impact of engagement

Understanding our suppliers' commitments to sustainability enables us to identify the companies we should engage on energy projects that can help reduce our GHG

emissions. For example, we are working with several suppliers on procuring renewable energy. We purchase renewable electricity directly through our energy suppliers or by buying Renewable Energy Certificates (RECs) that link our power consumption to a specific asset that generates renewable electricity. For example, in 2021 we began receiving electricity purchased from a new large-scale solar plant in the southwest U.S. for a large ASU. In Poland we signed a virtual power purchase agreement for wind energy, the CO₂ savings from which equate to the emissions of 8,500 passenger cars driven over one year or CO₂ sequestered by over 650,000 trees in 10 years.

In 2021, Air Products increased its purchases of renewable electricity by 14%.

Comment

C12.1b

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

Type of engagement & Details of engagement

Education/information sharing

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

0

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

At Air Products, we help our customers improve their sustainability performance. Our products enable our customers to be more productive and efficient – to make more with less while reducing their impact on the environment. In 2021, our products enabled our customers and downstream users to avoid the equivalent of 82 million metric tons of carbon dioxide emissions. This figure is more than three times our own direct and indirect CO_{2e} emissions.

Air Products is an important and significant supplier for many of our customers, often with on-site operations to produce hydrogen or other industrial gas products. Air Products routinely engages with the value chain partners to share information to help understand the most high impact strategies to decarbonize our customer's supply chains and operations. This may include sharing product carbon footprint data and helping customers optimize the supply mode of the products they receive.

We provide our customers with information about our products including our sustainable offerings, which are products that can help them improve energy efficiency, reduce environmental impact, and/or address a societal need. For example, hydrogen is a sustainable offering that is used to refine heavier, sour crudes, increase refinery yields and reduce emissions through cleaner transportation fuels including ultralow sulfur diesel fuel and hydrogen powered electric fuel cell vehicles. Air Products' oxy-fuel combustion technologies are also sustainable offerings and are used in energy intensive applications like cement, metals and glass manufacturing to increase production, lower fuel use and costs, reduce emissions and optimize efficiency.

Sales of gases such as hydrogen and oxygen enhance our bottom line. In fiscal year 2021, sales of atmospheric gases such as oxygen, nitrogen, argon, and rare gases constituted approximately 47% of our consolidated sales. Sales of tonnage hydrogen, syngas, and related products constituted approximately 22% of consolidated sales in fiscal 2021.

Impact of engagement, including measures of success

Measure of success

The measure of success for engaging with our customers is their increasing level of interest in how we can help them achieve their sustainability goals and increasing the emissions we enable them to avoid each year. Specifically, the threshold for success is a year-over-year increase in the quantity of CO₂ emissions avoided by our customers through the use of our products and applications.

Impact of engagement

Air Products has been building its business over time with the focus on helping our customers achieve their business outcomes in a more sustainable way – whether that is by increasing productivity, producing better quality products, reducing energy use or lowering emissions. We believe increased customer understanding of Air Products as a sustainable solutions provider has driven new business and created opportunities to innovate with customers as they realize their energy strategies alongside economic growth and social development. In 2021 we continued to see an increase in customer interest in decarbonization and improving energy efficiency and particularly how we could help them meet their sustainability goals, consistent with our measure of success.

Each year Air Products tracks emissions avoided by our customers, and in some cases, users further downstream in the supply chain. Emissions are estimated based on the emissions avoided per unit of gas and then multiplied by the amount of gas sold in a year. Included are the emissions avoided through integration of Air Products with its customers, including the use of customer waste gases as feeds to our processes and providing customers with efficiently produced by-product steam from our hydrogen plants. In 2021, we enabled 82 million metric tons of CO₂e to be avoided by our customers and their customers, which is approximately equivalent to the emissions from almost 18 million cars and more than three times our own direct and indirect CO₂e emissions.

C12.1d

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

Where appropriate, Air Products participates in government-mediated forums with major customers where these forums are part of broader consultation processes leading to new environmental policy, for example, in The Netherlands, on the development of the country's Klimaataakkoord (Climate Accord). Through the vehicle of industrial gases industry associations, Air Products also cooperates with representative associations on developing legislation. In these cases, we seek to ensure that new environmental legislation is constructed so as to respect the environmental value brought by our business model.

Air Products has also engaged directly with contract hauliers, encouraging them to increase the efficiency of their fleets and consider alternative transportation fuels. Similarly, we have worked with tanker manufacturers to design jumbo trailers for some of our products that can reduce the distance travelled per volume of gas delivered. The measures of success for these efforts are improved fuel efficiency and reduced distribution distances, both of which reduce greenhouse gas emissions.

In 2021, Air Products and Cummins Inc., a global power and hydrogen technologies leader, jointly announced the signing of a memorandum of understanding (MOU) to work together to accelerate the integration of hydrogen fuel cell trucks in the Americas, Europe and Asia. Cummins will provide hydrogen fuel cell electric powertrains integrated into selected OEM partners' heavy-duty trucks for Air Products as we begin to convert our global fleet of distribution vehicles to hydrogen fuel cell vehicles.

C12.2

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

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

C12.3

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

Row 1

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

Yes, we engage directly with policy makers

Yes, we engage indirectly through trade associations

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

No, but we plan to have one in the next two years

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

Air Products' regional environmental specialists and Government Relations Team members provide expertise for matters related to greenhouse gases and climate change including internal policy development, regulations, and legislation. These experts contribute to and are aware of Air Products' position and goals related to greenhouse gases and climate change, which are articulated on our website, in our annual Sustainability Report, and through employee electronic communications. The experts also share information and best practices across regions to promote consistent approaches to climate change developments. In addition, all employees must follow Air Products' Code of Conduct and Business Ethics, which notes that it is the responsibility of every employee to protect our Company by conducting ourselves in strict compliance with the letter and spirit of the Code, as well as with all applicable laws.

C12.3a

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

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

Low-carbon, non-renewable energy generation

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

Renewable Energy Directive and its revision (RED II)

The Renewable Energy Directive is the European Union's legal framework for developing renewable energy across the EU economy. The European Commission proposed a revision to the directive in 2021 in line with the European Green Deal, including strengthening measures for transport and promoting the use of renewable and low-carbon fuels, including hydrogen.

Policy, law, or regulation geographic coverage

Regional

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

Other, please specify

European Union

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

Support with no exceptions

Description of engagement with policy makers

Hydrogen plays a key role in helping the world move forward with the energy transition and in building a cleaner, more sustainable future. As the world's leading producer of hydrogen, Air Products is playing a major role in making that happen. We have more than six decades of experience and knowledge of every facet of the hydrogen value chain, from production to distribution to storage and dispensing. We have already taken major steps to build the hydrogen economy and have hands-on operating experience on over 250 hydrogen fueling station projects in 20 countries. The key now is scaling up to create the hydrogen infrastructure that businesses and governments need to make the switch to this clean energy on a major scale, giving users confidence in a secure, reliable and consistent source of hydrogen. Air Products' landmark investments in green and blue hydrogen will help deliver zero- and low-carbon hydrogen to the world. At NEOM in Saudi Arabia, we and our partners have committed billions to create the world's largest green hydrogen project. When that facility comes onstream in 2026 it will supply 650 tons per day of carbon-free hydrogen to power buses and trucks around the world, including in Europe. Air Products has shared these efforts with policy makers as examples of how the world can transition to low-carbon energy. We have also engaged on accounting methods for emissions.

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

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

Yes, we have evaluated, and it is aligned

C12.3b

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

Trade association

Other, please specify

European Industrial Gases Association

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

Consistent

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

We publicly promote their current position

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

EIGA supports the aims of the European climate targets, including the need for affordable and reliable renewable energy. It also promotes the role of industrial gases in the transition to a low-carbon economy.

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

Describe the aim of your organization's funding

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

Yes, we have evaluated, and it is aligned

C12.4

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

Publication

In voluntary sustainability report

Status

Complete

Attach the document

 2022 Sustainability Report.pdf

Page/Section reference

Strategy/Risks and Opportunities: pages 2, 5-9, 23-27

Emissions Figures and Targets: pages 25-26, 53

Other metrics: see energy and water data on pages 25-26, 28, 53-54

Content elements

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Comment

Air Products publishes a sustainability report each year that covers matters of importance to the Company, including climate change. The Sustainability Report is online at <https://www.airproducts.com/company/sustainability/sustainability-report>.

Publication

In voluntary sustainability report

Status

Complete

Attach the document

 [global-reporting-initiative-gri-content-index.pdf](#)

Page/Section reference

Governance: see item 102-18 on page 5

Strategy/Risks and Opportunities: see item 102-15 on page 3 and item 201-2 on page 10

Emissions Figures and Targets: see item 305-1, 305-2, 305-3, 305-4 and 305-5 on pages 14-16

Other metrics: see items 302-1, 302-3 and 302-4 on pages 12 for energy information, and items 303-3, 303-4 and 303-5 on pages 13-14 for water information

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

Air Products publishes a sustainability report each year that covers matters of importance to the Company, including climate change. The GRI Content Index is a supplement to the sustainability report that provides additional information on key matters and performance.

The GRI Content Index is online at <https://www.airproducts.com/company/sustainability/sustainability-report>.

Publication

In voluntary communications

Status

Complete

Attach the document

 air-products-and-tcf.pdf

Page/Section reference

TCFD elements are covered across the full document.

Content elements

- Governance
- Strategy
- Risks & opportunities
- Emissions figures
- Emission targets
- Other metrics

Comment

Air Products shows the alignment of its climate change programs with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) through a matrix published with its annual Sustainability Report.

The TCFD alignment matrix is online at <https://www.airproducts.com/company/sustainability/sustainability-report>.

C15. Biodiversity

C15.1

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

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity
Row 1	Yes, executive management-level responsibility	Air Products' commitment to biodiversity is embodied in our Environmental, Health and Safety (EHS) Policy through which we commit to designing and operating our facilities in a manner that protects the environment and continually reduce the environmental impacts of our operations. The EHS Policy has been signed by our President, Chairman and CEO and our Vice President of Environment, Health, Safety and Quality (EHS&Q). Our CEO is considered the chief EHS officer of the Company and provides visible leadership to ensure compliance with

		applicable regulations and internal policies and procedures, as well as requiring key levels of management to integrate EHS performance improvement objectives into their strategic plans and key business objectives, among other requirements. The VP EHS&Q is responsible for ensuring effective EHS expertise and resources, establishing EHS objectives to drive continuous improvement and monitoring EHS performance, also among other requirements.
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C15.2

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

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity	Biodiversity-related public commitments
Row 1	Yes, we have made public commitments only	Adoption of the mitigation hierarchy approach

C15.3

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

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	Yes, we assess impacts on biodiversity in our upstream value chain only

C15.4

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

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity-related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Land/water management Species management Livelihood, economic & other incentives


C15.5


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

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	Yes, we use indicators	Response indicators

C15.6

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

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments Impacts on biodiversity Biodiversity strategy	Please see page 31 of our 2022 Sustainability Report for details on our biodiversity-related policies, operational impacts, project assessments and supply chain considerations.  1

 12022 Sustainability Report.pdf

C16. Signoff

C-FI

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

C16.1

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

	Job title	Corresponding job category
Row 1	Vice President of Investor Relations, Government Relations, Corporate Relations, and Sustainability.	Chief Sustainability Officer (CSO)