

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended 31 March 2023

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number 001-04534



AIR PRODUCTS AND CHEMICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

23-1274455

(I.R.S. Employer Identification No.)

1940 Air Products Boulevard

Allentown, Pennsylvania 18106-5500

(Address of principal executive offices and Zip Code)

610-481-4911

(Registrant's telephone number, including area code)

Not Applicable

(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$1.00 per share	APD	New York Stock Exchange
1.000% Euro Notes due 2025	APD25	New York Stock Exchange
0.500% Euro Notes due 2028	APD28	New York Stock Exchange
0.800% Euro Notes due 2032	APD32	New York Stock Exchange
4.000% Euro Notes due 2035	APD35	New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The number of shares of common stock, par value \$1 per share, outstanding at 31 March 2023 was 222,122,719.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
QUARTERLY REPORT ON FORM 10-Q
For the quarterly period ended 31 March 2023

TABLE OF CONTENTS

Forward-Looking Statements	3
--	---

[PART I—FINANCIAL INFORMATION](#)

Item 1. Financial Statements (Unaudited)	
Consolidated Income Statements – Three and Six Months Ended 31 March 2023 and 2022	5
Consolidated Comprehensive Income Statements – Three and Six Months Ended 31 March 2023 and 2022	6
Consolidated Balance Sheets – 31 March 2023 and 30 September 2022	7
Consolidated Statements of Cash Flows – Six Months Ended 31 March 2023 and 2022	8
Consolidated Statements of Equity – Three and Six Months Ended 31 March 2023 and 2022	9
Notes to Consolidated Financial Statements	11
Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations	35
Item 3. Quantitative and Qualitative Disclosures About Market Risk	61
Item 4. Controls and Procedures	62

[PART II—OTHER INFORMATION](#)

Item 6. Exhibits	63
Signature	64

FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains “forward-looking statements” within the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include all statements that do not relate solely to historical or current facts and can generally be identified by words such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “forecast,” “future,” “goal,” “intend,” “may,” “outlook,” “plan,” “positioned,” “possible,” “potential,” “project,” “should,” “target,” “will,” “would,” and similar expressions or variations thereof, or the negative thereof, but these terms are not the exclusive means of identifying such statements. Forward-looking statements are based on management’s expectations and assumptions as of the date of this report and are not guarantees of future performance. You are cautioned not to place undue reliance on our forward-looking statements.

Forward-looking statements may relate to a number of matters, including expectations regarding revenue, margins, expenses, earnings, tax provisions, cash flows, pension obligations, share repurchases or other statements regarding economic conditions or our business outlook; statements regarding plans, projects, strategies and objectives for our future operations, including our ability to win new projects and execute the projects in our backlog; and statements regarding our expectations with respect to pending legal claims or disputes. While forward-looking statements are made in good faith and based on assumptions, expectations and projections that management believes are reasonable based on currently available information, actual performance and financial results may differ materially from projections and estimates expressed in the forward-looking statements because of many factors, including, without limitation:

- the duration and impacts of the ongoing COVID-19 global pandemic and efforts to contain its transmission, including the effect of these factors on our business, our customers, economic conditions and markets generally;
- changes in global or regional economic conditions, inflation, and supply and demand dynamics in the market segments we serve, including demand for technologies and projects to limit the impact of global climate change;
- changes in the financial markets that may affect the availability and terms on which we may obtain financing;
- the ability to implement price increases to offset cost increases;
- disruptions to our supply chain and related distribution delays and cost increases;
- risks associated with having extensive international operations, including political risks, risks associated with unanticipated government actions and risks of investing in developing markets;
- project delays, contract terminations, customer cancellations, or postponement of projects and sales;
- our ability to safely develop, operate, and manage costs of large-scale and technically complex projects;
- the future financial and operating performance of major customers, joint ventures, and equity affiliates;
- our ability to develop, implement, and operate new technologies and to market products produced utilizing new technologies;
- our ability to execute the projects in our backlog and refresh our pipeline of new projects;
- tariffs, economic sanctions and regulatory activities in jurisdictions in which we and our affiliates and joint ventures operate;
- the impact of environmental, tax, safety, or other legislation, as well as regulations and other public policy initiatives affecting our business and the business of our affiliates and related compliance requirements, including legislation, regulations, or policies intended to address global climate change;
- changes in tax rates and other changes in tax law;
- safety incidents relating to our operations;
- the timing, impact, and other uncertainties relating to acquisitions and divestitures, including our ability to integrate acquisitions and separate divested businesses, respectively;

FORWARD-LOOKING STATEMENTS (CONTINUED)

- risks relating to cybersecurity incidents, including risks from the interruption, failure or compromise of our information systems;
- catastrophic events, such as natural disasters and extreme weather events, public health crises, acts of war, including Russia's invasion of Ukraine and the ongoing civil war in Yemen, or terrorism;
- the impact on our business and customers of price fluctuations in oil and natural gas and disruptions in markets and the economy due to oil and natural gas price volatility;
- costs and outcomes of legal or regulatory proceedings and investigations;
- asset impairments due to economic conditions or specific events;
- significant fluctuations in inflation, interest rates and foreign currency exchange rates from those currently anticipated;
- damage to facilities, pipelines or delivery systems, including those we own or operate for third parties;
- availability and cost of electric power, natural gas, and other raw materials; and
- the success of productivity and operational improvement programs.

In addition to the foregoing factors, forward-looking statements contained herein are qualified with respect to the risks disclosed elsewhere in this document, including in Item 2, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, and Item 3, *Quantitative and Qualitative Disclosures About Market Risk*, as well as with respect to the risks described in Item 1A, *Risk Factors*, to our Annual Report on Form 10-K for the fiscal year ended 30 September 2022. Any of these factors, as well as those not currently anticipated by management, could cause our results of operations, financial condition or liquidity to differ materially from what is expressed or implied by any forward-looking statement. Except as required by law, we disclaim any obligation or undertaking to update or revise any forward-looking statements contained herein to reflect any change in assumptions, beliefs, or expectations or any change in events, conditions, or circumstances upon which any such forward-looking statements are based.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements

Air Products and Chemicals, Inc. and Subsidiaries CONSOLIDATED INCOME STATEMENTS (Unaudited)

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
<i>(Millions of U.S. Dollars, except for share and per share data)</i>				
Sales	\$3,200.1	\$2,945.1	\$6,374.8	\$5,939.3
Cost of sales	2,282.8	2,151.6	4,555.1	4,375.2
Selling and administrative expense	251.2	227.0	485.6	459.8
Research and development expense	27.2	23.7	51.6	47.0
Business and asset actions	185.6	—	185.6	—
Other income (expense), net	6.5	19.1	14.9	27.6
Operating Income	459.8	561.9	1,111.8	1,084.9
Equity affiliates' income	165.9	120.8	275.9	268.6
Interest expense	40.9	32.3	82.1	62.8
Other non-operating income (expense), net	(13.9)	9.1	(14.5)	31.7
Income Before Taxes	570.9	659.5	1,291.1	1,322.4
Income tax provision	121.0	122.7	257.4	236.0
Net Income	449.9	536.8	1,033.7	1,086.4
Net income (loss) attributable to noncontrolling interests	10.1	6.3	21.7	(4.5)
Net Income Attributable to Air Products	\$439.8	\$530.5	\$1,012.0	\$1,090.9
Per Share Data (U.S. Dollars per share)				
Basic earnings per share attributable to Air Products	\$1.98	\$2.39	\$4.55	\$4.91
Diluted earnings per share attributable to Air Products	\$1.97	\$2.38	\$4.54	\$4.90
Weighted Average Common Shares (in millions)				
Basic	222.3	222.0	222.3	222.0
Diluted	222.7	222.5	222.7	222.5

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED COMPREHENSIVE INCOME STATEMENTS
(Unaudited)

	Three Months Ended 31 March	
(Millions of U.S. Dollars)	2023	2022
Net Income	\$449.9	\$536.8
Other Comprehensive Income (Loss), net of tax:		
Translation adjustments, net of tax of (\$10.6) and \$9.2	51.0	(58.8)
Net loss on derivatives, net of tax of (\$0.6) and (\$15.3)	(14.6)	(39.4)
Reclassification adjustments:		
Currency translation adjustment	(0.3)	—
Derivatives, net of tax of \$1.9 and \$8.6	5.8	26.0
Pension and postretirement benefits, net of tax of \$4.7 and \$5.5	14.4	15.9
Total Other Comprehensive Income (Loss)	56.3	(56.3)
Comprehensive Income	506.2	480.5
Net Income Attributable to Noncontrolling Interests	10.1	6.3
Other Comprehensive Income (Loss) Attributable to Noncontrolling Interests	1.3	(3.0)
Comprehensive Income Attributable to Air Products	\$494.8	\$477.2

	Six Months Ended 31 March	
(Millions of U.S. Dollars)	2023	2022
Net Income	\$1,033.7	\$1,086.4
Other Comprehensive Income, net of tax:		
Translation adjustments, net of tax of (\$48.6) and \$16.8	560.6	(18.2)
Net gain (loss) on derivatives, net of tax of \$37.6 and (\$26.4)	106.4	(39.9)
Pension and postretirement benefits, net of tax of \$2.4 and \$—	6.7	—
Reclassification adjustments:		
Currency translation adjustment	(0.3)	—
Derivatives, net of tax of (\$19.8) and \$14.7	(62.9)	44.7
Pension and postretirement benefits, net of tax of \$8.4 and \$10.9	26.3	31.9
Total Other Comprehensive Income	636.8	18.5
Comprehensive Income	1,670.5	1,104.9
Net Income (Loss) Attributable to Noncontrolling Interests	21.7	(4.5)
Other Comprehensive Income Attributable to Noncontrolling Interests	14.0	8.2
Comprehensive Income Attributable to Air Products	\$1,634.8	\$1,101.2

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED BALANCE SHEETS
(Unaudited)

<i>(Millions of U.S. Dollars, except for share and per share data)</i>	31 March 2023	30 September 2022
Assets		
Current Assets		
Cash and cash items	\$2,242.4	\$2,711.0
Short-term investments	271.3	590.7
Trade receivables, net	1,714.7	1,794.4
Inventories	645.6	514.2
Prepaid expenses	224.7	156.8
Other receivables and current assets	622.9	515.8
Total Current Assets	5,721.6	6,282.9
Investment in net assets of and advances to equity affiliates	4,420.2	3,353.8
Plant and equipment, at cost	30,751.8	28,160.1
Less: accumulated depreciation	15,053.4	13,999.6
Plant and equipment, net	15,698.4	14,160.5
Goodwill, net	883.9	823.0
Intangible assets, net	367.2	347.5
Operating lease right-of-use assets, net	766.9	694.8
Noncurrent lease receivables	561.7	583.1
Other noncurrent assets	1,015.5	947.0
Total Noncurrent Assets	23,713.8	20,909.7
Total Assets	\$29,435.4	\$27,192.6
Liabilities and Equity		
Current Liabilities		
Payables and accrued liabilities	\$2,489.3	\$2,771.6
Accrued income taxes	128.2	135.2
Short-term borrowings	7.0	10.7
Current portion of long-term debt	173.4	548.3
Total Current Liabilities	2,797.9	3,465.8
Long-term debt	8,271.9	6,433.8
Long-term debt – related party	688.6	652.0
Noncurrent operating lease liabilities	632.3	592.1
Other noncurrent liabilities	1,096.3	1,099.1
Deferred income taxes	1,258.2	1,247.4
Total Noncurrent Liabilities	11,947.3	10,024.4
Total Liabilities	14,745.2	13,490.2
Commitments and Contingencies - See Note 13		
Air Products Shareholders' Equity		
Common stock (par value \$1 per share; issued 2023 and 2022 - 249,455,584 shares)	249.4	249.4
Capital in excess of par value	1,163.4	1,141.4
Retained earnings	16,781.3	16,520.3
Accumulated other comprehensive loss	(2,163.3)	(2,786.1)
Treasury stock, at cost (2023 - 27,332,865 shares; 2022 - 27,616,888 shares)	(1,972.5)	(1,981.0)
Total Air Products Shareholders' Equity	14,058.3	13,144.0
Noncontrolling Interests	631.9	558.4
Total Equity	14,690.2	13,702.4
Total Liabilities and Equity	\$29,435.4	\$27,192.6

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Six Months Ended 31 March	
(Millions of U.S. Dollars)	2023	2022
Operating Activities		
Net income	\$1,033.7	\$1,086.4
Less: Net income (loss) attributable to noncontrolling interests	21.7	(4.5)
Net income attributable to Air Products	1,012.0	1,090.9
Adjustments to reconcile income to cash provided by operating activities:		
Depreciation and amortization	661.1	668.2
Deferred income taxes	29.0	51.3
Business and asset actions	185.6	—
Undistributed earnings of equity method investments	(78.1)	(200.8)
Gain on sale of assets and investments	(3.9)	(11.8)
Share-based compensation	31.2	26.5
Noncurrent lease receivables	39.5	43.9
Other adjustments	70.9	(101.0)
Working capital changes that provided (used) cash, excluding effects of acquisitions:		
Trade receivables	162.0	(203.1)
Inventories	(112.3)	(57.3)
Other receivables	(63.0)	13.8
Payables and accrued liabilities	(451.3)	123.1
Other working capital	(124.7)	(138.7)
Cash Provided by Operating Activities	1,358.0	1,305.0
Investing Activities		
Additions to plant and equipment, including long-term deposits	(1,841.1)	(1,433.6)
Acquisitions, less cash acquired	—	(65.1)
Investment in and advances to unconsolidated affiliates	(912.0)	(1,650.9)
Proceeds from sale of assets and investments	7.2	25.3
Purchases of investments	(290.5)	(909.4)
Proceeds from investments	611.6	1,391.4
Other investing activities	(51.2)	6.5
Cash Used for Investing Activities	(2,476.0)	(2,635.8)
Financing Activities		
Long-term debt proceeds	1,891.6	87.5
Payments on long-term debt	(596.0)	(400.0)
Net (decrease) increase in commercial paper and short-term borrowings	(16.3)	210.9
Dividends paid to shareholders	(719.2)	(664.7)
Proceeds from stock option exercises	17.1	14.4
Investments by noncontrolling interests	72.8	3.6
Other financing activities	(46.6)	(37.3)
Cash Provided by (Used for) Financing Activities	603.4	(785.6)
Effect of Exchange Rate Changes on Cash	46.0	(3.8)
Decrease in cash and cash items	(468.6)	(2,120.2)
Cash and Cash items – Beginning of year	2,711.0	4,468.9
Cash and Cash Items – End of Period	\$2,242.4	\$2,348.7

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF EQUITY
(Unaudited)

Six Months Ended 31 March 2023

<i>(Millions of U.S. Dollars, except for per share data)</i>	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 30 September 2022	\$249.4	\$1,141.4	\$16,520.3	(\$2,786.1)	(\$1,981.0)	\$13,144.0	\$558.4	\$13,702.4
Net income	—	—	1,012.0	—	—	1,012.0	21.7	1,033.7
Other comprehensive income	—	—	—	622.8	—	622.8	14.0	636.8
Dividends on common stock (per share \$3.37)	—	—	(748.5)	—	—	(748.5)	—	(748.5)
Dividends to noncontrolling interests	—	—	—	—	—	—	(5.6)	(5.6)
Share-based compensation	—	29.0	—	—	—	29.0	—	29.0
Issuance of treasury shares for stock option and award plans	—	(7.3)	—	—	8.5	1.2	—	1.2
Investments by noncontrolling interests	—	—	—	—	—	—	72.8	72.8
Other equity transactions ^(A)	—	0.3	(2.5)	—	—	(2.2)	(29.4)	(31.6)
Balance at 31 March 2023	\$249.4	\$1,163.4	\$16,781.3	(\$2,163.3)	(\$1,972.5)	\$14,058.3	\$631.9	\$14,690.2

Six Months Ended 31 March 2022

<i>(Millions of U.S. Dollars, except for per share data)</i>	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 30 September 2021	\$249.4	\$1,115.8	\$15,678.3	(\$1,515.9)	(\$1,987.9)	\$13,539.7	\$548.3	\$14,088.0
Net income	—	—	1,090.9	—	—	1,090.9	(4.5)	1,086.4
Other comprehensive income	—	—	—	10.3	—	10.3	8.2	18.5
Dividends on common stock (per share \$3.12)	—	—	(691.8)	—	—	(691.8)	—	(691.8)
Dividends to noncontrolling interests	—	—	—	—	—	—	(1.0)	(1.0)
Share-based compensation	—	25.7	—	—	—	25.7	—	25.7
Issuance of treasury shares for stock option and award plans	—	(21.0)	—	—	2.5	(18.5)	—	(18.5)
Investments by noncontrolling interests	—	—	—	—	—	—	3.6	3.6
Purchase of noncontrolling interests	—	—	—	—	—	—	(1.9)	(1.9)
Other equity transactions	—	0.3	(1.5)	—	—	(1.2)	2.9	1.7
Balance at 31 March 2022	\$249.4	\$1,120.8	\$16,075.9	(\$1,505.6)	(\$1,985.4)	\$13,955.1	\$555.6	\$14,510.7

^(A) Reflects noncash activity related to the NEOM Green Hydrogen Company joint venture. Refer to Note 3, *Variable Interest Entities*, for additional information.

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF EQUITY (cont.)
(Unaudited)

Three Months Ended 31 March 2023

<i>(Millions of U.S. Dollars, except for per share data)</i>	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 31 December 2022	\$249.4	\$1,148.4	\$16,731.4	(\$2,218.3)	(\$1,975.2)	\$13,935.7	\$581.7	\$14,517.4
Net income	—	—	439.8	—	—	439.8	10.1	449.9
Other comprehensive loss	—	—	—	55.0	—	55.0	1.3	56.3
Dividends on common stock (per share \$1.75)	—	—	(388.7)	—	—	(388.7)	—	(388.7)
Dividends to noncontrolling interests	—	—	—	—	—	—	(4.8)	(4.8)
Share-based compensation	—	14.8	—	—	—	14.8	—	14.8
Issuance of treasury shares for stock option and award plans	—	0.1	—	—	2.7	2.8	—	2.8
Investments by noncontrolling interests	—	—	—	—	—	—	72.8	72.8
Purchase of noncontrolling interests	—	—	—	—	—	—	—	—
Other equity transactions ^(A)	—	0.1	(1.2)	—	—	(1.1)	(29.2)	(30.3)
Balance at 31 March 2023	\$249.4	\$1,163.4	\$16,781.3	(\$2,163.3)	(\$1,972.5)	\$14,058.3	\$631.9	\$14,690.2

Three Months Ended 31 March 2022

<i>(Millions of U.S. Dollars, except for per share data)</i>	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 31 December 2021	\$249.4	\$1,112.0	\$15,905.2	(\$1,452.3)	(\$1,989.2)	\$13,825.1	\$550.5	\$14,375.6
Net income	—	—	530.5	—	—	530.5	6.3	536.8
Other comprehensive income	—	—	—	(53.3)	—	(53.3)	(3.0)	(56.3)
Dividends on common stock (per share \$1.62)	—	—	(359.3)	—	—	(359.3)	—	(359.3)
Dividends to noncontrolling interests	—	—	—	—	—	—	(1.0)	(1.0)
Share-based compensation	—	11.6	—	—	—	11.6	—	11.6
Issuance of treasury shares for stock option and award plans	—	(2.9)	—	—	3.8	0.9	—	0.9
Other equity transactions	—	0.1	(0.5)	—	—	(0.4)	2.8	2.4
Balance at 31 March 2022	\$249.4	\$1,120.8	\$16,075.9	(\$1,505.6)	(\$1,985.4)	\$13,955.1	\$555.6	\$14,510.7

^(A) Reflects noncash activity related to the NEOM Green Hydrogen Company joint venture. Refer to Note 3, *Variable Interest Entities*, for additional information.

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

Millions of U.S. Dollars, unless otherwise indicated

1.	Basis of Presentation and Major Accounting Policies	12
2.	New Accounting Guidance	12
3.	Variable Interest Entities	13
4.	Business and Asset Actions	14
5.	Revenue Recognition	14
6.	Inventories	15
7.	Equity Affiliates	16
8.	Goodwill	17
9.	Financial Instruments	17
10.	Fair Value Measurements	24
11.	Debt	26
12.	Retirement Benefits	27
13.	Commitments and Contingencies	28
14.	Share-Based Compensation	30
15.	Accumulated Other Comprehensive Loss	31
16.	Earnings per Share	32
17.	Income Taxes	32
18.	Supplemental Information	32
19.	Business Segment Information	33

1. BASIS OF PRESENTATION AND MAJOR ACCOUNTING POLICIES

Basis of Presentation

The interim consolidated financial statements of Air Products and Chemicals, Inc. and its subsidiaries ("we," "our," "us," the "Company," "Air Products," or "registrant") included herein have been prepared by us, without audit, pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles ("GAAP") have been condensed or omitted pursuant to such rules and regulations. In our opinion, the accompanying statements reflect adjustments necessary to fairly present the financial position, results of operations, and cash flows for those periods indicated and contain adequate disclosures to make the information presented not misleading. Adjustments included herein are of a normal, recurring nature unless otherwise disclosed in the notes to the interim consolidated financial statements.

To fully understand the basis of presentation, the interim consolidated financial statements and related notes included herein should be read in conjunction with the consolidated financial statements and notes thereto included in our Annual Report on Form 10-K for the fiscal year ended 30 September 2022 (the "[2022 Form 10-K](#)"), which was filed with the SEC on 22 November 2022. Results of operations for interim periods are not necessarily indicative of the results of operations for a full year.

Major Accounting Policies

Refer to our 2022 Form 10-K for a description of major accounting policies. There have been no significant changes to these accounting policies during the first six months of fiscal year 2023.

Risks and Uncertainties

We are subject to various risks and uncertainties, including, but not limited to, those resulting from the COVID-19 pandemic and increased inflationary pressures. Our results of operations for the periods covered by this report were not materially impacted by these events; however, there is uncertainty regarding how these events and others may affect our business, results of operations, and overall financial performance.

Reclassifications

Beginning in the first quarter of fiscal year 2023, we present "Operating lease right-of-use assets, net" and "Noncurrent operating lease liabilities" in separate captions on our consolidated balance sheets. These balances were previously presented within "Other noncurrent assets" and "Other noncurrent liabilities," respectively. Our balance sheet as of 30 September 2022 has been reclassified to conform to the fiscal year 2023 presentation.

2. NEW ACCOUNTING GUIDANCE

New Accounting Guidance to be Implemented

Government Assistance

In November 2021, the Financial Accounting Standards Board ("FASB") issued disclosure guidance to increase the transparency of transactions an entity has with a government that are accounted for by applying a grant or contribution accounting model. We are evaluating the impact this guidance will have on our annual disclosures to our consolidated financial statements. We will adopt this guidance prospectively in our Annual Report for fiscal year 2023.

Reference Rate Reform

In March 2020, the FASB issued an update to provide practical expedients and exceptions for applying GAAP to contracts, hedging relationships and other transactions affected by reference rate reform if certain criteria are met. This update is primarily applicable to our contracts and hedging relationships that reference the London Inter-Bank Offered Rate ("LIBOR"). In December 2022, the FASB extended the date through which the amendments may be applied to impacted contracts and hedges to 31 December 2024. We have had no reference rate reform modifications to date. We will adopt this update on a prospective basis in the event of any such modifications.

3. VARIABLE INTEREST ENTITIES

We are the primary beneficiary of the NEOM Green Hydrogen Company joint venture ("NGHC"), which is a variable interest entity ("VIE") that is consolidated in our Middle East and India segment. We are not the primary beneficiary of any other material VIEs. We account for a VIE for which we exercise significant influence but are not the primary beneficiary, such as the Jazan Integrated Gasification and Power Company joint venture, as an equity method investment. For additional information on this joint venture, refer to Note 7, *Equity Affiliates*.

The table below summarizes balances associated with NGHC as reflected on our consolidated balance sheets. For additional information on this joint venture, refer to the "NEOM Green Hydrogen Project" section that follows.

	31 March 2023	30 September 2022
Assets		
Cash and cash items	\$129.2	\$274.7
Trade receivables, net	—	1.3
Prepaid expenses	3.3	0.1
Other receivables and current assets	52.3	23.3
Plant and equipment, net	613.3	218.8
Other noncurrent assets	11.1	1.5
Total Assets	\$809.2	\$519.7
Liabilities		
Payables and accrued liabilities	73.6	58.1
Accrued income taxes	0.4	—
Long-term debt – related party ^(A)	476.7	447.3
Other noncurrent liabilities	3.0	1.4
Total Liabilities	\$553.7	\$506.8
Noncontrolling interests^(A)	\$2.6	\$30.0

^(A) During the second quarter of fiscal year 2023, approximately \$29 of investments attributable to the noncontrolling partner of NGHC were converted to shareholder loans. This noncash activity is presented within "Other equity transactions" related to noncontrolling interests on our consolidated statements of equity for the three and six months ended 31 March 2023.

NEOM Green Hydrogen Project

In the fourth quarter of fiscal year 2020, we announced the NEOM Green Hydrogen Project (the "NEOM project"), a multi-billion dollar green hydrogen-based ammonia production facility powered by renewable energy located in the NEOM city of the Kingdom of Saudi Arabia. We, along with our joint venture partners, ACWA Power and NEOM Company, are equal owners in NGHC, which will develop, construct, own, operate, and finance the NEOM project. The NEOM project is expected to be financed through non-recourse project financing and the partners' investments.

During the third quarter of fiscal year 2022, we entered into an agreement with NGHC under which we commenced construction of the NEOM project. In addition, we executed an agreement with NGHC under which we will be the exclusive offtaker of green ammonia produced by the NEOM project under a long-term take-if-tendered agreement. The NEOM project is expected to be on-stream in 2026. We intend to transport green ammonia around the world to be dissociated to produce green hydrogen, primarily for the transportation market.

Air Products has one-third of the voting interests in the NGHC joint venture; however, substantially all the activities of the joint venture involve or are conducted on behalf of Air Products. Since we have disproportionately few voting rights relative to our economic interests in the joint venture, we determined that NGHC is a variable interest entity. In addition, we determined that we are the primary beneficiary of NGHC since we have the power to unilaterally direct certain significant activities, including key design and construction decisions, and we share power with our joint venture partners related to other activities that are significant to the economic performance of NGHC. Therefore, we consolidated NGHC within the Middle East and India segment beginning in the third quarter of fiscal year 2022.

4. BUSINESS AND ASSET ACTIONS

Our consolidated income statements for the three and six months ended 31 March 2023 reflect "Business and asset actions" of \$185.6 (\$153.7 attributable to Air Products after tax) that resulted from a noncash write-off of assets previously under construction in our Asia and Europe segments. In March 2023, we confirmed our decision to withdraw from coal gasification in Indonesia in order to focus our resources on other opportunities. Additionally, we permanently suspended construction of a plant in Ukraine due to ongoing uncertainty related to Russia's invasion of the country. The charge for these actions was not recorded in segment results.

5. REVENUE RECOGNITION

The majority of our revenue is generated from our sale of gas customers within the regional industrial gases segments. We distribute gases through either our on-site or merchant supply mode depending on various factors, including the customer's volume requirements and location. We also design and manufacture equipment for air separation, hydrocarbon recovery and purification, natural gas liquefaction, and liquid helium and liquid hydrogen transport and storage. The Corporate and other segment serves our sale of equipment customers.

Disaggregation of Revenue

The tables below present our consolidated sales disaggregated by supply mode for each of our reportable segments for the second quarter and first six months of fiscal years 2023 and 2022. We believe this presentation best depicts the nature, timing, type of customer, and contract terms for our sales.

Three Months Ended 31 March							
	Americas	Asia	Europe	Middle East and India	Corporate and other	Total	%
2023							
On-site	\$801.9	\$490.3	\$259.4	\$22.8	\$—	\$1,574.4	49 %
Merchant	571.2	323.6	493.5	22.0	—	1,410.3	44 %
Sale of equipment	—	—	—	—	215.4	215.4	7 %
Total	\$1,373.1	\$813.9	\$752.9	\$44.8	\$215.4	\$3,200.1	100 %
2022							
On-site	\$716.5	\$460.4	\$292.0	\$17.3	\$—	\$1,486.2	51 %
Merchant	470.1	290.8	446.6	11.6	—	1,219.1	41 %
Sale of equipment	—	—	—	—	239.8	239.8	8 %
Total	\$1,186.6	\$751.2	\$738.6	\$28.9	\$239.8	\$2,945.1	100 %

Six Months Ended 31 March							
	Americas	Asia	Europe	Middle East and India	Corporate and other	Total	%
2023							
On-site	\$1,647.7	\$948.0	\$587.5	\$41.6	\$—	\$3,224.8	51 %
Merchant	1,109.6	643.7	957.3	44.6	—	2,755.2	43 %
Sale of Equipment	—	—	—	—	394.8	394.8	6 %
Total	\$2,757.3	\$1,591.7	\$1,544.8	\$86.2	\$394.8	\$6,374.8	100 %
2022							
On-site	\$1,514.1	\$912.0	\$617.6	\$33.6	\$—	\$3,077.3	52 %
Merchant	896.6	619.6	865.2	19.0	—	2,400.4	40 %
Sale of Equipment	—	—	—	—	461.6	461.6	8 %
Total	\$2,410.7	\$1,531.6	\$1,482.8	\$52.6	\$461.6	\$5,939.3	100 %

Remaining Performance Obligations

As of 31 March 2023, the transaction price allocated to remaining performance obligations is estimated to be approximately \$24 billion. This amount includes fixed-charge contract provisions associated with our on-site and sale of equipment supply modes. We estimate that approximately half of this revenue will be recognized over the next five years and the balance thereafter.

Our remaining performance obligations do not include (1) expected revenue associated with new on-site plants that are not yet on-stream; (2) consideration associated with contracts that have an expected duration of less than one year; and (3) variable consideration for which we recognize revenue at the amount to which we have the right to invoice, including energy cost pass-through to customers.

In the future, actual amounts will differ due to events outside of our control, including, but not limited to, inflationary price escalations; currency exchange rates; and amended, terminated, or renewed contracts.

Contract Balances

The table below details balances arising from contracts with customers:

	Balance Sheet Location	31 March 2023	30 September 2022
Assets			
Contract assets – current	Other receivables and current assets	\$74.2	\$69.0
Contract fulfillment costs – current	Other receivables and current assets	105.6	84.1
Liabilities			
Contract liabilities – current	Payables and accrued liabilities	\$396.0	\$439.1
Contract liabilities – noncurrent	Other noncurrent liabilities	97.7	67.2

Changes to our contract balances primarily relate to our sale of equipment contracts. During the first half of fiscal year 2023, we recognized sales of approximately \$165 associated with sale of equipment contracts that were included within our contract liabilities as of 30 September 2022.

6. INVENTORIES

The components of inventories are as follows:

	31 March 2023	30 September 2022
Finished goods	\$239.1	\$162.0
Work in process	27.2	22.0
Raw materials, supplies, and other	379.3	330.2
Inventories	\$645.6	\$514.2

7. EQUITY AFFILIATES

Equity Affiliate Investment in Jazan Integrated Gasification and Power Company ("JIGPC")

On 27 October 2021, we made an initial investment of \$1.6 billion to acquire a 55% ownership interest in the Jazan Integrated Gasification and Power Company ("JIGPC") joint venture, of which 4% is attributable to the noncontrolling partner of Air Products Qudra ("APQ"). We completed a second investment of \$908 on 19 January 2023, which did not change our ownership interest. As of 31 March 2023, the carrying value of our investment totaled \$2,724.0 and is presented as "Investments in net assets of and advances to equity affiliates" on our consolidated balance sheet. Our loss exposure is limited to our investment in the joint venture.

Our investments were made primarily in the form of shareholder loans that qualify as in-substance common stock in the joint venture and were executed according to the timing of the joint venture's purchase of project assets, which is being completed in phases. The amounts invested included approximately \$130 and \$73 received from the noncontrolling partner of APQ for the first and second investment, respectively. We expect to complete a remaining investment of approximately \$115 for additional assets to be purchased by the joint venture later this calendar year.

We determined JIGPC is a variable interest entity for which we are not the primary beneficiary as we do not have the power to direct the activities that are most significant to the economic performance of the joint venture. Instead, these activities, including plant dispatch, operating and maintenance decisions, budgeting, capital expenditures, and financing, require unanimous approval of the owners or are controlled by the customer. Since we have the ability to exercise significant influence in the joint venture, we accounted for our investment in JIGPC under the equity method within the Middle East and India segment beginning in the first quarter of fiscal year 2022.

Certain shareholders receive a preferred cash distribution pursuant to the joint venture agreement, which specifies each shareholder's share of income after considering the amount of cash available for distribution. As such, the earnings attributable to Air Products may not be proportionate to our ownership interest in the venture.

Additional information on the JIGPC joint venture is provided below.

JIGPC Joint Venture

JIGPC is a joint venture with Saudi Aramco Power Company (a subsidiary of Aramco), ACWA Power, and APQ in the Jazan Economic City, Saudi Arabia. On 27 September 2021, JIGPC signed definitive agreements for the acquisition of project assets from Aramco for \$12 billion and entered into related project financing for the purchase of the project assets, which include power blocks, gasifiers, air separation units, syngas cleanup assets, and utilities, in multiple phases. The first phase was completed on 27 October 2021 for \$7.39 billion, and the second phase was completed for \$4.15 billion on 19 January 2023. We expect JIGPC to acquire additional assets totaling approximately \$525 later this calendar year. JIGPC will commission, operate, and maintain the project assets to supply electricity, steam, hydrogen, and utilities to Aramco's refinery and terminal complex under a 25-year agreement, which commenced in the first quarter of fiscal year 2022. JIGPC recorded financing receivables upon acquisition of the assets and is recognizing financing income over the supply term.

Jazan Gas Project Company

Jazan Gas Project Company ("JGPC"), a joint venture between Air Products and ACWA Holding, entered into a 20-year oxygen and nitrogen supply agreement in 2015 to supply Aramco's oil refinery and power plant in Jazan, Saudi Arabia.

In October 2021, the supply agreement between JGPC and Aramco was terminated, and JGPC sold its air separation units to Aramco. We initially sold these assets to JGPC and deferred profit proportionate to our ownership in the joint venture. With the termination of the supply agreement and sale of the air separation units complete, we recognized the remaining deferred profit, net of other project finalization costs, in equity affiliates' income in the first quarter of fiscal year 2022.

8. GOODWILL

Changes to the carrying amount of consolidated goodwill by segment for the six months ended 31 March 2023 are as follows:

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total
Goodwill, net at 30 September 2022	\$143.2	\$172.7	\$457.5	\$15.8	\$33.8	\$823.0
Currency translation and other	8.7	4.2	47.9	—	0.1	60.9
Goodwill, net at 31 March 2023	\$151.9	\$176.9	\$505.4	\$15.8	\$33.9	\$883.9

	31 March 2023	30 September 2022
Goodwill, gross	\$1,218.0	\$1,096.0
Accumulated impairment losses ^(A)	(334.1)	(273.0)
Goodwill, net	\$883.9	\$823.0

^(A) Accumulated impairment losses are attributable to our Latin America reporting unit ("LASA") within the Americas segment and include the impact of currency translation.

We review goodwill for impairment annually in the fourth quarter of the fiscal year and whenever events or changes in circumstances indicate that the carrying value of goodwill might not be recoverable.

9. FINANCIAL INSTRUMENTS

Currency Price Risk Management

Our earnings, cash flows, and financial position are exposed to foreign currency risk from foreign currency-denominated transactions and net investments in foreign operations. It is our policy to seek to minimize our cash flow volatility from changes in currency exchange rates. This is accomplished by identifying and evaluating the risk that our cash flows will change in value due to changes in exchange rates and by executing strategies necessary to manage such exposures. Our objective is to maintain economically balanced currency risk management strategies that provide adequate downside protection.

Forward Exchange Contracts

We enter into forward exchange contracts to reduce the cash flow exposure to foreign currency fluctuations associated with highly anticipated cash flows and certain firm commitments, such as the purchase of plant and equipment. We also enter into forward exchange contracts to hedge the cash flow exposure on intercompany loans and third-party debt. This portfolio of forward exchange contracts consists primarily of Euros and U.S. Dollars. The maximum remaining term of any forward exchange contract currently outstanding and designated as a cash flow hedge at 31 March 2023 is 3.2 years.

Forward exchange contracts are also used to hedge the value of investments in certain foreign subsidiaries and affiliates by creating a liability in a currency in which we have a net equity position. The primary currency pair in this portfolio of forward exchange contracts is Euros and U.S. Dollars.

We also utilize forward exchange contracts that are not designated as hedges. These contracts are used to economically hedge foreign currency-denominated monetary assets and liabilities, primarily working capital. The primary objective of these forward exchange contracts is to protect the value of foreign currency-denominated monetary assets and liabilities from the effects of volatility in foreign exchange rates that might occur prior to their receipt or settlement. This portfolio of forward exchange contracts consists of many different foreign currency pairs, with a profile that changes from time to time depending on our business activity and sourcing decisions.

The table below summarizes our outstanding currency price risk management instruments:

	31 March 2023		30 September 2022	
	US\$ Notional	Years Average Maturity	US\$ Notional	Years Average Maturity
Forward Exchange Contracts:				
Cash flow hedges	\$4,628.7	0.6	\$4,525.0	0.7
Net investment hedges	860.4	2.9	542.2	2.2
Not designated	842.2	0.3	534.3	0.3
Total Forward Exchange Contracts	\$6,331.3	0.9	\$5,601.5	0.8

We also use foreign currency-denominated debt to hedge the foreign currency exposures of our net investment in certain foreign subsidiaries. The designated foreign currency-denominated debt and related accrued interest was €1,979.9 million (\$2,146.1) at 31 March 2023 and €1,265.4 million (\$1,240.4) at 30 September 2022. The designated foreign currency-denominated debt is presented within "Long-term debt" on the consolidated balance sheets.

Debt Portfolio Management

It is our policy to identify, on a continuing basis, the need for debt capital and to evaluate the financial risks inherent in funding the Company with debt capital. Reflecting the result of this ongoing review, we manage our debt portfolio and hedging program with the intent to (1) reduce funding risk with respect to borrowings made by us to preserve our access to debt capital and provide debt capital as required for funding and liquidity purposes, and (2) manage the aggregate interest rate risk and the debt portfolio in accordance with certain debt management parameters.

Interest Rate Management Contracts

We enter into interest rate swaps to change the fixed/variable interest rate mix of our debt portfolio in order to maintain the percentage of fixed- and variable-rate debt within the parameters set by management. In accordance with these parameters, the agreements are used to manage interest rate risks and costs inherent in our debt portfolio. Our interest rate management portfolio generally consists of fixed-to-floating interest rate swaps (which are designated as fair value hedges), pre-issuance interest rate swaps and treasury locks (which hedge the interest rate risk associated with anticipated fixed-rate debt issuances and are designated as cash flow hedges), and floating-to-fixed interest rate swaps (which are designated as cash flow hedges). As of 31 March 2023, the outstanding interest rate swaps were denominated in U.S. Dollars. The notional amount of the interest rate swap agreements is equal to or less than the designated debt being hedged. When interest rate swaps are used to hedge variable-rate debt, the indices of the swaps and the debt to which they are designated are the same. It is our policy not to enter into any interest rate management contracts which lever a move in interest rates on a greater than one-to-one basis.

Cross Currency Interest Rate Swap Contracts

We enter into cross currency interest rate swap contracts when our risk management function deems necessary. These contracts may entail both the exchange of fixed- and floating-rate interest payments periodically over the life of the agreement and the exchange of one currency for another currency at inception and at a specified future date. The contracts are used to hedge either certain net investments in foreign operations or non-functional currency cash flows related to intercompany loans. The current cross currency interest rate swap portfolio consists of fixed-to-fixed swaps primarily between the U.S. Dollar and each of the Chinese Renminbi, Indian Rupee, and Chilean Peso.

The table below summarizes our outstanding interest rate management contracts and cross currency interest rate swaps:

	31 March 2023				30 September 2022			
	US\$ Notional	Average Pay %	Average Receive %	Years Average Maturity	US\$ Notional	Average Pay %	Average Receive %	Years Average Maturity
Interest rate swaps (fair value hedge)	\$800.0	Various	1.64 %	4.5	\$800.0	Various	1.64 %	5.0
Cross currency interest rate swaps (net investment hedge)	\$150.1	3.89 %	3.01 %	1.0	\$176.7	4.12 %	3.07 %	1.2
Cross currency interest rate swaps (cash flow hedge)	\$630.3	4.75 %	3.05 %	2.4	\$785.7	4.78 %	3.05 %	2.3
Cross currency interest rate swaps (not designated)	\$20.3	5.39 %	3.54 %	0.7	\$37.7	5.39 %	3.54 %	1.2

The table below provides the amounts recorded on the consolidated balance sheet related to cumulative basis adjustments for fair value hedges:

Balance Sheet Location	Carrying amounts of hedged item		Cumulative hedging adjustment, included in carrying amount	
	31 March 2023	30 September 2022	31 March 2023	30 September 2022
Long-term debt	\$2,031.0	\$2,012.9	(\$59.9)	(\$77.1)

The table below summarizes the fair value and balance sheet location of our outstanding derivatives:

	Balance Sheet Location	31 March 2023	30 September 2022	Balance Sheet Location	31 March 2023	30 September 2022
Derivatives Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables and current assets	\$82.1	\$71.6	Payables and accrued liabilities	\$67.2	\$226.2
Interest rate management contracts	Other receivables and current assets	8.5	36.7	Payables and accrued liabilities	2.5	—
Forward exchange contracts	Other noncurrent assets	23.5	60.8	Other noncurrent liabilities	12.9	46.9
Interest rate management contracts	Other noncurrent assets	6.9	12.5	Other noncurrent liabilities	82.5	91.2
Total Derivatives Designated as Hedging Instruments		\$121.0	\$181.6		\$165.1	\$364.3
Derivatives Not Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables and current assets	4.4	6.1	Payables and accrued liabilities	4.6	2.1
Interest rate management contracts	Other receivables and current assets	0.2	—	Payables and accrued liabilities	—	—
Forward exchange contracts	Other noncurrent assets	0.2	0.1	Other noncurrent liabilities	0.1	0.1
Interest rate management contracts	Other noncurrent assets	—	1.3	Other noncurrent liabilities	—	—
Total Derivatives Not Designated as Hedging Instruments		\$4.8	\$7.5		\$4.7	\$2.2
Total Derivatives		\$125.8	\$189.1		\$169.8	\$366.5

Refer to Note 10, *Fair Value Measurements*, which defines fair value, describes the method for measuring fair value, and provides additional disclosures regarding fair value measurements.

The tables below summarize gains (losses) recognized in other comprehensive income during the period related to our net investment and cash flow hedging relationships:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Net Investment Hedging Relationships				
Forward exchange contracts	(\$15.3)	(\$4.2)	(\$62.4)	\$10.3
Foreign currency debt	(35.6)	39.4	(150.9)	67.0
Cross currency interest rate swaps	(3.2)	(7.4)	(13.8)	(9.7)
Total Amount Recognized in OCI	(54.1)	27.8	(227.1)	67.6
Tax effects	13.3	(6.9)	55.8	(16.7)
Net Amount Recognized in OCI	(\$40.8)	\$20.9	(\$171.3)	\$50.9

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Derivatives in Cash Flow Hedging Relationships				
Forward exchange contracts	\$5.3	(\$40.1)	\$194.1	(\$63.5)
Forward exchange contracts, excluded components	(5.9)	2.0	(11.5)	(0.7)
Other ^(A)	(14.6)	(16.6)	(38.6)	(2.1)
Total Amount Recognized in OCI	(15.2)	(54.7)	144.0	(66.3)
Tax effects	0.6	15.3	(37.6)	26.4
Net Amount Recognized in OCI	(\$14.6)	(\$39.4)	\$106.4	(\$39.9)

^(A) Other primarily includes interest rate and cross currency interest rate swaps for which excluded components are recognized in "Payables and accrued liabilities" and "Other receivables and current assets" as a component of accrued interest payable and accrued interest receivable, respectively. These excluded components are recorded in "Other non-operating income (expense), net" over the life of the cross currency interest rate swap. Other also includes the recognition of our share of gains and losses, net of tax, related to interest rate swaps held by our equity affiliates.

The table below summarizes the location and amounts recognized in income related to our cash flow and fair value hedging relationships by contract type:

	Three Months Ended 31 March							
	Sales		Cost of Sales		Interest Expense		Other Non-Operating Income (Expense), Net	
	2023	2022	2023	2022	2023	2022	2023	2022
Total presented in consolidated income statements that includes effects of hedging below	\$3,200.1	\$2,945.1	\$2,282.8	\$2,151.6	\$40.9	\$32.3	(\$13.9)	\$9.1
(Gain) Loss Effects of Cash Flow Hedging:								
Forward Exchange Contracts:								
Amount reclassified from OCI into income	\$0.1	\$0.3	\$2.4	\$0.4	\$—	\$—	(\$6.1)	\$26.4
Amount excluded from effectiveness testing recognized in earnings based on amortization approach	—	—	—	—	—	—	3.3	1.1
Other:								
Amount reclassified from OCI into income	—	—	—	—	1.3	1.5	6.7	4.9
Total (Gain) Loss Reclassified from OCI to Income	0.1	0.3	2.4	0.4	1.3	1.5	3.9	32.4
Tax effects	—	(0.1)	(0.6)	(0.1)	(0.6)	(0.6)	(0.7)	(7.8)
Net (Gain) Loss Reclassified from OCI to Income	\$0.1	\$0.2	\$1.8	\$0.3	\$0.7	\$0.9	\$3.2	\$24.6
(Gain) Loss Effects of Fair Value Hedging:								
Other:								
Hedged items	\$—	\$—	\$—	\$—	\$12.8	(\$22.0)	\$—	\$—
Derivatives designated as hedging instruments	—	—	—	—	(12.8)	22.0	—	—
Total (Gain) Loss Recognized in Income	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—

	Six Months Ended 31 March							
	Sales		Cost of Sales		Interest Expense		Other Non-Operating Income (Expense), Net	
	2023	2022	2023	2022	2023	2022	2023	2022
Total presented in consolidated income statements that includes effects of hedging below	\$6,374.8	\$5,939.3	\$4,555.1	\$4,375.2	\$82.1	\$62.8	(\$14.5)	\$31.7
(Gain) Loss Effects of Cash Flow Hedging:								
Forward Exchange Contracts:								
Amount reclassified from OCI into income	\$0.1	\$0.7	\$3.6	\$0.3	\$—	\$—	(\$123.9)	\$40.9
Amount excluded from effectiveness testing recognized in earnings based on amortization approach	—	—	—	—	—	—	5.3	2.4
Other:								
Amount reclassified from OCI into income	—	—	—	—	2.8	2.9	29.4	12.2
Total (Gain) Loss Reclassified from OCI to Income	0.1	0.7	3.6	0.3	2.8	2.9	(89.2)	55.5
Tax effects	—	(0.2)	(0.8)	(0.1)	(1.1)	(1.1)	21.7	(13.3)
Net (Gain) Loss Reclassified from OCI to Income	\$0.1	\$0.5	\$2.8	\$0.2	\$1.7	\$1.8	(\$67.5)	\$42.2
(Gain) Loss Effects of Fair Value Hedging:								
Other:								
Hedged items	\$—	\$—	\$—	\$—	\$17.2	(\$24.5)	\$—	\$—
Derivatives designated as hedging instruments	—	—	—	—	(17.2)	24.5	—	—
Total (Gain) Loss Recognized in Income	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—

The table below summarizes the location and amounts recognized in income related to our derivatives not designated as hedging instruments by contract type:

	Three Months Ended 31 March			
	Other Income (Expense), Net		Other Non-Operating Income (Expense), Net	
	2023	2022	2023	2022
The Effects of Derivatives Not Designated as Hedging Instruments:				
Forward Exchange Contracts	\$0.7	\$0.3	(\$1.1)	(\$0.7)
Other	—	—	0.8	0.1
Total (Gain) Loss Recognized in Income	\$0.7	\$0.3	(\$0.3)	(\$0.6)

	Six Months Ended 31 March			
	Other Income (Expense), Net		Other Non-Operating Income (Expense), Net	
	2023	2022	2023	2022
The Effects of Derivatives Not Designated as Hedging Instruments:				
Forward Exchange Contracts	\$1.3	\$1.4	(\$2.7)	(\$1.3)
Other	—	—	1.9	0.2
Total (Gain) Loss Recognized in Income	\$1.3	\$1.4	(\$0.8)	(\$1.1)

The amount of unrealized gains and losses related to cash flow hedges as of 31 March 2023 that are expected to be reclassified to earnings in the next twelve months is not material.

The cash flows related to derivative contracts are generally reported in the operating activities section of the consolidated statements of cash flows.

Credit Risk-Related Contingent Features

Certain derivative instruments are executed under agreements that require us to maintain a minimum credit rating with both Standard & Poor's and Moody's. If our credit rating falls below this threshold, the counterparty to the derivative instruments has the right to request full collateralization on the derivatives' net liability position. The net liability position of derivatives with credit risk-related contingent features was \$111.5 and \$114.8 as of 31 March 2023 and 30 September 2022, respectively. Because our current credit rating is above the various pre-established thresholds, no collateral has been posted on these liability positions.

Counterparty Credit Risk Management

We execute financial derivative transactions with counterparties that are highly rated financial institutions, all of which are investment grade at this time. Some of our underlying derivative agreements give us the right to require the institution to post collateral if its credit rating falls below the pre-established thresholds with Standard & Poor's or Moody's. The collateral that the counterparties would be required to post was \$37.3 and \$62.8 as of 31 March 2023 and 30 September 2022, respectively. No financial institution is required to post collateral at this time as all have credit ratings at or above threshold.

10. FAIR VALUE MEASUREMENTS

Fair value is defined as an exit price, or the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value into three broad levels as follows:

Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — Inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the asset or liability.

Level 3 — Inputs that are unobservable for the asset or liability based on our own assumptions about the assumptions market participants would use in pricing the asset or liability.

The methods and assumptions used to measure the fair value of financial instruments are as follows:

Short-term Investments

Short-term investments primarily include time deposits with original maturities greater than three months and less than one year. We estimated the fair value of our short-term investments, which approximates carrying value as of the balance sheet date, using Level 2 inputs within the fair value hierarchy. Level 2 measurements were based on current interest rates for similar investments with comparable credit risk and time to maturity.

Derivatives

The fair value of our interest rate management contracts and forward exchange contracts are quantified using the income approach and are based on estimates using standard pricing models. These models consider the value of future cash flows as of the balance sheet date, discounted to a present value using discount factors that match both the time to maturity and currency of the underlying instruments. These standard pricing models utilize inputs that are derived from or corroborated by observable market data such as interest rate yield curves as well as currency spot and forward rates; therefore, the fair value of our derivatives is classified as a Level 2 measurement. On an ongoing basis, we randomly test a subset of our valuations against valuations received from the transaction's counterparty to validate the accuracy of our standard pricing models. Counterparties to these derivative contracts are highly rated financial institutions.

Refer to Note 9, *Financial Instruments*, for a description of derivative instruments, including details related to the balance sheet line classifications.

Long-term Debt, Including Related Party

The fair value of our debt is based on estimates using standard pricing models that consider the value of future cash flows as of the balance sheet date, discounted to a present value using discount factors that match both the time to maturity and currency of the underlying instruments. These standard valuation models utilize observable market data such as interest rate yield curves and currency spot rates; therefore, the fair value of our debt is classified as a Level 2 measurement. We generally perform the computation of the fair value of these instruments.

The carrying values and fair values of financial instruments were as follows:

	31 March 2023		30 September 2022	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets				
Derivatives				
Forward exchange contracts	\$110.2	\$110.2	\$138.6	\$138.6
Interest rate management contracts	15.6	15.6	50.5	50.5
Liabilities				
Derivatives				
Forward exchange contracts	\$84.8	\$84.8	\$275.3	\$275.3
Interest rate management contracts	85.0	85.0	91.2	91.2
Long-term debt, including current portion and related party	9,133.9	8,409.1	7,634.1	6,721.2

The carrying amounts reported on the consolidated balance sheets for cash and cash items, short-term investments, trade receivables, payables and accrued liabilities, accrued income taxes, and short-term borrowings approximate fair value due to the short-term nature of these instruments. Accordingly, these items have been excluded from the above table.

The table below summarizes assets and liabilities on the consolidated balance sheets that are measured at fair value on a recurring basis:

	31 March 2023				30 September 2022			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Assets at Fair Value								
Derivatives								
Forward exchange contracts	\$110.2	\$—	\$110.2	\$—	\$138.6	\$—	\$138.6	\$—
Interest rate management contracts	15.6	—	15.6	—	50.5	—	50.5	—
Total Assets at Fair Value	\$125.8	\$—	\$125.8	\$—	\$189.1	\$—	\$189.1	\$—
Liabilities at Fair Value								
Derivatives								
Forward exchange contracts	\$84.8	\$—	\$84.8	\$—	\$275.3	\$—	\$275.3	\$—
Interest rate management contracts	85.0	—	85.0	—	91.2	—	91.2	—
Total Liabilities at Fair Value	\$169.8	\$—	\$169.8	\$—	\$366.5	\$—	\$366.5	\$—

11. DEBT

Green Financing

On 3 March 2023, we issued our inaugural multi-currency green bonds under our new Green Finance Framework, which was established to further align our financings with our sustainability strategy. The offering included U.S. Dollar- and Euro-denominated fixed-rate notes with aggregate principal amounts of \$600 and €700 million, respectively. The proceeds from these notes were reduced by deferred financing charges and discounts of approximately \$15 as of 31 March 2023, which will be amortized over the life of the underlying bonds.

We intend to use the net proceeds to finance or refinance, in whole or in part, existing or future projects that are expected to have environmental benefits, including those related to pollution prevention and control, renewable energy generation and procurement, and sustainable aviation fuel. Pending full allocation of the net proceeds to such eligible projects, we may temporarily invest the balance of the net proceeds in cash, cash equivalents, or short-term investments, or repay a portion of outstanding indebtedness in line with our treasury management policies.

The interest rate, maturity, and carrying amount as of 31 March 2023 for each of the notes issued under our Green Finance Framework are summarized in the table below:

	Fiscal Year Maturities	31 March 2023
Payable in U.S. Dollars		
Note 4.800%	2033	\$600.0
Payable in Euros		
Eurobonds 4.000%	2035	758.8
Total		\$1,358.8

Related Party Debt

Total debt owed to related parties was \$822.1 and \$781.0 as of 31 March 2023 and 30 September 2022, respectively, of which \$133.6 and \$129.0, respectively, was reflected within "Current portion of long-term debt" on our consolidated balance sheets. Our related party debt includes loans with joint venture partners, including Lu'An Clean Energy Company, as well as shareholder loans associated with the NEOM project. Refer to Note 3, *Variable Interest Entities*, for additional information.

Other

We have credit facilities available to certain of our foreign subsidiaries totaling \$1,324.4, of which \$823.5 was borrowed and outstanding as of 31 March 2023. The amount borrowed and outstanding as of 30 September 2022 was \$457.5. The increase from 30 September 2022 was driven by borrowings on a new variable-rate Saudi Riyal loan facility that matures in October 2026. The interest rate on the facility is based on the Saudi Arabian Interbank Offered Rate ("SAIBOR") plus an annual margin of 1.35%. We entered into this facility in October 2022 and utilized a portion of the proceeds to repay a variable-rate 4.10% Saudi Riyal Loan Facility of \$195.6, which was presented within long-term debt on our consolidated balance sheet as of 30 September 2022.

12. RETIREMENT BENEFITS

The components of net periodic cost (benefit) for our defined benefit pension plans for the three and six months ended 31 March 2023 and 2022 were as follows:

Three Months Ended 31 March	Pension Benefits					
	2023			2022		
	U.S.	Inter-national	Total	U.S.	Inter-national	Total
Service cost	\$2.8	\$3.0	\$5.8	\$4.6	\$5.6	\$10.2
Non-service cost (benefit):						
Interest cost	32.5	14.9	47.4	18.4	7.6	26.0
Expected return on plan assets	(31.8)	(12.2)	(44.0)	(42.1)	(17.6)	(59.7)
Prior service cost amortization	0.3	0.1	0.4	0.3	—	0.3
Actuarial loss amortization	15.0	3.0	18.0	16.6	3.8	20.4
Settlements	0.9	0.2	1.1	0.9	0.2	1.1
Other	—	0.2	0.2	—	0.2	0.2
Net Periodic Cost (Benefit)	\$19.7	\$9.2	\$28.9	(\$1.3)	(\$0.2)	(\$1.5)

Six Months Ended 31 March	Pension Benefits					
	2023			2022		
	U.S.	Inter-national	Total	U.S.	Inter-national	Total
Service cost	\$5.5	\$6.3	\$11.8	\$9.2	\$11.2	\$20.4
Non-service cost (benefit):						
Interest cost	65.0	29.3	94.3	36.8	15.2	52.0
Expected return on plan assets	(63.6)	(24.0)	(87.6)	(84.2)	(35.3)	(119.5)
Prior service cost amortization	0.6	0.1	0.7	0.6	—	0.6
Actuarial loss amortization	29.8	6.0	35.8	33.3	7.7	41.0
Settlements	0.9	0.2	1.1	1.8	0.2	2.0
Curtailments	—	(1.9)	(1.9)	—	—	—
Other	—	0.5	0.5	—	1.0	1.0
Net Periodic Cost (Benefit)	\$38.2	\$16.5	\$54.7	(\$2.5)	\$—	(\$2.5)

Our service costs are primarily included within "Cost of sales" and "Selling and administrative expense" on our consolidated income statements. The amount of service costs capitalized in the first six months of fiscal years 2023 and 2022 were not material. The non-service related impacts, including pension settlement losses and curtailment gains, are presented outside operating income within "Other non-operating income (expense), net."

For the six months ended 31 March 2023 and 2022, our cash contributions to funded pension plans and benefit payments under unfunded pension plans were \$15.4 and \$16.1, respectively. Total contributions for fiscal year 2023 are expected to be approximately \$25 to \$35. During fiscal year 2022, total contributions were \$44.7.

In December 2022, we amended an international defined benefit pension plan to move its participants to a defined contribution plan for future benefit accumulation. As a result of this amendment, we recognized a \$1.9 curtailment gain for the write-off of prior service credits and remeasured the projected benefit obligations of the plan. This resulted in a net decrease to our projected benefit obligation and accumulated other comprehensive loss of \$9.1 in the first quarter of fiscal year 2023. The impact of the remeasurement on fiscal year 2023 expense is not material.

During the three and six months ended 31 March 2023, we recognized actuarial gain amortization of \$0.4 and \$1.0, respectively, for our other postretirement benefits plan. During the three and six months ended 31 March 2022, we recognized actuarial gain amortization of \$0.4 and \$0.8, respectively, for our other postretirement benefits plan.

13. COMMITMENTS AND CONTINGENCIES

Litigation

We are involved in various legal proceedings, including commercial, competition, environmental, intellectual property, regulatory, product liability, and insurance matters. We do not currently believe there are any legal proceedings, individually or in the aggregate, that are reasonably possible to have a material impact on our financial condition, results of operations, or cash flows.

In September 2010, the Brazilian Administrative Council for Economic Defense ("CADE") issued a decision against our Brazilian subsidiary, Air Products Brasil Ltda., and several other Brazilian industrial gas companies for alleged anticompetitive activities. CADE imposed a civil fine of R\$179.2 million (approximately \$35 at 31 March 2023) on Air Products Brasil Ltda. This fine was based on a recommendation by a unit of the Brazilian Ministry of Justice, following an investigation beginning in 2003, which alleged violation of competition laws with respect to the sale of industrial and medical gases. The fines are based on a percentage of our total revenue in Brazil in 2003.

We have denied the allegations made by the authorities and filed an appeal in October 2010 with the Brazilian courts. On 6 May 2014, our appeal was granted and the fine against Air Products Brasil Ltda. was dismissed. CADE has appealed that ruling and the matter remains pending. We, with advice of our outside legal counsel, have assessed the status of this matter and have concluded that, although an adverse final judgment after exhausting all appeals is possible, such a judgment is not probable. As a result, no provision has been made in the consolidated financial statements. In the event of an adverse final judgment, we estimate the maximum possible loss to be the full amount of the fine of R\$179.2 million (approximately \$35 at 31 March 2023) plus interest accrued thereon until final disposition of the proceedings.

Additionally, in April 2023, we received a favorable ruling from a Texas court for disputed energy management services related to Winter Storm Uri, a severe winter weather storm that impacted the U.S. Gulf Coast in February 2021. The ruling is subject to appeal and had no impact on our consolidated financial statements for the three and six months ended 31 March 2023.

Environmental

In the normal course of business, we are involved in legal proceedings under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA," the federal Superfund law), Resource Conservation and Recovery Act ("RCRA"), and similar state and foreign environmental laws relating to the designation of certain sites for investigation or remediation. Presently, there are 28 sites on which a final settlement or remediation has not been achieved where we, usually along with others, have been designated a potentially responsible party by environmental authorities or are otherwise engaged in investigation or remediation, including cleanup activity at certain of our current and former manufacturing sites. We continually monitor these sites for which we have environmental exposure.

Accruals for environmental loss contingencies are recorded when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. The consolidated balance sheets at 31 March 2023 and 30 September 2022 included an accrual of \$68.9 and \$71.3, respectively, primarily as part of other noncurrent liabilities. The environmental liabilities will be paid over a period of up to 30 years. We estimate the exposure for environmental loss contingencies to range from \$68 to a reasonably possible upper exposure of \$82 as of 31 March 2023.

Actual costs to be incurred at identified sites in future periods may vary from the estimates, given inherent uncertainties in evaluating environmental exposures. Using reasonably possible alternative assumptions of the exposure level could result in an increase to the environmental accrual. Due to the inherent uncertainties related to environmental exposures, a significant increase to the reasonably possible upper exposure level could occur if a new site is designated, the scope of remediation is increased, a different remediation alternative is identified, or a significant increase in our proportionate share occurs. We do not expect that any sum we may have to pay in connection with environmental matters in excess of the amounts recorded or disclosed above would have a material adverse impact on our financial position or results of operations in any one year.

Pace

At 31 March 2023, \$37.7 of the environmental accrual was related to the Pace facility.

In 2006, we sold our Amines business, which included operations at Pace, Florida, and recognized a liability for retained environmental obligations associated with remediation activities at Pace. We are required by the Florida Department of Environmental Protection ("FDEP") and the United States Environmental Protection Agency ("USEPA") to continue our remediation efforts. We recognized a before-tax expense of \$42 in fiscal year 2006 in results from discontinued operations and recorded an environmental accrual of \$42 in continuing operations on the consolidated balance sheets.

During the second quarter of fiscal year 2020, we completed an updated cost review of the environmental remediation status at the Pace facility. The review was completed in conjunction with requirements to maintain financial assurance per the Consent Order issued by the FDEP discussed below. Based on our review, we expect ongoing activities to continue for 30 years. Additionally, we will require near-term spending to install new groundwater recovery wells and ancillary equipment, in addition to future capital to consider the extended time horizon for remediation at the site. As a result of these changes, we increased our environmental accrual for this site by \$19 in continuing operations on the consolidated balance sheets and recognized a before-tax expense of \$19 in results from discontinued operations in the second quarter of fiscal year 2020. There have been no significant changes to the estimated exposure range related to the Pace facility since the second quarter of fiscal year 2020.

We have implemented many of the remedial corrective measures at the Pace facility required under 1995 Consent Orders issued by the FDEP and the USEPA. Contaminated soils have been bioremediated, and the treated soils have been secured in a lined on-site corrective action management unit. Several groundwater recovery systems have been installed to contain and remove contamination from groundwater. We completed an extensive assessment of the site to determine the efficacy of existing measures, what additional corrective measures may be needed, and whether newer remediation technologies that were not available in the 1990s might be suitable to more quickly and effectively remediate groundwater. Based on assessment results, we completed a focused feasibility study that has identified alternative approaches that may more effectively remove contaminants. We continue to review alternative remedial approaches with the FDEP and have completed additional field work during 2021 to support the design of an improved groundwater recovery network with the objective of targeting areas of higher contaminant concentration and avoiding areas of high groundwater iron which has proven to be a significant operability issue for the project. The design of the optimized recovery system has been initiated in fiscal year 2023 with construction to begin thereafter. In the first quarter of 2015, we entered into a new Consent Order with the FDEP requiring us to continue our remediation efforts at the Pace facility, along with the completion of a cost review every 5 years.

Piedmont

At 31 March 2023, \$6.9 of the environmental accrual was related to the Piedmont site.

On 30 June 2008, we sold our Elkton, Maryland, and Piedmont, South Carolina, production facilities and the related North American atmospheric emulsions and global pressure sensitive adhesives businesses. In connection with the sale, we recognized a liability for retained environmental obligations associated with remediation activities at the Piedmont site. This site is under active remediation for contamination caused by an insolvent prior owner.

We are required by the South Carolina Department of Health and Environmental Control ("SCDHEC") to address both contaminated soil and groundwater. Numerous areas of soil contamination have been addressed, and contaminated groundwater is being recovered and treated. The SCDHEC issued its final approval to the site-wide feasibility study on 13 June 2017 and the Record of Decision for the site on 27 June 2018, after which we signed a Consent Agreement Amendment memorializing our obligations to complete the cleanup of the site. Remediation has started in accordance with the design, which includes in-situ chemical oxidation treatment, as well as soil vapor extraction to remove volatile organic compounds from the unsaturated soils beneath the impacted areas of the plant. We estimate that source area remediation and groundwater recovery and treatment will continue through 2029. Thereafter, we expect this site to go into a state of monitored natural attenuation through 2047.

We recognized a before-tax expense of \$24 in 2008 as a component of income from discontinued operations and recorded an environmental liability of \$24 in continuing operations on the consolidated balance sheets. There have been no significant changes to the estimated exposure.

Pasadena

At 31 March 2023, \$10.7 of the environmental accrual was related to the Pasadena site.

During the fourth quarter of 2012, management committed to permanently shutting down our polyurethane intermediates ("PUI") production facility in Pasadena, Texas. In shutting down and dismantling the facility, we have undertaken certain obligations related to soil and groundwater contaminants. We have been pumping and treating groundwater to control off-site contaminant migration in compliance with regulatory requirements and under the approval of the Texas Commission on Environmental Quality ("TCEQ"). We estimate that the pump and treat system will continue to operate until 2042.

We continue to perform additional work to address other environmental obligations at the site. This additional work includes remediating, as required, impacted soils, investigating groundwater west of the former PUI facility, continuing post closure care for two closed RCRA surface impoundment units, and maintaining engineering controls. Additionally, we have conducted an interim corrective action to treat impacted soils as recommended in the TCEQ 2019 Annual Report. In 2012, we estimated the total exposure at this site to be \$13. There have been no significant changes to the estimated exposure.

14. SHARE-BASED COMPENSATION

Our outstanding share-based compensation programs include deferred stock units and stock options. During the six months ended 31 March 2023, we granted market-based and time-based deferred stock units. Under all programs, the terms of the awards are fixed at the grant date. We issue shares from treasury stock upon the payout of deferred stock units and the exercise of stock options. As of 31 March 2023, there were 1.2 million shares available for future grant under our Long-Term Incentive Plan ("LTIP").

Share-based compensation cost recognized on the consolidated income statements is summarized below:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Before-tax share-based compensation cost	\$15.5	\$10.5	\$32.4	\$27.3
Income tax benefit	(3.9)	(2.6)	(7.9)	(6.7)
After-tax share-based compensation cost	\$11.6	\$7.9	\$24.5	\$20.6

Before-tax share-based compensation cost is primarily included in "Selling and administrative expense" on our consolidated income statements. The amount of share-based compensation cost capitalized in the first six months of fiscal years 2023 and 2022 was not material.

Deferred Stock Units

During the six months ended 31 March 2023, we granted 85,612 market-based deferred stock units. The market-based deferred stock units are earned over the performance period beginning 1 October 2022 and ending 30 September 2025, conditioned on the level of our total shareholder return in relation to a defined peer group over the three-year performance period.

The market-based deferred stock units had an estimated grant-date fair value of \$502.03 per unit, which was estimated using a Monte Carlo simulation model. The model utilizes multiple input variables that determine the probability of satisfying the market condition stipulated in the grant and calculates the fair value of the awards. We generally expense the grant-date fair value of these awards on a straight-line basis over the vesting period. The calculation of the fair value of market-based deferred stock units used the following assumptions:

Expected volatility	32.5 %
Risk-free interest rate	4.0 %
Expected dividend yield	2.4 %

In addition, during the six months ended 31 March 2023, we granted 113,134 time-based deferred stock units at a weighted average grant-date fair value of \$309.75.

15. ACCUMULATED OTHER COMPREHENSIVE LOSS

The tables below summarize changes in accumulated other comprehensive loss ("AOCL"), net of tax, attributable to Air Products for the three and six months ended 31 March 2023:

	Derivatives qualifying as hedges	Foreign currency translation adjustments	Pension and postretirement benefits	Total
Balance at 31 December 2022	(\$19.0)	(\$1,576.0)	(\$623.3)	(\$2,218.3)
Other comprehensive (loss) income before reclassifications	(14.6)	51.0	—	36.4
Amounts reclassified from AOCL	5.8	(0.3)	14.4	19.9
Net current period other comprehensive (loss) income	(8.8)	50.7	14.4	56.3
Amount attributable to noncontrolling interests	(1.3)	2.6	—	1.3
Balance at 31 March 2023	(\$26.5)	(\$1,527.9)	(\$608.9)	(\$2,163.3)

	Derivatives qualifying as hedges	Foreign currency translation adjustments	Pension and postretirement benefits	Total
Balance at 30 September 2022	(\$71.9)	(\$2,072.4)	(\$641.8)	(\$2,786.1)
Other comprehensive income before reclassifications	106.4	560.6	6.7	673.7
Amounts reclassified from AOCL	(62.9)	(0.3)	26.3	(36.9)
Net current period other comprehensive income	43.5	560.3	33.0	636.8
Amount attributable to noncontrolling interests	(1.9)	15.8	0.1	14.0
Balance at 31 March 2023	(\$26.5)	(\$1,527.9)	(\$608.9)	(\$2,163.3)

The table below summarizes the reclassifications out of AOCL and the affected line item on the consolidated income statements:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Loss (Gain) on Cash Flow Hedges, net of tax				
Sales	\$0.1	\$0.2	\$0.1	\$0.5
Cost of sales	1.8	0.3	2.8	0.2
Interest expense	0.7	0.9	1.7	1.8
Other non-operating income (expense), net	3.2	24.6	(67.5)	42.2
Total Loss (Gain) on Cash Flow Hedges, net of tax	\$5.8	\$26.0	(\$62.9)	\$44.7
Currency Translation Adjustment				
Business and asset actions	(\$0.3)	\$—	(\$0.3)	\$—
Pension and Postretirement Benefits, net of tax ^(A)	\$14.4	\$15.9	\$26.3	\$31.9

^(A) The components of net periodic benefit cost reclassified out of AOCL include items such as prior service cost amortization, actuarial loss amortization, settlements, and curtailments and are included in "Other non-operating income (expense), net" on the consolidated income statements. Refer to Note 12, *Retirement Benefits*, for additional information.

16. EARNINGS PER SHARE

The table below details the computation of basic and diluted earnings per share ("EPS"):

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Numerator				
Net income attributable to Air Products	\$439.8	\$530.5	\$1,012.0	\$1,090.9
Denominator (in millions)				
Weighted average common shares — Basic	222.3	222.0	222.3	222.0
Effect of dilutive securities				
Employee stock option and other award plans	0.4	0.5	0.4	0.5
Weighted average common shares — Diluted	222.7	222.5	222.7	222.5
Per Share Data (U.S. Dollars per share)				
Basic EPS attributable to Air Products	\$1.98	\$2.39	\$4.55	\$4.91
Diluted EPS attributable to Air Products	\$1.97	\$2.38	\$4.54	\$4.90

For the three and six months ended 31 March 2023 and 2022, there were no antidilutive outstanding share-based awards.

17. INCOME TAXES

Effective Tax Rate

Our effective tax rate was 21.2% and 19.9% for the three and six months ended 31 March 2023, respectively, and 18.6% and 17.8% for the three and six months ended 31 March 2022, respectively.

During the second quarter of 2023, we recognized a charge of \$185.6 (\$153.7 attributable to Air Products after tax) related to various business and asset actions. Refer to Note 4, *Business and Asset Actions*, for additional information. This charge included certain losses for which we could not recognize an income tax benefit. Therefore, we recorded a valuation allowance of \$31.7 against deferred tax assets resulting from the charge. Partially offsetting the valuation allowance cost was a \$15.9 income tax benefit from a tax election related to a non-U.S. subsidiary.

Cash Paid for Taxes (Net of Cash Refunds)

Income tax payments, net of refunds, were \$327.0 and \$236.9 for the six months ended 31 March 2023 and 2022, respectively.

18. SUPPLEMENTAL INFORMATION

Related Party Transactions

We have related party sales to some of our equity affiliates and joint venture partners as well as other income primarily from fees charged for use of Air Products' patents and technology. Sales to and other income from related parties totaled approximately \$105 and \$185 for the three and six months ended 31 March 2023, respectively, and approximately \$60 and \$125 for the three and six months ended 31 March 2022, respectively. Sales agreements with related parties include terms that are consistent with those that we believe would have been negotiated at an arm's length with an independent party. As of 31 March 2023 and 30 September 2022, our consolidated balance sheets included related party trade receivables of approximately \$170 and \$55, respectively.

Refer to Note 11, *Debt*, for information concerning debt owed to related parties.

Changes in Estimates

Changes in estimates on projects accounted for under the cost incurred input method are recognized as a cumulative adjustment for the inception-to-date effect of such change. We recorded changes to project cost estimates that unfavorably impacted operating income by approximately \$35 and \$60 for the three and six months ended 31 March 2023. The impact of changes in estimates for the first half of fiscal year 2022 was not material.

Lessee Accounting

During the six months ended 31 March 2023, we recorded noncash right-of-use asset additions of approximately \$79, primarily for operating leases that had not yet commenced as of 30 September 2022.

19. BUSINESS SEGMENT INFORMATION

Our reportable segments reflect the manner in which our chief operating decision maker assesses performance and allocates resources. Our reportable segments are as follows:

- Americas;
- Asia;
- Europe;
- Middle East and India; and
- Corporate and other

Except for the Corporate and other segment, each reportable segment meets the definition of an operating segment and does not include the aggregation of multiple operating segments. Our Corporate and other segment includes the aggregation of three operating segments that meet the aggregation criteria under GAAP.

Summary by Business Segment

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total
Three Months Ended 31 March 2023						
Sales	\$1,373.1	\$813.9	\$752.9	\$44.8	\$215.4	\$3,200.1 ^(A)
Operating income (loss)	324.2	233.0	173.2	1.3	(86.3)	645.4 ^(B)
Depreciation and amortization	161.7	110.0	48.3	6.6	13.0	339.6
Equity affiliates' income	28.1	7.3	29.5	98.9	2.1	165.9
Three Months Ended 31 March 2022						
Sales	\$1,186.6	\$751.2	\$738.6	\$28.9	\$239.8	\$2,945.1 ^(A)
Operating income (loss)	275.5	203.6	116.4	4.8	(38.4)	561.9 ^(B)
Depreciation and amortization	153.7	111.8	50.3	6.9	13.2	335.9
Equity affiliates' income	20.1	6.2	23.3	71.1	0.1	120.8

^(A) Sales relate to external customers only. All intersegment sales are eliminated in consolidation.

^(B) Refer to the *Reconciliation to Consolidated Results* section below.

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total
Six Months Ended 31 March 2023						
Sales	\$2,757.3	\$1,591.7	\$1,544.8	\$86.2	\$394.8	\$6,374.8 ^(A)
Operating income (loss)	667.2	468.9	319.0	8.0	(165.7)	1,297.4 ^(B)
Depreciation and amortization	317.7	211.9	92.6	13.2	25.7	661.1
Equity affiliates' income	44.5	14.7	47.2	163.0	6.5	275.9
Six Months Ended 31 March 2022						
Sales	\$2,410.7	\$1,531.6	\$1,482.8	\$52.6	\$461.6	\$5,939.3 ^(A)
Operating income (loss)	542.7	424.7	215.6	9.6	(107.7)	1,084.9 ^(B)
Depreciation and amortization	309.0	222.6	100.1	13.0	23.5	668.2
Equity affiliates' income	54.3	12.8	37.2	163.4	0.9	268.6
Total Assets						
31 March 2023	\$8,859.0	\$7,422.7	\$3,914.4	\$4,451.8	\$4,787.5	\$29,435.4
30 September 2022	8,237.7	6,968.7	3,645.1	2,980.7	5,360.4	27,192.6

^(A) Sales relate to external customers only. All intersegment sales are eliminated in consolidation.

^(B) Refer to the *Reconciliation to Consolidated Results* section below.

Reconciliation to Consolidated Results

The table below reconciles total operating income disclosed in the tables above to consolidated operating income as reflected on our consolidated income statements:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Operating Income				
Total	\$645.4	\$561.9	\$1,297.4	\$1,084.9
Business and asset actions	(185.6)	—	(185.6)	—
Consolidated Operating Income	\$459.8	\$561.9	\$1,111.8	\$1,084.9

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Second Quarter 2023 in Summary	36
Second Quarter 2023 Results of Operations	38
First Six Months 2023 in Summary	43
First Six Months 2023 Results of Operations	45
Reconciliations of Non-GAAP Financial Measures	50
Liquidity and Capital Resources	57
Pension Benefits	60
Critical Accounting Policies and Estimates	61

As used in the discussion that follows, unless the context indicates otherwise, the terms "we," "our," "us," the "Company," "Air Products," or "registrant" include controlled subsidiaries and affiliates of Air Products. This discussion should be read in conjunction with the interim consolidated financial statements and the accompanying notes contained in this Quarterly Report on Form 10-Q. Unless otherwise stated, financial information is presented in millions of U.S. Dollars, except for per share data. Except for net income, which includes the results of discontinued operations, when applicable, financial information is presented on a continuing operations basis.

Comparisons of our results of operations and liquidity and capital resources are for the second quarter and first six months of fiscal year 2023 versus ("vs.") the second quarter and first six months of fiscal year 2022, respectively. The disclosures provided in this Quarterly Report on Form 10-Q are complementary to those made in our Annual Report on Form 10-K for the fiscal year ended 30 September 2022 (the "[2022 Form 10-K](#)"), which was filed with the SEC on 22 November 2022.

The financial measures discussed below are presented in accordance with U.S. generally accepted accounting principles ("GAAP"), except as noted. We present certain financial measures on an "adjusted" or "non-GAAP" basis because we believe such measures, when viewed together with financial results computed in accordance with GAAP, provide a more complete understanding of the factors and trends affecting our historical financial performance. For each non-GAAP financial measure, including adjusted diluted earnings per share ("EPS"), adjusted EBITDA, adjusted EBITDA margin, adjusted effective tax rate, and capital expenditures, we present a reconciliation to the most directly comparable financial measure calculated in accordance with GAAP. These reconciliations and explanations regarding the use of non-GAAP measures are presented under the "Reconciliations of Non-GAAP Financial Measures" section beginning on page [50](#).

For information concerning activity with our related parties, refer to Note 18, *Supplemental Information*, to the consolidated financial statements.

About Air Products

Air Products and Chemicals, Inc., a Delaware corporation originally founded in 1940, has built a reputation for its innovative culture, operational excellence, and commitment to safety and the environment. Our passionate, talented, and committed employees are from diverse backgrounds and together are driven by our higher purpose to create innovative solutions that benefit the environment, enhance sustainability, and address the challenges facing customers, communities, and the world. As of 30 September 2022, we had approximately 21,900 employees, of which over 90% were working full-time and 75% were located outside the United States. For information on our product, service, and solution offerings, refer to our [2022 Form 10-K](#).

We manage our operations, assess performance, and report earnings under five reportable segments: Americas, Asia, Europe, Middle East and India, and Corporate and other. This Management's Discussion and Analysis discusses our results based on these operations.

SECOND QUARTER 2023 VS. SECOND QUARTER 2022

SECOND QUARTER 2023 IN SUMMARY

- Sales of \$3,200.1 increased 9%, or \$255.0, as higher pricing of 8% and higher volumes of 6% were partially offset by an unfavorable impact from currency of 4% and lower energy cost pass-through to customers of 1%.
- Operating income of \$459.8 decreased 18%, or \$102.1, as our pricing actions and higher volumes were more than offset by a charge for business and asset actions related to our withdrawal from projects in Indonesia and Ukraine of \$185.6, higher other costs, and unfavorable currency. Operating margin of 14.4% decreased 470 basis points ("bp") as the unfavorable costs were only partially offset by the impact of our pricing actions.
- Equity affiliates' income of \$165.9 increased 37%, or \$45.1, primarily due to a higher contribution from the Jazan Integrated Gasification and Power Company ("JIGPC") joint venture, which completed the second phase of the Jazan gasification and power project in January 2023.
- Net income of \$449.9 decreased 16%, or \$86.9, primarily due to the charge for business and asset actions and higher other costs, partially offset by the impact of our pricing actions and higher volumes as well as higher equity affiliates' income from JIGPC. Net income margin of 14.1% decreased 410 bp.
- Adjusted EBITDA of \$1,150.9 increased 13%, or \$132.3, and adjusted EBITDA margin of 36.0% increased 140 bp.
- Diluted EPS of \$1.97 decreased 17%, or \$0.41 per share, and included a \$0.69 unfavorable impact from business and asset actions as well as an unfavorable \$0.08 impact from non-service related pension costs. Adjusted diluted EPS of \$2.74 increased 17%, or \$0.40 per share. A summary table of changes in diluted EPS is presented below.
- In January 2023, the Board of Directors declared a quarterly dividend of \$1.75 per share, representing an 8% increase, or \$0.13 per share, from the prior quarterly dividend of \$1.62 per share. This is the 41st consecutive year that we have increased our quarterly dividend.

Changes in Diluted EPS Attributable to Air Products

The per share impacts presented in the tables below were calculated independently and may not sum to the total change in diluted EPS due to rounding.

	Three Months Ended 31 March		Increase (Decrease)
	2023	2022	
Diluted EPS	\$1.97	\$2.38	(\$0.41)
Operating Impacts			
Underlying business			
Volume			\$0.12
Price, net of variable costs			0.72
Other costs			(0.44)
Currency			(0.09)
Business and asset actions			(0.69)
Total operating impacts			(\$0.38)
Other Impacts			
Equity affiliates' income			\$0.16
Interest expense			(0.03)
Other non-operating income/expense, net, excluding discrete item below			0.04
Non-service pension cost/benefit, net			(0.12)
Change in effective tax rate			(0.04)
Noncontrolling interests			(0.04)
Total other impacts			(\$0.03)
Total change in diluted EPS			(\$0.41)
% Change from prior year			(17 %)

The table below summarizes the diluted per share impact of our non-GAAP adjustments for the second quarter of fiscal years 2023 and 2022:

	Three Months Ended 31 March		Increase (Decrease)
	2023	2022	
Diluted EPS	\$1.97	\$2.38	(\$0.41)
Business and asset actions	0.69	—	0.69
Non-service pension cost (benefit), net	0.08	(0.04)	0.12
Adjusted Diluted EPS	\$2.74	\$2.34	\$0.40
% Change from prior year			17 %

SECOND QUARTER 2023 RESULTS OF OPERATIONS

Discussion of Second Quarter Consolidated Results

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
GAAP Measures				
Sales	\$3,200.1	\$2,945.1	\$255.0	9 %
Operating income	459.8	561.9	(102.1)	(18 %)
Operating margin	14.4 %	19.1 %		(470) bp
Equity affiliates' income	\$165.9	\$120.8	\$45.1	37 %
Net income	449.9	536.8	(86.9)	(16 %)
Net income margin	14.1 %	18.2 %		(410) bp
Non-GAAP Measures				
Adjusted EBITDA	\$1,150.9	\$1,018.6	\$132.3	13 %
Adjusted EBITDA margin	36.0 %	34.6 %		140 bp

Sales

The table below summarizes the major factors that impacted consolidated sales for the periods presented:

Volume	6 %
Price	8 %
Energy cost pass-through to customers	(1 %)
Currency	(4 %)
Total consolidated sales change	9 %

Sales of \$3,200.1 increased 9%, or \$255.0, due to higher pricing of 8% and higher volumes of 6%, partially offset by an unfavorable impact from currency of 4% and lower energy cost pass-through to customers of 1%. Pricing improved across each of our regional segments. The volume improvement was primarily attributable to our on-site businesses. Currency was unfavorable as the U.S. Dollar strengthened against most major currencies.

Cost of Sales and Gross Margin

Cost of sales of \$2,282.8 increased 6%, or \$131.2, due to higher costs associated with sales volumes of \$149 and unfavorable costs of \$102 driven by inflation, higher planned maintenance, power for our merchant business, and project development, partially offset by a favorable impact from currency of \$85 and lower energy cost pass-through to customers of \$35. Gross margin of 28.7% increased 180 bp from 26.9% in the prior year, primarily due to the positive impact of our pricing actions, partially offset by the unfavorable costs.

Selling and Administrative Expense

Selling and administrative expense of \$251.2 increased 11%, or \$24.2, primarily due to higher incentive compensation, additional costs to support growth, and inflation, partially offset by a favorable currency impact. Selling and administrative expense as a percentage of sales increased to 7.8% from 7.7% in the prior year.

Research and Development Expense

Research and development expense of \$27.2 increased 15%, or \$3.5. Research and development expense as a percentage of sales of 0.8% was flat versus the prior year.

Business and Asset Actions

During the second quarter of fiscal year 2023, we recognized a noncash charge of \$185.6 (\$153.7 attributable to Air Products after tax, or \$0.69 per share) to write off assets that were previously under construction in our Asia and Europe segments. The charge is reflected within "Business and asset actions" on our consolidated income statements and was not recorded in segment results. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information.

Other Income (Expense), Net

Other income of \$6.5 decreased 66%, or \$12.6, primarily due to lower income from the sale of assets and an unfavorable foreign exchange impact.

Operating Income and Operating Margin

Operating income of \$459.8 decreased 18%, or \$102.1, as a charge of \$186 to write off assets previously under construction in our Asia and Europe segments, higher other costs of \$120, and an unfavorable currency impact of \$26 were partially offset by positive pricing, net of power and fuel costs, of \$197 and higher volumes of \$33. Higher costs were driven by inflation, incentive compensation, and planned maintenance as well as project development and other costs related to the execution of our growth strategy. Operating margin of 14.4% decreased 470 bp from 19.1% in the prior year, as the unfavorable costs were only partially offset by the impact of our pricing actions.

Equity Affiliates' Income

Equity affiliates' income of \$165.9 increased 37%, or \$45.1, primarily due to a higher contribution from the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project in January 2023, as well as higher income from affiliates in Mexico and Italy.

Interest Expense

	Three Months Ended 31 March	
	2023	2022
Interest incurred	\$64.1	\$40.4
Less: Capitalized interest	23.2	8.1
Interest expense	\$40.9	\$32.3

Interest incurred increased 59%, or \$23.7, driven by a higher average interest rate on variable-rate instruments in our debt portfolio. Capitalized interest increased \$15.1 due to a higher carrying value of projects under construction.

We expect interest expense to be higher in future periods due to U.S. Dollar- and Euro-denominated fixed-rate notes issued in March 2023 under our new Green Finance Framework.

Other Non-Operating Income (Expense), Net

Other non-operating expense was \$13.9 versus income of \$9.1 in the prior year. The decrease of \$23.0 was primarily attributable to higher non-service pension costs, which were driven by higher interest cost and lower expected returns on plan assets for the U.S. salaried pension plan and the U.K. pension plan. This impact was partially offset by higher interest income on cash and cash items due to higher interest rates.

Net Income and Net Income Margin

Net income of \$449.9 decreased 16%, or \$86.9, primarily due to higher costs, including a charge for business and asset actions as well as higher non-service pension costs, partially offset by higher pricing, net of power and fuel costs, and higher volumes as well as higher equity affiliates' income driven by JIGPC. Net income margin of 14.1% decreased 410 bp from 18.2% in the prior year.

Adjusted EBITDA and Adjusted EBITDA Margin

Adjusted EBITDA of \$1,150.9 increased 13%, or \$132.3, primarily due to higher pricing, net of power and fuel costs, and higher volumes as well as higher equity affiliates' income driven by JIGPC, partially offset by higher costs. Adjusted EBITDA margin of 36.0% increased 140 bp from 34.6% in the prior year.

Effective Tax Rate

The effective tax rate equals the income tax provision divided by income before taxes. Equity affiliates' income is primarily included net of income taxes within "Income Before Taxes" on our consolidated income statements.

Our effective tax rate was 21.2% and 18.6% for the three months ended 31 March 2023 and 2022, respectively.

During the second quarter of fiscal year 2023, we recognized a charge of \$185.6 (\$153.7 attributable to Air Products after tax) related to various business and asset actions. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information. The charge included certain losses for which we could not recognize an income tax benefit and were subject to a valuation allowance of \$31.7. Partially offsetting the valuation allowance cost was a \$15.9 income tax benefit from a tax election related to a non-U.S. subsidiary.

Our current quarter effective tax rate was higher primarily due to the discrete tax impact of our business and asset actions. In addition, certain recurring income tax benefits had a lower impact on our effective tax rate in the current year as they did not increase in proportion to the increase to our annual forecast of income before taxes, which includes higher equity affiliates' income, the expiration of an income tax incentive, and earning a greater share of income in jurisdictions with higher tax rates in fiscal year 2023.

Our adjusted effective tax rate, which does not include the impact of our business and asset actions discussed above, was 19.7% and 18.5% for the three months ended 31 March 2023 and 2022, respectively.

Discussion of Second Quarter Results by Business Segment

Americas

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$1,373.1	\$1,186.6	\$186.5	16 %
Operating income	324.2	275.5	48.7	18 %
Operating margin	23.6 %	23.2 %		40 bp
Equity affiliates' income	\$28.1	\$20.1	\$8.0	40 %
Adjusted EBITDA	514.0	449.3	64.7	14 %
Adjusted EBITDA margin	37.4 %	37.9 %		(50) bp

The table below summarizes the major factors that impacted sales in the Americas segment for the periods presented:

Volume	9 %
Price	8 %
Energy cost pass-through to customers	— %
Currency	(1 %)
Total Americas sales change	16 %

Sales of \$1,373.1 increased 16%, or \$186.5, due to higher volumes of 9% and higher pricing of 8%, partially offset by an unfavorable currency impact of 1%. The volume improvement was primarily attributable to our on-site business due to better demand for hydrogen. Additionally, we successfully recovered higher costs in our merchant business through continued focus on pricing actions. Energy cost pass-through to customers was flat versus the prior year.

Operating income of \$324.2 increased 18%, or \$48.7, primarily from positive pricing, net of power and fuel costs, of \$85 and favorable volumes of \$15, partially offset by higher costs of \$50. Higher costs were driven by higher incentive compensation, inflation, planned maintenance, and distribution and sourcing costs. Operating margin of 23.6% increased 40 bp from 23.2% in the prior year primarily due to the pricing improvement, which was partially offset by the impact of higher costs.

Equity affiliates' income of \$28.1 increased 40%, or \$8.0, driven by our Mexico affiliate.

Asia

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$813.9	\$751.2	\$62.7	8 %
Operating income	233.0	203.6	29.4	14 %
Operating margin	28.6 %	27.1 %		150 bp
Equity affiliates' income	\$7.3	\$6.2	\$1.1	18 %
Adjusted EBITDA	350.3	321.6	28.7	9 %
Adjusted EBITDA margin	43.0 %	42.8 %		20 bp

The table below summarizes the major factors that impacted sales in the Asia segment for the periods presented:

Volume	7 %
Price	5 %
Energy cost pass-through to customers	3 %
Currency	(7 %)
Total Asia sales change	8 %

Sales of \$813.9 increased 8%, or \$62.7, due to higher volumes of 7%, higher pricing of 5%, and higher energy cost pass-through to customers of 3%, partially offset by an unfavorable impact from currency of 7%. The volume improvement was primarily driven by our on-site business, including new plants brought onstream. Higher power costs across the region were recovered by our merchant pricing actions. In our on-site business, the higher power costs increased contractual energy cost pass-through to our customers. The unfavorable currency impact was primarily attributable to the strengthening of the U.S. Dollar against the Chinese Renminbi and the South Korean Won.

Operating income of \$233.0 increased 14%, or \$29.4, due to positive pricing, net of power and fuel costs, of \$31 and higher volumes of \$30, partially offset by higher costs of \$17 driven by project development, higher planned maintenance, and inflation as well as an unfavorable currency impact of \$15. Operating margin of 28.6% increased 150 bp from 27.1% in the prior year due to positive pricing and the volume improvement, partially offset by higher costs.

Equity affiliates' income of \$7.3 increased 18%, or \$1.1.

Europe

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$752.9	\$738.6	\$14.3	2 %
Operating income	173.2	116.4	56.8	49 %
Operating margin	23.0 %	15.8 %		720 bp
Equity affiliates' income	\$29.5	\$23.3	\$6.2	27 %
Adjusted EBITDA	251.0	190.0	61.0	32 %
Adjusted EBITDA margin	33.3 %	25.7 %		760 bp

The table below summarizes the major factors that impacted sales in the Europe segment for the periods presented:

Volume	3 %
Price	11 %
Energy cost pass-through to customers	(6 %)
Currency	(6 %)
Total Europe sales change	2 %

Sales of \$752.9 increased 2%, or \$14.3, due to higher pricing of 11% and higher volumes of 3%, partially offset by lower energy cost pass-through to customers of 6% and an unfavorable impact from currency of 6%. We successfully recovered higher costs in our merchant business through continued focus on pricing actions. The volume improvement was primarily attributable to our on-site business due to recovery in hydrogen. Energy cost pass-through to our on-site customers was lower, reflecting lower natural gas prices across the region. Additionally, currency negatively impacted sales due to the strengthening of the U.S. Dollar against the Euro and the British Pound Sterling.

Operating income of \$173.2 increased 49%, or \$56.8, as higher pricing, net of power and fuel costs, of \$78 and higher volumes of \$5 were partially offset by higher costs of \$19 driven by inflation and higher planned maintenance as well as an unfavorable currency impact of \$7. Operating margin of 23.0% increased 720 bp from 15.8% in the prior year primarily due to the pricing improvement, partially offset by the impact of higher costs.

Equity affiliates' income of \$29.5 increased 27%, or \$6.2, driven by an affiliate in Italy.

Middle East and India

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%
Sales	\$44.8	\$28.9	\$15.9	55 %
Operating income	1.3	4.8	(3.5)	(73 %)
Equity affiliates' income	98.9	71.1	27.8	39 %
Adjusted EBITDA	106.8	82.8	24.0	29 %

Sales of \$44.8 increased 55%, or \$15.9, due to higher merchant volumes. Despite higher sales, operating income of \$1.3 decreased 73%, or \$3.5, primarily due to higher costs for planned maintenance. Equity affiliates' income of \$98.9 increased 39%, or \$27.8, due to a higher contribution from the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project in January 2023.

Corporate and other

	Three Months Ended 31 March		Changes	
	2023	2022	\$	%
Sales	\$215.4	\$239.8	(\$24.4)	(10 %)
Operating loss	(86.3)	(38.4)	(47.9)	(125 %)
Adjusted EBITDA	(71.2)	(25.1)	(46.1)	(184 %)

Sales of \$215.4 decreased 10%, or \$24.4, and operating loss of \$86.3 increased 125%, or \$47.9, primarily due to lower project activity in our sale of equipment business. Our Corporate and other segment also incurs costs to provide corporate support functions and global management activities that benefit all segments, which have increased in support of our growth strategy.

FIRST SIX MONTHS 2023 VS. FIRST SIX MONTHS 2022

FIRST SIX MONTHS 2023 IN SUMMARY

- Sales of \$6,374.8 increased 7%, or \$435.5, as higher pricing of 7%, higher volumes of 4%, and higher energy cost pass-through to customers of 1% were partially offset by an unfavorable impact from currency of 5%.
- Operating income of \$1,111.8 increased 2%, or \$26.9, as our pricing actions and higher volumes were partially offset by a charge for business and asset actions related to our withdrawal from projects in Indonesia and Ukraine of \$185.6, higher other costs, and unfavorable currency. Operating margin of 17.4% decreased 90 bp as the unfavorable costs were only partially offset by the impact of our pricing actions.
- Equity affiliates' income of \$275.9 increased 3%, or \$7.3, as a higher contribution from the JIGPC joint venture, which completed the second phase of the Jazan gasification and power project in January 2023, was largely offset by a prior year benefit associated with the sale of air separation units by the Jazan Gas Project Company joint venture.
- Net income of \$1,033.7 decreased 5%, or \$52.7, primarily due to the charge for business and asset actions and higher other costs, partially offset by the impact of our pricing actions and higher volumes. Net income margin of 16.2% decreased 210 bp.
- Adjusted EBITDA of \$2,234.4 increased 11%, or \$212.7, and adjusted EBITDA margin of 35.1% increased 110 bp.
- Diluted EPS of \$4.54 decreased 7%, or \$0.36 per share, and included a \$0.69 unfavorable impact from business and asset actions as well as an unfavorable \$0.14 impact from non-service related pension costs. Adjusted diluted EPS of \$5.38 increased 12%, or \$0.56 per share. A summary table of changes in diluted EPS is presented below.
- In January 2023, the Board of Directors declared a quarterly dividend of \$1.75 per share, representing an 8% increase, or \$0.13 per share, from the prior quarterly dividend of \$1.62 per share. This is the 41st consecutive year that we have increased our quarterly dividend.

Changes in Diluted EPS Attributable to Air Products

The per share impacts presented in the tables below were calculated independently and do not sum to the total change in diluted EPS due to rounding.

	Six Months Ended 31 March		Increase (Decrease)
	2023	2022	
Diluted EPS	\$4.54	\$4.90	(\$0.36)
Operating Impacts			
Underlying business			
Volume			\$0.15
Price, net of variable costs			1.44
Other costs			(0.56)
Currency			(0.24)
Business and asset actions			(0.69)
Total operating impacts			\$0.10
Other Impacts			
Equity affiliates' income			0.03
Interest expense			(0.07)
Other non-operating income/expense, net, excluding discrete item below			0.07
Non-service pension cost/benefit, net			(0.22)
Change in effective tax rate			(0.12)
Noncontrolling interests			(0.14)
Total other impacts			(\$0.45)
Total change in diluted EPS			(\$0.36)
% Change from prior year			(7 %)

Upon completion of the first phase of the Jazan gasification and power project in the first quarter of fiscal year 2022, we recognized a net benefit from the recognition of previously deferred profits, net of other project finalization costs, related to the Jazan Gas Project Company joint venture within "Equity affiliates' income." Our noncontrolling partner's share of the project finalization costs favorably impacted EPS within "Noncontrolling interests." Diluted earnings per share for the first six months of fiscal year 2022 reflects a total net benefit from this event of approximately \$0.20 per share.

The table below summarizes the diluted per share impact of our non-GAAP adjustments for the first six months of fiscal years 2023 and 2022:

	Six Months Ended 31 March		Increase (Decrease)
	2023	2022	
Diluted EPS	\$4.54	\$4.90	(\$0.36)
Business and asset actions	0.69	—	0.69
Non-service pension cost (benefit), net	0.14	(0.08)	0.22
Adjusted Diluted EPS	\$5.38	\$4.82	\$0.56
% Change from prior year			12 %

FIRST SIX MONTHS 2023 RESULTS OF OPERATIONS

Discussion of First Six Months Consolidated Results

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
GAAP Measures				
Sales	\$6,374.8	\$5,939.3	\$435.5	7 %
Operating income	1,111.8	1,084.9	26.9	2 %
Operating margin	17.4 %	18.3 %		(90) bp
Equity affiliates' income	\$275.9	\$268.6	\$7.3	3 %
Net income	1,033.7	1,086.4	(52.7)	(5 %)
Net income margin	16.2 %	18.3 %		(210) bp
Non-GAAP Measures				
Adjusted EBITDA	\$2,234.4	\$2,021.7	\$212.7	11 %
Adjusted EBITDA margin	35.1 %	34.0 %		110 bp

Sales

The table below summarizes the major factors that impacted consolidated sales for the periods presented:

Sales % Change from Prior Year

Volume	4 %
Price	7 %
Energy cost pass-through to customers	1 %
Currency	(5 %)
Total Consolidated Sales Change	7 %

Sales of \$6,374.8 increased 7%, or \$435.5, due to higher pricing of 7%, higher volumes of 4%, and higher energy cost pass-through to customers of 1%, partially offset by an unfavorable impact from currency of 5%. The pricing improvement was primarily attributable to our merchant businesses in the Americas and Europe segments. Higher volumes were driven by our on-site business and better demand for merchant products, partially offset by lower sale of equipment project activity. Currency was unfavorable as the U.S. Dollar strengthened against most major currencies.

Cost of Sales and Gross Margin

Cost of sales of \$4,555.1 increased 4%, or \$179.9, due to higher costs associated with sales volumes of \$203, unfavorable costs of \$159 driven by inflation, higher planned maintenance, and power for our merchant business, as well as higher energy cost pass-through to customers of \$40, partially offset by a favorable impact from currency of \$222. Gross margin of 28.5% increased 220 bp from 26.3% in the prior year, primarily due to the positive impact of our pricing actions, partially offset by the unfavorable costs.

Selling and Administrative Expense

Selling and administrative expense of \$485.6 increased 6%, or \$25.8, primarily due to higher incentive compensation, additional costs to support growth, and inflation, partially offset by a favorable currency impact. Selling and administrative expense as a percentage of sales decreased to 7.6% from 7.7% in the prior year.

Research and Development Expense

Research and development expense of \$51.6 increased 10%, or \$4.6. Research and development expense as a percentage of sales of 0.8% was flat versus the prior year.

Business and Asset Actions

During the second quarter of fiscal year 2023, we recognized a noncash charge of \$185.6 (\$153.7 attributable to Air Products after tax, or \$0.69 per share) to write off assets that were previously under construction in our Asia and Europe segments. The charge is reflected within "Business and asset actions" on our consolidated income statements and was not recorded in segment results. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information.

Other Income (Expense), Net

Other income of \$14.9 decreased 46%, or \$12.7, primarily due to lower income from the sale of assets and an unfavorable foreign exchange impact.

Operating Income and Operating Margin

Operating income of \$1,111.8 increased 2%, or \$26.9, as positive pricing, net of power and fuel costs, of \$388 and higher volumes of \$41 were partially offset by a charge of \$186 to write off assets previously under construction in our Asia and Europe segments, higher other costs of \$150, and an unfavorable currency impact of \$66. Higher other costs were driven by inflation, planned maintenance, and incentive compensation, as well as project development and other costs related to the execution of our growth strategy. Despite higher operating income, operating margin of 17.4% decreased 90 bp from 18.3% in the prior year, as the unfavorable costs were only partially offset by the impact of our pricing actions.

Equity Affiliates' Income

Equity affiliates' income of \$275.9 increased 3%, or \$7.3. A higher contribution from the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project in January 2023, was mostly offset by the prior year recognition of the remaining deferred profit associated with air separation units previously sold to Jazan Gas Project Company, net of other project finalization costs. Additionally, higher income from our affiliate in Italy was mostly offset by lower income from our affiliate in Mexico.

Interest Expense

	Six Months Ended 31 March	
	2023	2022
Interest incurred	\$120.4	\$81.4
Less: Capitalized interest	38.3	18.6
Interest expense	\$82.1	\$62.8

Interest incurred increased 48%, or \$39.0, driven by a higher average interest rate on variable-rate instruments in our debt portfolio. Capitalized interest increased \$19.7 due to a higher carrying value of projects under construction.

We expect interest expense to be higher in future periods due to U.S. Dollar- and Euro-denominated fixed-rate notes issued in March 2023 under our new Green Finance Framework.

Other Non-Operating Income (Expense), net

Other non-operating expense was \$14.5 versus income of \$31.7 in the prior year. The decrease of \$46.2 was primarily attributable to higher non-service pension costs, which were driven by higher interest cost and lower expected returns on plan assets for the U.S. salaried pension plan and the U.K. pension plan. This impact was partially offset by higher interest income on cash and cash items due to higher interest rates.

Net Income and Net Income Margin

Net income of \$1,033.7 decreased 5%, or \$52.7, primarily due to higher costs, including a charge for business and asset actions as well as higher non-service pension costs, partially offset by higher pricing, net of power and fuel costs, and higher volumes. Net income margin of 16.2% decreased 210 bp from 18.3% in the prior year.

Adjusted EBITDA and Adjusted EBITDA Margin

Adjusted EBITDA of \$2,234.4 increased 11%, or \$212.7, primarily due to higher pricing, net of power and fuel costs, and higher volumes, partially offset by higher costs. Adjusted EBITDA margin of 35.1% increased 110 bp from 34.0% in the prior year.

Effective Tax Rate

Our effective tax rate was 19.9% and 17.8% for the six months ended 31 March 2023 and 2022, respectively.

During the second quarter of fiscal year 2023, we recognized a charge of \$185.6 (\$153.7 attributable to Air Products after tax) related to various business and asset actions. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information. The charge included certain losses for which we could not recognize an income tax benefit and were subject to a valuation allowance of \$31.7. Partially offsetting the valuation allowance cost was a \$15.9 income tax benefit from a tax election related to a non-U.S. subsidiary.

Our effective tax rate for the current year was higher primarily due to lower excess tax benefits on share-based compensation and the discrete tax impact of our business and asset actions. In addition, certain recurring income tax benefits had a lower impact on our effective tax rate in the current year as they did not increase in proportion to the increase to our annual forecast of income before taxes, which includes higher equity affiliates' income, the expiration of an income tax incentive, and earning a greater share of income in jurisdictions with higher tax rates in fiscal year 2023.

Our adjusted effective tax rate, which does not include the impact of our business and asset actions discussed above, was 19.4% and 17.7% for the six months ended 31 March 2023 and 2022, respectively.

Discussion of First Six Months Results by Business Segment

Americas

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$2,757.3	\$2,410.7	\$346.6	14 %
Operating income	667.2	542.7	124.5	23 %
Operating margin	24.2 %	22.5 %		170 bp
Equity affiliates' income	\$44.5	\$54.3	(\$9.8)	(18 %)
Adjusted EBITDA	1,029.4	906.0	123.4	14 %
Adjusted EBITDA margin	37.3 %	37.6 %		(30) bp

The table below summarizes the major factors that impacted sales in the Americas segment for the periods presented:

Volume	7 %
Price	9 %
Energy cost pass-through to customers	(1 %)
Currency	(1 %)
Total Americas sales change	14 %

Sales of \$2,757.3 increased 14%, or \$346.6, due to higher pricing of 9% and higher volumes of 7%, partially offset by lower energy cost pass-through to customers of 1% and an unfavorable currency impact of 1%. We successfully recovered higher costs in our merchant business through continued focus on pricing actions. Additionally, volumes improved primarily due to our on-site business.

Operating income of \$667.2 increased 23%, or \$124.5, due to positive pricing, net of power and fuel costs, of \$177 and favorable volumes of \$29, partially offset by higher costs of \$75 and an unfavorable currency impact of \$6. Higher costs were driven by higher incentive compensation, inflation, planned maintenance, and distribution and sourcing costs. Operating margin of 24.2% increased 170 bp from 22.5% in the prior year, primarily due to the pricing improvement, which was partially offset by the impact of higher costs.

Equity affiliates' income of \$44.5 decreased 18%, or \$9.8, driven by our Mexico affiliate.

Asia

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$1,591.7	\$1,531.6	\$60.1	4 %
Operating income	468.9	424.7	44.2	10 %
Operating margin	29.5 %	27.7 %		180 bp
Equity affiliates' income	\$14.7	\$12.8	\$1.9	15 %
Adjusted EBITDA	695.5	660.1	35.4	5 %
Adjusted EBITDA margin	43.7 %	43.1 %		60 bp

The table below summarizes the major factors that impacted sales in the Asia segment for the periods presented:

Volume	7 %
Price	3 %
Energy cost pass-through to customers	3 %
Currency	(9 %)
Total Asia sales change	4 %

Sales of \$1,591.7 increased 4%, or \$60.1, due to higher volumes of 7%, higher pricing of 3%, and higher energy cost pass-through to customers of 3%, partially offset by an unfavorable currency impact of 9%. Higher volumes driven by our on-site business, including several traditional industrial gas plants that were brought onstream across the region, were partially offset by COVID-19 impacts in certain parts of China. Higher power costs across the region were recovered by our merchant pricing actions. In our on-site business, the higher power costs increased contractual energy cost pass-through to our customers. The unfavorable currency impact was primarily attributable to the strengthening of the U.S. Dollar against the Chinese Renminbi and the South Korean Won.

Operating income of \$468.9 increased 10%, or \$44.2, due to higher volumes of \$54 and positive pricing, net of power and fuel costs, of \$40, partially offset by an unfavorable currency impact of \$38 and higher costs of \$12 driven by project development, higher planned maintenance, and inflation. Operating margin of 29.5% increased 180 bp from 27.7% in the prior year due to positive pricing and the volume improvement, partially offset by higher costs.

Equity affiliates' income of \$14.7 increased 15%, or \$1.9.

Europe

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%/bp
Sales	\$1,544.8	\$1,482.8	\$62.0	4 %
Operating income	319.0	215.6	103.4	48 %
Operating margin	20.6 %	14.5 %		610 bp
Equity affiliates' income	\$47.2	\$37.2	\$10.0	27 %
Adjusted EBITDA	458.8	352.9	105.9	30 %
Adjusted EBITDA margin	29.7 %	23.8 %		590 bp

The table below summarizes the major factors that impacted sales in the Europe segment for the periods presented:

Volume	(1 %)
Price	12 %
Energy cost pass-through to customers	2 %
Currency	(9 %)
Total Europe sales change	4 %

Sales of \$1,544.8 increased 4%, or \$62.0, due to higher pricing of 12% and higher energy cost pass-through to customers of 2%, partially offset by an unfavorable impact from currency of 9% and lower volumes of 1%. We successfully recovered higher costs in our merchant business through continued focus on pricing actions. Despite a decline in natural gas prices during the second quarter, energy costs remained elevated versus the prior year, which increased energy cost pass-through to our on-site customers. Currency negatively impacted sales due to the strengthening of the U.S. Dollar against the Euro and the British Pound Sterling. Additionally, volumes declined slightly due to lower demand for hydrogen and merchant products in the first quarter.

Operating income of \$319.0 increased 48%, or \$103.4, as higher pricing, net of power and fuel costs, of \$167 was partially offset by higher costs of \$26 driven by inflation and planned maintenance, an unfavorable currency impact of \$19, and lower volumes of \$19. Operating margin of 20.6% increased 610 bp from 14.5% in the prior year primarily due to the pricing improvement, partially offset by the impact of higher costs and lower volumes.

Equity affiliates' income of \$47.2 increased 27%, or \$10.0, driven by an affiliate in Italy.

Middle East and India

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%
Sales	\$86.2	\$52.6	\$33.6	64 %
Operating income	8.0	9.6	(1.6)	(17 %)
Equity affiliates' income	163.0	163.4	(0.4)	— %
Adjusted EBITDA	184.2	186.0	(1.8)	(1 %)

Sales of \$86.2 increased 64%, or \$33.6, driven by higher merchant volumes, including contributions from a small acquisition completed in January 2022. Despite higher sales, operating income of \$8.0 decreased 17%, or \$1.6, primarily due to higher costs for planned maintenance.

In January 2023, we made an additional investment in the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project. Despite a higher contribution from JIGPC, equity affiliates' income of \$163.0 decreased \$0.4 primarily due to a prior year net benefit recognized for the remaining deferred profit associated with air separation units previously sold to Jazan Gas Project Company, net of other project finalization costs.

Corporate and other

	Six Months Ended 31 March		Changes	
	2023	2022	\$	%
Sales	\$394.8	\$461.6	(\$66.8)	(14 %)
Operating loss	(165.7)	(107.7)	(58.0)	(54 %)
Adjusted EBITDA	(133.5)	(83.3)	(50.2)	(60 %)

Sales of \$394.8 decreased 14%, or \$66.8, and operating loss of \$165.7 increased 54%, or \$58.0, primarily due to lower project activity in our sale of equipment business. Our Corporate and other segment also incurs costs to provide corporate support functions and global management activities that benefit all segments, which have increased in support of our growth strategy.

RECONCILIATIONS OF NON-GAAP FINANCIAL MEASURES

(Millions of U.S. Dollars unless otherwise indicated, except for per share data)

We present certain financial measures, other than in accordance with U.S. generally accepted accounting principles ("GAAP"), on an "adjusted" or "non-GAAP" basis. On a consolidated basis, these measures include adjusted diluted earnings per share ("EPS"), adjusted EBITDA, adjusted EBITDA margin, the adjusted effective tax rate, and capital expenditures. On a segment basis, these measures include adjusted EBITDA and adjusted EBITDA margin. In addition to these measures, we also present certain supplemental non-GAAP financial measures to help the reader understand the impact that certain disclosed items, or "non-GAAP adjustments," have on the calculation of our adjusted diluted EPS. For each non-GAAP financial measure, we present a reconciliation to the most directly comparable financial measure calculated in accordance with GAAP.

In many cases, non-GAAP financial measures are determined by adjusting the most directly comparable GAAP measure to exclude non-GAAP adjustments that we believe are not representative of our underlying business performance. For example, we exclude the impact of the non-service components of net periodic benefit/cost for our defined benefit pension plans as further discussed below. Additionally, we may exclude certain expenses associated with cost reduction actions, impairment charges, and gains on disclosed transactions. The reader should be aware that we may recognize similar losses or gains in the future.

When applicable, the tax impact of our pre-tax non-GAAP adjustments reflects the expected current and deferred income tax impact of our non-GAAP adjustments. These tax impacts are primarily driven by the statutory tax rate of the various relevant jurisdictions and the taxability of the adjustments in those jurisdictions.

We provide these non-GAAP financial measures to allow investors, potential investors, securities analysts, and others to evaluate the performance of our business in the same manner as our management. We believe these measures, when viewed together with financial results computed in accordance with GAAP, provide a more complete understanding of the factors and trends affecting our historical financial performance and projected future results. However, we caution readers not to consider these measures in isolation or as a substitute for the most directly comparable measures calculated in accordance with GAAP. Readers should also consider the limitations associated with these non-GAAP financial measures, including the potential lack of comparability of these measures from one company to another.

NON-GAAP ADJUSTMENT FOR NON-SERVICE PENSION COST (BENEFIT), NET

Effective beginning in the first quarter of fiscal year 2023, our adjusted EPS and the adjusted effective tax rate exclude the impact of non-service related components of net periodic benefit/cost for our defined benefit pension plans. The prior year non-GAAP financial measures presented below have been recast accordingly to conform to the fiscal year 2023 presentation. Non-service related components are recurring, non-operating items that include interest cost, expected returns on plan assets, prior service cost amortization, actuarial loss amortization, as well as special termination benefits, curtailments, and settlements. The net impact of non-service related components is reflected within "Other non-operating income (expense), net" on our consolidated income statements. Adjusting for the impact of non-service pension components provides management and users of our financial statements with a more accurate representation of our underlying business performance because these components are driven by factors that are unrelated to our operations, such as recent changes to the allocation of our pension plan assets associated with de-risking as well as volatility in equity and debt markets. Further, non-service related components are not indicative of our defined benefit plans' future contribution needs due to the funded status of the plans.

ADJUSTED DILUTED EPS

The table below provides a reconciliation to the most directly comparable GAAP measure for each of the major components used to calculate adjusted diluted EPS from continuing operations, which we view as a key performance metric. In periods that we have non-GAAP adjustments, we believe it is important for the reader to understand the per share impact of each such adjustment because management does not consider these impacts when evaluating underlying business performance. Per share impacts are calculated independently and may not sum to total diluted EPS and total adjusted diluted EPS due to rounding.

	Three Months Ended 31 March					
Q2 2023 vs. Q2 2022	Operating Income	Equity Affiliates' Income	Other Non-Operating Income/Expense, Net	Income Tax Provision	Net Income Attributable to Air Products	Diluted EPS
Q2 2023 GAAP	\$459.8	\$165.9	(\$13.9)	\$121.0	\$439.8	\$1.97
Q2 2022 GAAP	561.9	120.8	9.1	122.7	530.5	2.38
\$ Change GAAP						(\$0.41)
% Change GAAP						(17 %)
Q2 2023 GAAP	\$459.8	\$165.9	(\$13.9)	\$121.0	\$439.8	\$1.97
Business and asset actions ^(A)	185.6	—	—	26.9	153.7	0.69
Non-service pension cost, net	—	—	22.9	5.7	17.2	0.08
Q2 2023 Non-GAAP ("Adjusted")	\$645.4	\$165.9	\$9.0	\$153.6	\$610.7	\$2.74
Q2 2022 GAAP	\$561.9	\$120.8	\$9.1	\$122.7	\$530.5	\$2.38
Non-service pension benefit, net	—	—	(11.9)	(2.9)	(9.0)	(0.04)
Q2 2022 Non-GAAP ("Adjusted")	\$561.9	\$120.8	(\$2.8)	\$119.8	\$521.5	\$2.34
\$ Change Non-GAAP ("Adjusted")						\$0.40
% Change Non-GAAP ("Adjusted")						17 %

^(A) Charge includes \$5.0 attributable to noncontrolling interests.

Six Months Ended 31 March

	Operating Income	Equity Affiliates' Income	Other Non-Operating Income/Expense, Net	Income Tax Provision	Net Income Attributable to Air Products	Diluted EPS
2023 vs. 2022						
2023 GAAP	\$1,111.8	\$275.9	(\$14.5)	\$257.4	\$1,012.0	\$4.54
2022 GAAP	1,084.9	268.6	31.7	236.0	1,090.9	4.90
\$ Change GAAP						(\$0.36)
% Change GAAP						(7 %)
2023 GAAP	\$1,111.8	\$275.9	(\$14.5)	\$257.4	\$1,012.0	\$4.54
Business and asset actions ^(A)	185.6	—	—	26.9	153.7	0.69
Non-service pension cost, net	—	—	42.4	10.6	31.8	0.14
2023 Non-GAAP ("Adjusted")	\$1,297.4	\$275.9	\$27.9	\$294.9	\$1,197.5	\$5.38
2022 GAAP	\$1,084.9	\$268.6	\$31.7	\$236.0	\$1,090.9	\$4.90
Non-service pension benefit, net	—	—	(23.9)	(5.8)	(18.1)	(0.08)
2022 Non-GAAP ("Adjusted")	\$1,084.9	\$268.6	\$7.8	\$230.2	\$1,072.8	\$4.82
\$ Change Non-GAAP ("Adjusted")						\$0.56
% Change Non-GAAP ("Adjusted")						12 %

^(A) Charge includes \$5.0 attributable to noncontrolling interests.

ADJUSTED EBITDA AND ADJUSTED EBITDA MARGIN

We define adjusted EBITDA as net income less income from discontinued operations, net of tax, and excluding non-GAAP adjustments, which we do not believe to be indicative of underlying business trends, before interest expense, other non-operating income (expense), net, income tax provision, and depreciation and amortization expense. Adjusted EBITDA and adjusted EBITDA margin provide useful metrics for management to assess operating performance. Margins are calculated independently for each period by dividing each line item by consolidated sales for the respective period and may not sum to total margin due to rounding.

The tables below present consolidated sales and a reconciliation of net income on a GAAP basis to adjusted EBITDA and net income margin on a GAAP basis to adjusted EBITDA margin:

	Three Months Ended 31 March				Six Months Ended 31 March			
	2023		2022		2023		2022	
	\$	Margin	\$	Margin	\$	Margin	\$	Margin
Sales	\$3,200.1		\$2,945.1		\$6,374.8		\$5,939.3	
Net income and net income margin	\$449.9	14.1 %	\$536.8	18.2 %	\$1,033.7	16.2 %	\$1,086.4	18.3 %
Add: Interest expense	40.9	1.3 %	32.3	1.1 %	82.1	1.3 %	62.8	1.1 %
Less: Other non-operating income (expense), net	(13.9)	(0.4 %)	9.1	0.3 %	(14.5)	(0.2 %)	31.7	0.5 %
Add: Income tax provision	121.0	3.8 %	122.7	4.2 %	257.4	4.0 %	236.0	4.0 %
Add: Depreciation and amortization	339.6	10.6 %	335.9	11.4 %	661.1	10.4 %	668.2	11.3 %
Add: Business and asset actions	185.6	5.8 %	—	—%	185.6	2.9 %	—	—%
Adjusted EBITDA and adjusted EBITDA margin	\$1,150.9	36.0 %	\$1,018.6	34.6 %	\$2,234.4	35.1 %	\$2,021.7	34.0 %
Change GAAP								
Net income \$ change	(\$86.9)				(\$52.7)			
Net income % change	(16%)				(5%)			
Net income margin change	(410) bp				(210) bp			
Change Non-GAAP								
Adjusted EBITDA \$ change	\$132.3				\$212.7			
Adjusted EBITDA % change	13%				11%			
Adjusted EBITDA margin change	140 bp				110 bp			

The tables below present sales and a reconciliation of operating income and operating margin by segment to adjusted EBITDA and adjusted EBITDA margin for the three and six months ended 31 March 2023 and 2022:

Americas

	Three Months Ended				Six Months Ended			
	31 March		Changes vs. Prior Year		31 March		Changes vs. Prior Year	
	2023	2022	\$	%/bp	2023	2022	\$	%/bp
Sales	\$1,373.1	\$1,186.6	\$186.5	16 %	\$2,757.3	\$2,410.7	\$346.6	14 %
Operating income	\$324.2	\$275.5	\$48.7	18 %	\$667.2	\$542.7	\$124.5	23 %
Operating margin	23.6 %	23.2 %		40 bp	24.2 %	22.5 %		170 bp
<u>Reconciliation of GAAP to Non-GAAP:</u>								
Operating income	\$324.2	\$275.5			\$667.2	\$542.7		
Add: Depreciation and amortization	161.7	153.7			317.7	309.0		
Add: Equity affiliates' income	28.1	20.1			44.5	54.3		
Adjusted EBITDA	\$514.0	\$449.3	\$64.7	14 %	\$1,029.4	\$906.0	\$123.4	14 %
Adjusted EBITDA margin	37.4 %	37.9 %		(50) bp	37.3 %	37.6 %		(30) bp

Asia

	Three Months Ended				Six Months Ended			
	31 March		Changes vs. Prior Year		31 March		Changes vs. Prior Year	
	2023	2022	\$	%/bp	2023	2022	\$	%/bp
Sales	\$813.9	\$751.2	\$62.7	8 %	\$1,591.7	\$1,531.6	\$60.1	4 %
Operating income	\$233.0	\$203.6	\$29.4	14 %	\$468.9	\$424.7	\$44.2	10 %
Operating margin	28.6 %	27.1 %		150 bp	29.5 %	27.7 %		180 bp
<u>Reconciliation of GAAP to Non-GAAP:</u>								
Operating income	\$233.0	\$203.6			\$468.9	\$424.7		
Add: Depreciation and amortization	110.0	111.8			211.9	222.6		
Add: Equity affiliates' income	7.3	6.2			14.7	12.8		
Adjusted EBITDA	\$350.3	\$321.6	\$28.7	9 %	\$695.5	\$660.1	\$35.4	5 %
Adjusted EBITDA margin	43.0 %	42.8 %		20 bp	43.7 %	43.1 %		60 bp

Europe

	Three Months Ended				Six Months Ended			
	31 March		Changes vs. Prior Year		31 March		Changes vs. Prior Year	
	2023	2022	\$	%/bp	2023	2022	\$	%/bp
Sales	\$752.9	\$738.6	\$14.3	2 %	\$1,544.8	\$1,482.8	\$62.0	4 %
Operating income	\$173.2	\$116.4	\$56.8	49 %	\$319.0	\$215.6	\$103.4	48 %
Operating margin	23.0 %	15.8 %		720 bp	20.6 %	14.5 %		610 bp
Reconciliation of GAAP to Non-GAAP:								
Operating income	\$173.2	\$116.4			\$319.0	\$215.6		
Add: Depreciation and amortization	48.3	50.3			92.6	100.1		
Add: Equity affiliates' income	29.5	23.3			47.2	37.2		
Adjusted EBITDA	\$251.0	\$190.0	\$61.0	32 %	\$458.8	\$352.9	\$105.9	30 %
Adjusted EBITDA margin	33.3 %	25.7 %		760 bp	29.7 %	23.8 %		590 bp

Middle East and India

	Three Months Ended				Six Months Ended			
	31 March		Changes vs. Prior Year		31 March		Changes vs. Prior Year	
	2023	2022	\$	%/bp	2023	2022	\$	%/bp
Sales	\$44.8	\$28.9	\$15.9	55 %	\$86.2	\$52.6	\$33.6	64 %
Operating income	\$1.3	\$4.8	(\$3.5)	(73 %)	\$8.0	\$9.6	(\$1.6)	(17 %)
Reconciliation of GAAP to Non-GAAP:								
Operating income	\$1.3	\$4.8			\$8.0	\$9.6		
Add: Depreciation and amortization	6.6	6.9			13.2	13.0		
Add: Equity affiliates' income	98.9	71.1			163.0	163.4		
Adjusted EBITDA	\$106.8	\$82.8	\$24.0	29 %	\$184.2	\$186.0	(\$1.8)	(1 %)

Corporate and other

	Three Months Ended				Six Months Ended			
	31 March		Changes vs. Prior Year		31 March		Changes vs. Prior Year	
	2023	2022	\$	%/bp	2023	2022	\$	%/bp
Sales	\$215.4	\$239.8	(\$24.4)	(10 %)	\$394.8	\$461.6	(\$66.8)	(14 %)
Operating loss	(\$86.3)	(\$38.4)	(\$47.9)	(125 %)	(\$165.7)	(\$107.7)	(\$58.0)	(54 %)
Reconciliation of GAAP to Non-GAAP:								
Operating loss	(\$86.3)	(\$38.4)			(\$165.7)	(\$107.7)		
Add: Depreciation and amortization	13.0	13.2			25.7	23.5		
Add: Equity affiliates' income	2.1	0.1			6.5	0.9		
Adjusted EBITDA	(\$71.2)	(\$25.1)	(\$46.1)	(184 %)	(\$133.5)	(\$83.3)	(\$50.2)	(60 %)

ADJUSTED EFFECTIVE TAX RATE

The effective tax rate equals the income tax provision divided by income before taxes. We calculate our adjusted effective tax rate by adjusting the numerator and denominator to exclude the tax and before tax impacts of our non-GAAP adjustments, respectively. The table below presents a reconciliation of the GAAP effective tax rate to our adjusted effective tax rate:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Income tax provision	\$121.0	\$122.7	\$257.4	\$236.0
Income before taxes	570.9	659.5	1,291.1	1,322.4
Effective tax rate	21.2 %	18.6 %	19.9 %	17.8 %
Income tax provision	\$121.0	\$122.7	\$257.4	\$236.0
Business and asset actions	26.9	—	26.9	—
Non-service pension tax impact	5.7	(2.9)	10.6	(5.8)
Adjusted income tax provision	\$153.6	\$119.8	\$294.9	\$230.2
Income before taxes	\$570.9	\$659.5	\$1,291.1	\$1,322.4
Business and asset actions	185.6	—	185.6	—
Non-service pension (benefit) cost, net	22.9	(11.9)	42.4	(23.9)
Adjusted income before taxes	\$779.4	\$647.6	\$1,519.1	\$1,298.5
Adjusted effective tax rate	19.7 %	18.5 %	19.4 %	17.7 %

CAPITAL EXPENDITURES

We define capital expenditures as cash flows for additions to plant and equipment, including long-term deposits, acquisitions (less cash acquired), and investment in and advances to unconsolidated affiliates on our consolidated statement of cash flows. Beginning in the second quarter of fiscal year 2023, we also adjust capital expenditures to exclude NEOM Green Hydrogen Company ("NGHC") spending reflected in "Additions to plant and equipment, including long-term deposits" that is ultimately funded through our partners' equity contributions to NGHC as well as non-recourse project financing incurred by NGHC. We believe adjusting for NGHC expenditures not funded by Air Products' equity to arrive at capital expenditures provides users of our financial statements with a better understanding of the investment on which we expect to make a return.

A reconciliation of cash used for investing activities to our reported capital expenditures is provided below:

	Six Months Ended 31 March	
	2023	2022
Cash used for investing activities	\$2,476.0	\$2,635.8
Proceeds from sale of assets and investments	7.2	25.3
Purchases of investments	(290.5)	(909.4)
Proceeds from investments	611.6	1,391.4
Other investing activities	(51.2)	6.5
NGHC expenditures not funded by Air Products' equity	(335.3)	—
Capital expenditures	\$2,417.8	\$3,149.6

LIQUIDITY AND CAPITAL RESOURCES

Our cash balance and cash flows from operations are our primary sources of liquidity and are generally sufficient to meet our liquidity needs. In addition, we have the flexibility to access capital through a variety of financing activities, including accessing the capital markets, drawing upon our credit facility, or alternatively, accessing the commercial paper markets. During the second quarter of fiscal year 2023, we issued U.S. Dollar- and Euro-denominated fixed-rate notes with aggregate principal amounts of \$600 and €700 million, respectively, under our new Green Finance Framework. We intend to use the net proceeds to finance or refinance, in whole or in part, existing or future projects that are expected to have environmental benefits, including those related to pollution prevention and control, renewable energy generation and procurement, and sustainable aviation fuel. At this time, we have not utilized, nor do we expect to access, our credit facility for additional liquidity.

As of 31 March 2023, we had \$1,122.5 of foreign cash and cash items compared to total cash and cash items of \$2,242.4. We do not expect that a significant portion of the earnings of our foreign subsidiaries and affiliates will be subject to U.S. income tax upon repatriation to the U.S. Depending on the country in which the subsidiaries and affiliates reside, the repatriation of these earnings may be subject to foreign withholding and other taxes. However, since we have significant current investment plans outside the U.S., it is our intent to permanently reinvest the majority of our foreign cash and cash items that would be subject to additional taxes outside the U.S.

Cash Flows From Operations

Six Months Ended 31 March	2023	2022
Net income attributable to Air Products	\$1,012.0	\$1,090.9
Adjustments to reconcile income to cash provided by operating activities:		
Depreciation and amortization	661.1	668.2
Deferred income taxes	29.0	51.3
Business and asset actions	185.6	—
Undistributed earnings of equity method investments	(78.1)	(200.8)
Gain on sale of assets and investments	(3.9)	(11.8)
Share-based compensation	31.2	26.5
Noncurrent lease receivables	39.5	43.9
Other adjustments	70.9	(101.0)
Changes in working capital accounts	(589.3)	(262.2)
Cash Provided by Operating Activities	\$1,358.0	\$1,305.0

For the first six months of fiscal year 2023, cash provided by operating activities was \$1,358.0. Business and asset actions of \$185.6 included noncash charges to write-down the full carrying value of assets previously under construction in our Asia and Europe segments. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information. Other adjustments of \$70.9 primarily included adjustments for noncash currency impacts of intercompany balances. The working capital accounts were a use of cash of \$589.3, primarily driven by \$451.3 from payables and accrued liabilities, \$124.7 from other working capital, and \$112.3 from inventory, partially offset by a source of cash of \$162.0 from trade receivables, less allowances. The use of cash within payables and accrued liabilities primarily resulted from the impact of lower prices for the purchase of natural gas, a decrease in value of derivatives that hedge intercompany loans, and payments for incentive compensation under the fiscal year 2022 plan. The use of cash within other working capital primarily relates to the timing of income tax payments. The source of cash within trade receivables includes lower natural gas costs contractually passed through to customers.

For the first six months of fiscal year 2022, cash provided by operating activities was \$1,305.0. The working capital accounts were a use of cash of \$262.2, primarily driven by a use of cash of \$203.1 from trade receivables, less allowances, \$138.7 from other working capital, and \$57.3 from inventory partially offset by a source of cash of \$123.1 from payables and accrued liabilities. The source of cash within payables and accrued liabilities primarily resulted from customer advances for sale of equipment projects and higher natural gas costs, which also impacted the use of cash within trade receivables as we contractually passed through these higher costs to customers. The use of cash within other working capital primarily relates to contract fulfillment costs and the timing of income tax payments.

Cash Flows From Investing Activities

Six Months Ended 31 March	2023	2022
Additions to plant and equipment, including long-term deposits	(\$1,841.1)	(\$1,433.6)
Acquisitions, less cash acquired	—	(65.1)
Investment in and advances to unconsolidated affiliates	(912.0)	(1,650.9)
Proceeds from sale of assets and investments	7.2	25.3
Purchases of investments	(290.5)	(909.4)
Proceeds from investments	611.6	1,391.4
Other investing activities	(51.2)	6.5
Cash Used for Investing Activities	(\$2,476.0)	(\$2,635.8)

For the first six months of fiscal year 2023, cash used for investing activities was \$2,476.0. The use of cash primarily resulted from additions to plant and equipment, including long-term deposits, of \$1,841.1 and investment in and advances to unconsolidated affiliates of \$912.0. Refer to the *Capital Expenditures* section below for further detail. Proceeds from investments of \$611.6 resulted from maturities of time deposits and treasury securities with terms greater than three months but less than one year and exceeded purchases of investments of \$290.5.

For the first six months of fiscal year 2022, cash used for investing activities was \$2,635.8. Capital expenditures primarily included \$1,650.9 for investment in and advances to unconsolidated affiliates and \$1,433.6 for additions to plant and equipment. Proceeds from investments of \$1,391.4 resulted from maturities of time deposits and treasury securities with terms greater than three months but less than one year and exceeded purchases of investments of \$909.4.

Capital Expenditures

We define capital expenditures as cash flows for additions to plant and equipment, including long-term deposits, acquisitions (less cash acquired), and investment in and advances to unconsolidated affiliates on our consolidated statement of cash flows. Beginning in the second quarter of fiscal year 2023, we also adjust capital expenditures to exclude NEOM Green Hydrogen Company ("NGHC") spending reflected in "Additions to plant and equipment, including long-term deposits" that is ultimately funded through our partners' equity contributions to NGHC as well as non-recourse project financing incurred by NGHC. The components of our capital expenditures are detailed in the table below. We also present a reconciliation of our capital expenditures to cash used for investing activities on page [56](#).

	Six Months Ended 31 March	
	2023	2022
Additions to plant and equipment	\$1,841.1	\$1,433.6
Acquisitions, less cash acquired	—	65.1
Investment in and advances to unconsolidated affiliates	912.0	1,650.9
NGHC expenditures not funded by Air Products' equity	(335.3)	—
Capital Expenditures	\$2,417.8	\$3,149.6

Capital expenditures for the first six months of fiscal year 2023 totaled \$2,417.8 compared to \$3,149.6 for the first six months of fiscal year 2022. The prior year included our initial investment of \$1.6 billion in JIGPC, which included approximately \$130 from a noncontrolling partner in one of our subsidiaries, in the first quarter of fiscal year 2022. In the second quarter of fiscal year 2023, we made an additional investment of \$908 toward the second phase of the Jazan gasification and power project. This investment included \$73 received from our noncontrolling partner. We expect to complete a remaining investment of approximately \$115 later this calendar year. Refer to Note 7, *Equity Affiliates*, to the consolidated financial statements for additional information.

Outlook for Investing Activities

It is not possible, without unreasonable efforts, to reconcile our forecasted capital expenditures to future cash used for investing activities because we are unable to identify the timing or occurrence of our future investment activity, which is driven by our assessment of competing opportunities at the time we enter into transactions. These decisions, either individually or in the aggregate, could have a significant effect on our cash used for investing activities.

We expect capital expenditures for fiscal year 2023 to be approximately \$5 to \$5.5 billion.

Cash Flows From Financing Activities

Six Months Ended 31 March	2023	2022
Long-term debt proceeds	\$1,891.6	\$87.5
Payments on long-term debt	(596.0)	(400.0)
Net (decrease) increase in commercial paper and short-term borrowings	(16.3)	210.9
Dividends paid to shareholders	(719.2)	(664.7)
Proceeds from stock option exercises	17.1	14.4
Investments by noncontrolling interests	72.8	3.6
Other financing activities	(46.6)	(37.3)
Cash Provided by (Used for) Financing Activities	\$603.4	(\$785.6)

For the first six months of fiscal year 2023, cash provided by financing activities was \$603.4. The source of cash was primarily driven by long-term debt proceeds of \$1,891.6, partially offset by dividend payments to shareholders of \$719.2 and payments on long-term debt of \$596.0. Refer to the *Credit Facilities* section below and Note 11, *Debt*, to the consolidated financial statements for additional information.

For the first six months of fiscal year 2022, cash used for financing activities was \$785.6. The use of cash was primarily driven by dividend payments to shareholders of \$664.7 and payments on long-term debt of \$400.0 for the repayment of a 3.0% Senior Note. These uses of cash were partially offset by short-term borrowings and long-term debt proceeds of \$210.9 and \$87.5, respectively.

Financing and Capital Structure

Debt

Capital needs in the first six months of fiscal year 2023 were satisfied with our cash balance, cash from operations and long-term borrowings. Total debt increased from \$7,644.8 as of 30 September 2022 to \$9,140.9 as of 31 March 2023, primarily due to U.S. Dollar- and Euro-denominated fixed-rate notes that were issued in the second quarter of fiscal year 2023. Total debt includes related party debt of \$822.1 and \$781.0 as of 31 March 2023 and 30 September 2022, respectively.

Various debt agreements to which we are a party include financial covenants and other restrictions, including restrictions pertaining to the ability to create property liens and enter into certain sale and leaseback transactions. As of 31 March 2023, we are in compliance with all of the financial and other covenants under our debt agreements.

Credit Facilities

We have a five-year \$2,750 revolving credit agreement maturing 31 March 2026 with a syndicate of banks (the "2021 Credit Agreement"), under which senior unsecured debt is available to us and certain of our subsidiaries. The 2021 Credit Agreement provides a source of liquidity and supports our commercial paper program. The only financial covenant in the 2021 Credit Agreement is a maximum ratio of total debt to total capitalization (equal to total debt plus total equity) not to exceed 70%. Total debt as of 31 March 2023 and 30 September 2022, expressed as a percentage of total capitalization, was 38.4% and 35.8%, respectively. No borrowings were outstanding under the 2021 Credit Agreement as of 31 March 2023.

We also have credit facilities available to certain of our foreign subsidiaries totaling \$1,324.4, of which \$823.5 was borrowed and outstanding as of 31 March 2023. The amount borrowed and outstanding as of 30 September 2022 was \$457.5. The increase from 30 September 2022 was driven by borrowings on a new variable-rate Saudi Riyal loan facility that matures in October 2026. The interest rate on the facility is based on the Saudi Arabian Interbank Offered Rate ("SAIBOR") plus an annual margin of 1.35%. We entered into this facility in October 2022 and utilized a portion of the proceeds to repay a variable-rate 4.10% Saudi Riyal Loan Facility of \$195.6, which was presented within long-term debt on our consolidated balance sheet as of 30 September 2022.

Equity Securities

On 15 September 2011, the Board of Directors authorized the repurchase of up to \$1,000 of our outstanding common stock. We did not purchase any of our outstanding shares in the first six months of fiscal years 2023 or 2022. As of 31 March 2023, \$485.3 in share repurchase authorization remained.

Dividends

The Board of Directors determines whether to declare cash dividends on our common stock and the timing and amount based on financial condition and other factors it deems relevant. Dividends are paid quarterly, usually during the sixth week after the close of the fiscal quarter. We expect to continue to pay cash dividends in the future at comparable or increased levels.

On 26 January 2023, the Board of Directors declared a quarterly dividend of \$1.75 per share, representing an 8% increase, or \$0.13 per share, from the prior quarterly dividend of \$1.62 per share. The dividend is payable on 8 May 2023 to shareholders of record at the close of business on 3 April 2023. This is the 41st consecutive year that we have increased our quarterly dividend.

PENSION BENEFITS

We and certain of our subsidiaries sponsor defined benefit pension plans and defined contribution plans that cover a substantial portion of our worldwide employees. The principal defined benefit pension plans are the U.S. salaried pension plan and the U.K. pension plan. These plans were closed to new participants in 2005, after which defined contribution plans were offered to new employees. The shift to defined contribution plans is expected to continue to reduce volatility of both plan expense and contributions. For additional information, refer to Note 12, *Retirement Benefits*, to the consolidated financial statements.

Net Periodic Cost (Benefit)

The table below summarizes the components of net periodic cost (benefit) for our U.S. and international defined benefit pension plans:

	Three Months Ended 31 March		Six Months Ended 31 March	
	2023	2022	2023	2022
Service cost	\$5.8	\$10.2	\$11.8	\$20.4
Non-service related cost (benefit)	22.9	(11.9)	42.4	(23.9)
Other	0.2	0.2	0.5	1.0
Net Periodic Cost (Benefit)	\$28.9	(\$1.5)	\$54.7	(\$2.5)

Net periodic cost was \$28.9 and \$54.7 for the three and six months ended 31 March 2023, respectively, versus a benefit of \$1.5 and \$2.5 for the three and six months ended 31 March 2022, respectively. The increased costs from the prior year were primarily attributable to higher non-service costs, which were driven by higher interest cost and lower expected returns on plan assets due to a smaller beginning balance of plan assets. Fiscal year 2023 non-service items also include a \$1.9 curtailment gain recorded in the first quarter for the write-off of prior service credits in an amended international defined benefit pension plan. Non-service related components of net periodic cost (benefit) are reflected within "Other non-operating income (expense), net" on our consolidated income statements.

Service costs result from benefits earned by active employees and are reflected as operating expenses primarily within "Cost of sales" and "Selling and administrative expense" on our consolidated income statements. The amount of service costs capitalized in the first six months of fiscal years 2023 and 2022 was not material.

Company Contributions

Management considers various factors when making pension funding decisions, including tax, cash flow, and regulatory implications. For the six months ended 31 March 2023 and 2022, our cash contributions to funded pension plans and benefit payments for unfunded pension plans were \$15.4 and \$16.1, respectively.

Total contributions for fiscal year 2023 are expected to be approximately \$25 to \$35. During fiscal year 2022, total contributions were \$44.7.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

A description of our major accounting policies, including those that we consider to be the most critical to understanding our financial statements, is included in our 2022 Form 10-K. There were no changes to our accounting policies during the first six months of fiscal year 2023.

Management's Discussion and Analysis of our financial condition and results of operations is based on the consolidated financial statements and accompanying notes that have been prepared in accordance with GAAP. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. These estimates reflect our best judgment about current and/or future economic and market conditions and their effect based on information available as of the date of our consolidated financial statements. If conditions change, actual results may differ materially from these estimates.

Judgments and estimates of uncertainties are required to apply our accounting policies in many areas. However, application of policies that management has identified as critical places significant importance on management's judgment, often as the result of the need to make estimates about the effects of matters that are inherently uncertain. As discussed in Note 4, *Business and Asset Actions*, to the consolidated financial statements, we concluded that we will not proceed with certain projects in Indonesia and Ukraine and wrote down the full carrying value of related assets. Additionally, we recorded changes to project cost estimates on certain projects accounted for under the cost incurred input method. Accordingly, we recorded a cumulative effect adjustment that unfavorably impacted operating income by approximately \$35 and \$60 for the three and six months ended 31 March 2023. There were no other changes to our estimates during the first six months of fiscal year 2023 that had a significant impact on our financial condition, change in financial condition, liquidity, or results of operations.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Information on our utilization of financial instruments and an analysis of the sensitivity of these instruments to selected changes in market rates and prices is included in our 2022 Form 10-K.

Our net financial instrument position increased from a liability of \$6,898.6 at 30 September 2022 to a liability of \$8,453.1 at 31 March 2023. The increase was primarily due to the issuance of U.S. Dollar- and Euro-denominated fixed-rate notes during the second quarter of fiscal year 2023.

Interest Rate Risk

The sensitivity analysis related to the interest rate risk on the fixed portion of our debt portfolio assumes an instantaneous 100 bp move in interest rates from the level at 31 March 2023, with all other variables held constant. A 100 bp increase in market interest rates would result in a decrease of \$490 and \$364 in the net liability position of financial instruments at 31 March 2023 and 30 September 2022, respectively. A 100 bp decrease in market interest rates would result in an increase of \$566 and \$425 in the net liability position of financial instruments at 31 March 2023 and 30 September 2022, respectively. The increased principal associated with the issuance of U.S. Dollar- and Euro-denominated fixed-rate notes during the second quarter of fiscal year 2023 created a higher sensitivity to market interest rates.

There were no material changes to the sensitivity analysis related to the variable portion of our debt portfolio since 30 September 2022.

Foreign Currency Exchange Rate Risk

The sensitivity analysis related to foreign currency exchange rates assumes an instantaneous 10% change in foreign currency exchange rates from their levels at 31 March 2023, with all other variables held constant. A 10% strengthening or weakening of the functional currency of an entity versus all other currencies would result in a decrease or increase, respectively, of \$255 and \$165 in the net liability position of financial instruments at 31 March 2023 and 30 September 2022, respectively. The increase in sensitivity is primarily due to the issuance of Euro-denominated fixed-rate notes during the second quarter of fiscal year 2023.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

We maintain a comprehensive set of disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Under the supervision of the Chief Executive Officer and Chief Financial Officer, our management conducted an evaluation of the effectiveness of our disclosure controls and procedures as of 31 March 2023. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of 31 March 2023, our disclosure controls and procedures were effective.

Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended 31 March 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 6. Exhibits.

(a) Exhibits required by Item 601 of Regulation S-K

Exhibit No.	Description
(4)	Instruments defining the rights of securities holders, including indentures
4.1	Indenture, dated as of April 30, 2020, between the Company and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated herein by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, filed on 30 April 2020).
4.2	Form of Officer's Certificate setting forth the terms and forms of the 4.800% U.S. Notes due 2033 (incorporated herein by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K, filed on 3 March 2023).
4.3	Form of Officer's Certificate setting forth the terms and forms of the 4.000% Euro Notes due 2035 (incorporated herein by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K, filed on 3 March 2023).
4.4	Form of 4.800% U.S. Notes due 2033 (included in Exhibit 4.2)
4.5	Form of 4.000% Euro Notes due 2035 (included in Exhibit 4.3)
(10)	Material Contracts
(31)	Rule 13a-14(a)/15d-14(a) Certifications
31.1	Certification by the Principal Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification by the Principal Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
(32)	Section 1350 Certifications
32.1	Certification by the Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. †
(101)	Interactive Data Files
101.INS	Inline XBRL Instance Document. The XBRL Instance Document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
104	Cover Page Interactive Data File, formatted in Inline XBRL (included in Exhibit 101).

† The certification attached as Exhibit 32.1 that accompanies this Quarterly Report on Form 10-Q is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Air Products and Chemicals, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Air Products and Chemicals, Inc.

(Registrant)

By:

/s/ Melissa N. Schaeffer

Melissa N. Schaeffer
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Date: 9 May 2023