

Ingredion Inc
Form 10-K
February 25, 2019
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UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2018

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 1-13397

INGREDION INCORPORATED

(Exact Name of Registrant as Specified in Its Charter)

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Delaware (State or Other Jurisdiction of Incorporation or Organization)	22-3514823 (I.R.S. Employer Identification No.)
5 Westbrook Corporate Center, Westchester, Illinois (Address of Principal Executive Offices)	60154 (Zip Code)

Registrant's telephone number, including area code (708) 551-2600

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

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, \$.01 par value per share	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: NONE

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes No

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Note – Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Exchange Act from their obligations under those Sections.

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

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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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant’s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

The aggregate market value of the Registrant's voting stock held by non-affiliates of the Registrant (based upon the per share closing price of \$110.70 on June 30, 2018, and, for the purpose of this calculation only, the assumption that all of the Registrant's directors and executive officers are affiliates) was approximately \$7,812,000,000.

The number of shares outstanding of the Registrant's Common Stock, par value \$0.01 per share, as of February 14, 2019, was 66,667,462.

Documents Incorporated by Reference:

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Information required by Part III (Items 10, 11, 12, 13 and 14) of this document is incorporated by reference to certain portions of the Registrant's definitive Proxy Statement (the "Proxy Statement") to be distributed in connection with its 2019 Annual Meeting of Stockholders which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018.

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PART I.

ITEM 1. BUSINESS

The Company

Ingredion Incorporated (“Ingredion”) is a leading global ingredients solutions provider. We turn corn, tapioca, potatoes, grains, fruits, and vegetables into value-added ingredients and biomaterials for the food, beverage, paper and corrugating, brewing and other industries. Ingredion was incorporated as a Delaware corporation in 1997 and its common stock is traded on the New York Stock Exchange under the ticker symbol “INGR”.

For purposes of this report, unless the context otherwise requires, all references herein to the “Company,” “Ingredion,” “we,” “us,” and “our” shall mean Ingredion Incorporated and its subsidiaries.

We are principally engaged in the production and sale of starches and sweeteners for a wide range of industries, and are managed geographically on a regional basis. Our operations are classified into four reportable business segments: North America, South America, Asia Pacific and Europe, Middle East, and Africa (“EMEA”). Our North America segment includes businesses in the U.S., Mexico, and Canada. Our South America segment includes businesses in Brazil, the Southern Cone of South America (which includes Argentina, Peru, Chile, and Uruguay), Colombia, and Ecuador. Our Asia Pacific segment includes businesses in South Korea, Thailand, China, Australia, Japan, New Zealand, Indonesia, Singapore, the Philippines, Malaysia, and India. Our EMEA segment includes businesses in Pakistan, Germany, the United Kingdom and South Africa.

We supply a broad range of customers in many diverse industries around the world, including the food, beverage, brewing, paper and corrugating, pharmaceutical, textile, and personal care industries, as well as the global animal feed and corn oil markets.

Our product lines include starches and sweeteners, animal feed products and edible corn oil. Our starch-based products include both food-grade and industrial starches, and biomaterials. Our sweetener products include glucose syrups, high maltose syrups, high fructose corn syrup, caramel color, dextrose, polyols, maltodextrins, and glucose and syrup solids. Our products are derived primarily from the processing of corn and other starch-based materials, such as tapioca, potato, and rice.

Our manufacturing process is based on a capital-intensive, two-step process that involves the wet-milling and processing of starch-based materials, primarily corn. During the front-end process, the starch-based materials are steeped in a water-based solution and separated into starch and co-products such as animal feed and corn oil. The starch is then either dried for sale or further processed to make starches, sweeteners and other ingredients that serve the particular needs of various industries.

We believe our approach to production and service, which focuses on local management and production improvements of our worldwide operations, provides us with a unique understanding of the cultures and product requirements in each of the geographic markets in which we operate, bringing added value to our customers through innovative solutions. At the same time, we believe that our corporate functions allow us to identify synergies and maximize the benefits of our global presence.

Geographic Scope and Operations

Our North America segment consists of operations in the U.S., Mexico, and Canada. The region's facilities include 20 plants producing a wide range of starches, sweeteners, and fruit and vegetable concentrates.

Our South America segment includes operations in Brazil, Colombia, and Ecuador and the Southern Cone of South America. The segment includes nine plants that produce regular, modified, waxy, and tapioca starches, high fructose and high maltose syrups and syrup solids, dextrins and maltodextrins, dextrose, specialty starches, caramel color, sorbitol, and vegetable adhesives.

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Our Asia Pacific segment manufactures corn-based products in South Korea, China, and Australia. Also, we manufacture tapioca-based products in Thailand, from which we supply not only our Asia Pacific segment but the rest of our global network. The region's facilities include ten plants that produce modified, specialty, regular, waxy, tapioca and rice starches, dextrins, glucose, high maltose syrup, dextrose, high fructose corn syrup, and caramel color.

Our EMEA segment includes five plants that produce modified and specialty starches, glucose and dextrose in Pakistan, Germany, and the United Kingdom.

Additionally, we utilize a network of tolling manufacturers in various regions in the production cycle of certain specialty starches. In general, these tolling manufacturers produce certain basic starches for us, and we in turn complete the manufacturing process of starches through our finishing channels.

We utilize our global network of manufacturing facilities to support key global product lines.

In general, demand for our products is balanced throughout the year. However, demand for sweeteners in South America is greater in the first and fourth quarters (its summer season) while demand for sweeteners in North America is greater in the second and third quarters. Due to the offsetting impact of these demand trends, we do not experience material seasonal fluctuations in our net sales on a consolidated basis.

Products

Our portfolio of products is generally classified into three categories: Starch Products, Sweetener Products, and Co-products and others. Within these categories, a portion of our products are considered Specialty Ingredients. We describe these three general product categories in more detail below, along with a broader discussion of specialty ingredients within the product portfolio.

Starch Products: Our starch products represented approximately 45 percent, 44 percent, and 46 percent of our net sales for 2018, 2017, and 2016, respectively. Starches are an important component in a wide range of processed foods, where they are used for adhesion, clouding, dusting, expansion, fat replacement, freshness, gelling, glazing, mouth feel, stabilization, and texture. Cornstarch is sold to cornstarch packers for sale to consumers. Starches are also used in paper production to create a smooth surface for printed communications and to improve strength in recycled papers. Specialty starches are used for enhanced drainage, fiber retention, oil and grease resistance, improved printability, and biochemical oxygen demand control. In the corrugating industry, starches and specialty starches are used to produce

high quality adhesives for the production of shipping containers, display board, and other corrugated applications. The textile industry uses starches and specialty starches for sizing (abrasion resistance) to provide size and finishes for manufactured products. Industrial starches are used in the production of construction materials, textiles, adhesives, pharmaceuticals, and cosmetics, as well as in mining, water filtration, and oil and gas drilling. Specialty starches are used for biomaterial applications including biodegradable plastics, fabric softeners and detergents, hair and skin care applications, dusting powders for surgical gloves, and in the production of glass fiber and insulation.

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Sweetener Products: Our sweetener products represented approximately 36 percent of our net sales for 2018, and 37 percent our net sales for both 2017, and 2016. Sweeteners include products such as glucose syrups, high maltose syrup, high fructose corn syrup, dextrose, polyols, maltodextrin, glucose syrup solids, and non-GMO syrups. Our sweeteners are used in a wide variety of food and beverage products, such as baked goods, snack foods, canned fruits, condiments, candy and other sweets, dairy products, ice cream, jams and jellies, prepared mixes, table syrups, soft drinks, fruit-flavored drinks, beer, and many others. These sweetener products also offer functionality in addition to sweetness, such as texture, body and viscosity; help control freezing points, crystallization, and browning; add humectancy (ability to add moisture) and flavor; and act as binders. Our high maltose syrups speed the fermentation process, allowing brewers to increase capacity without adding capital. Dextrose has a wide range of applications in the food and confection industries, in solutions for intravenous (“IV”) and other pharmaceutical applications, and numerous industrial applications like wallboard, biodegradable surface agents, and moisture control agents. Our specialty sweeteners provide affordable, natural, reduced calorie and sugar-free solutions for our customers.

Co-products and others: Co-products and others accounted for approximately 19 percent of our net sales for both 2018 and 2017, and 17 percent of our net sales for 2016. Refined corn oil (from germ) is sold to packers of cooking oil and to producers of margarine, salad dressings, shortening, mayonnaise, and other foods. Corn gluten feed is sold as animal feed. Corn gluten meal is sold as high-protein feed for chickens, pet food, and aquaculture. Our other products include fruit and vegetable products, such as concentrates, purees, and essences, as well as pulse proteins and hydrocolloids systems and blends.

Specialty Ingredients within the product portfolio: We consider certain of our products to be specialty ingredients. Specialty ingredients comprised approximately 29 percent of our net sales for 2018, up from 28 percent and 26 percent in 2017 and 2016, respectively. These ingredients deliver more functionality than our other products and add additional customer value. Our specialty ingredients are aligned with growing market and consumer trends such as health and wellness, clean-label, simple ingredients, affordability, indulgence, and sustainability.

We drive growth for our specialty ingredients portfolio by leveraging the following five growth platforms: Wholesome, Texture, Nutrition, Sweetness, and Beauty and Home.

Wholesome: Clean and simple specialty ingredients that consumers can identify and trust. Products include Novation clean label functional starches, value-added pulse-based ingredients, and gluten free offerings.

Texture: Specialty ingredients that provide precise food texture solutions designed to optimize the consumer experience and build back texture. Include starch systems that replace more expensive ingredients and are designed to optimize customer formulation costs, texturizers that are designed to create rich, creamy mouth feel, and products that enhance texture in healthier offerings.

Nutrition: Specialty ingredients that provide nutritional carbohydrates with benefits of digestive health and energy management. Our fibers and complementary nutritional ingredients address the leading health and wellness concerns of consumers, including digestive health, infant nutrition, weight control, and energy management.

Sweetness: Specialty ingredients that provide affordable, natural, reduced-calorie and sugar-free solutions for our customers. We have a broad portfolio of nutritive and non-nutritive sweeteners, including high potency sweeteners, and naturally based stevia sweeteners.

Beauty and Home: Nature-based materials that offer clean label ingredients for manufacturers to become more sustainable by replacing synthetic materials in personal care, home care, and other industrial segments.

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Each growth platform addresses multiple consumer trends. To demonstrate how we are positioned to address market trends and customer needs, we present our internal growth platforms externally as “Benefit Platforms.” Connecting our capabilities to key trends and customer challenges, these Benefit Platforms include products designed to provide:

Affordability: reduce formulating and production costs without compromising quality or consumer experience

Clean & Simple: replace undesirable ingredients and simplify ingredient labels to give consumers the clean, simple, and authentic products they want

Health & Nutrition: enhance nutrition benefits by fortifying or eliminating ingredients to address broad consumer health and wellness needs globally with specific solutions for all ages

Sensory Experience: deliver a fresh, distinctive, multi-sensory experience in the dimensions of texture, sweetness, and taste for food, beverage, and personal care products

Convenience & Performance: help create products for today’s on-the-go lifestyles and that meet user expectations the first time and every time, from start to finish

At the Consumer Analyst Group of New York Conference on February 19, 2019, we announced a reorganization of our specialty growth platforms. We will be shifting our focus for value creation within our specialty products portfolio into the following five new growth platforms: Starch-based Texturizers, Clean and Simple Ingredients, Plant-based proteins, Sugar Reduction and Specialty Sweeteners, and Food Systems. In addition to these five new growth platforms, we produce other specialty products primarily serving the industrial sector.

Competition

The starch and sweetener industry is highly competitive. Many of our products are viewed as basic ingredients that compete with virtually identical products and derivatives manufactured by other companies in the industry. The U.S. is a highly competitive market where there are other starch processors, several of which are divisions of larger enterprises. Some of these competitors, unlike us, have vertically integrated their starch processing and other operations. Competitors include ADM Corn Processing Division (“ADM,” a division of Archer-Daniels-Midland Company), Cargill, Inc. (“Cargill”), Tate & Lyle Ingredients Americas, Inc. (“Tate & Lyle”), and several others. Our operations in Mexico and Canada face competition from U.S. imports and local producers including ALMEX, a

Mexican joint venture between ADM and Tate & Lyle. In South America, Cargill has starch processing operations in Brazil and Argentina. We also face competition from Roquette Frères S.A. (“Roquette”) primarily in our North America region.

Many smaller local corn and tapioca refiners also operate in many of our markets. Competition within our markets is largely based on price, quality, and product availability.

Several of our products also compete with products made from raw materials other than corn. High fructose corn syrup and monohydrate dextrose compete principally with cane and beet sugar products. Co-products such as corn oil and gluten meal compete with products of the corn dry milling industry and with soybean oil, soybean meal, and other products. Fluctuations in prices of these competing products may affect prices of, and profits derived from, our products.

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Customers

We supply a broad range of customers in over 60 industries worldwide. The following table provides the approximate percentage of total net sales by industry for each of our industries served in 2018:

Industries Served	Total Company		North America		South America		APAC		EMEA	
Food	53	%	50	%	47	%	65	%	69	%
Beverage	11		14		8		6		1	
Brewing	7		8		14		3		—	
Food and Beverage Ingredients	71		72		69		74		70	
Animal Nutrition	10		11		15		5		8	
Other	19		17		16		21		22	
Total Net sales	100	%	100	%	100	%	100	%	100	%

No customer accounted for 10 percent or more of our net sales in 2018, 2017, or 2016.

Raw Materials

Corn (primarily yellow dent) is the primary basic raw material we use to produce starches and sweeteners. The supply of corn in the U.S. has been, and is anticipated to continue to be, adequate for our domestic needs. The price of corn, which is determined by reference to prices on the Chicago Board of Trade, fluctuates as a result of various factors including: farmers' planting decisions, climate, domestic and foreign government policies (including those related to the production of ethanol), livestock feeding, shortages or surpluses of world grain supplies, and trade agreements. We use starch from potato processors as the primary raw material to manufacture ingredients derived from potato-based starches. We also use tapioca, gum, rice, and sugar as raw materials.

Corn is also grown in other areas of the world, including China, Brazil, Europe, Argentina, Mexico, South Africa, Canada, Pakistan, and Australia. Our subsidiaries outside the U.S. utilize both local supplies of corn and corn imported from other geographic areas, including the U.S. The supply of corn for these subsidiaries is also generally expected to be adequate for our needs. Corn prices for our non-U.S. affiliates generally fluctuate as a result of the same factors that affect U.S. corn prices.

We also utilize specialty grains such as waxy and high amylose corn in our operations. In general, the planning cycle for our specialty grain sourcing begins three years in advance of the anticipated delivery of the specialty corn since the necessary seed must be grown in the season prior to grain contracting. In order to secure these specialty grains at the time of our anticipated needs, we contract with certain farmers to grow the specialty corn approximately two years in advance of delivery. These specialty grains have a higher cost due to their more limited supply and require longer planning cycles to mitigate the risk of supply shortages.

Due to the competitive nature of our industry and the availability of substitute products not produced from corn, such as sugar from cane or beets, end-product prices may not necessarily fluctuate in a manner that correlates to raw material costs of corn.

We follow a policy of hedging our exposure to commodity price fluctuations with commodities futures and options contracts primarily for certain of our North American corn purchases. We use derivative hedging contracts to protect the gross margin of our firm-priced business in North America. Other business may or may not be hedged at any given time based on management's judgment as to the need to fix the costs of our raw materials to protect our profitability. Outside of North America, we generally enter into short-term commercial sales contracts and adjust our selling prices based upon the local raw material costs. See Item 7A. Quantitative and Qualitative Disclosures about Market Risk, in the section entitled "Commodity Costs" for additional information.

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Other raw materials used in our manufacturing processes include starch from potato processors as the primary raw material to manufacture ingredients derived from potato-based starches. In addition, we use tapioca, particularly in certain of our production processes in the Asia Pacific region. While the price of tapioca fluctuates from time-to-time as a result of growing conditions, the supply of tapioca has been, and is anticipated to continue to be, adequate for our production needs in the various markets in which we operate. In addition to corn, potato, and tapioca, we use pulses, gum, rice, and sugar as raw materials, among others.

Research and Development

We have a global network of more than 400 scientists working in 28 Ingredion Idea Labs® innovation centers with headquarters in Bridgewater, New Jersey. Activities at Bridgewater include plant science and physical, chemical and biochemical modifications to food formulations, food sensory evaluation, and development of non-food applications such as starch-based biopolymers. In addition, we have product application technology centers that direct our product development teams worldwide to create product application solutions to better serve the ingredient needs of our customers. Product development activity is focused on developing product applications for identified customer and market needs. Through this approach, we have developed value-added products for use by customers in various industries. We usually collaborate with customers to develop the desired product application either in the customers' facilities, our technical service laboratories, or on a contract basis. These efforts are supported by our marketing, product technology, and technology support staff. R&D expense was approximately \$46 million in 2018, \$43 million in 2017, and \$41 million in 2016.

Sales and Distribution

Our salaried sales personnel, who are generally dedicated to customers in a geographic region, sell our products directly to manufacturers and distributors. In addition, we have staff that provide technical support to our sales personnel on an industry basis. We generally contract with trucking companies to deliver our bulk products to customer destinations. In North America, we generally use trucks to ship to nearby customers. For those customers located considerable distances from our plants, we use either rail or a combination of railcars and trucks to deliver our products. We generally lease railcars for terms of three to ten years.

Patents, Trademarks, and Technical License Agreements

We own more than 750 patents and patents pending, which relate to a variety of products and processes, and a number of established trademarks under which we market our products. We also have the right to use other patents and trademarks pursuant to patent and trademark licenses. We do not believe that any individual patent or trademark is material to our business. There is no currently pending challenge to the use or registration of any of our patents or trademarks that would have a material adverse impact on us or our results of operations if decided against us.

Employees

As of December 31, 2018, we had approximately 11,000 employees, of which approximately 2,600 were located in the U.S. Approximately 32 percent of U.S. and 37 percent of our non-U.S. employees are unionized.

Government Regulation and Environmental Matters

As a manufacturer and marketer of food items and items for use in the pharmaceutical industry, our operations and the use of many of our products are subject to various federal, state, foreign and local statutes and regulations, including the Federal Food, Drug and Cosmetic Act and the Occupational Safety and Health Act. We and many of our products are also subject to regulation by various government agencies, including the U.S. Food and Drug Administration. Among other things, applicable regulations prescribe requirements and establish standards for product quality, purity, and labeling. Failure to comply with one or more regulatory requirements can result in a variety of sanctions, including monetary fines. No such fines of a material nature were imposed on us in 2018. We may also be required to comply with federal, state, foreign, and local laws regulating food handling and storage. We believe these laws and regulations have not negatively affected our competitive position.

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Our operations are also subject to various federal, state, foreign, and local laws and regulations with respect to environmental matters, including air and water quality, and other regulations intended to protect public health and the environment. We operate industrial boilers that fire natural gas, coal, or biofuels to operate our manufacturing facilities and they, along with product dryers, are our primary source of greenhouse gas emissions. In Argentina, we are in discussions with local regulators associated with conducting studies of possible environmental remediation programs at our Chacabuco plant. We are unable to predict the outcome of these discussions; however, we do not believe that the ultimate cost of remediation will be material. Based on current laws and regulations and the enforcement and interpretations thereof, we do not expect that the costs of future environmental compliance will be a material expense, although there can be no assurance that we will remain in compliance or that the costs of remaining in compliance will not have a material adverse effect on our future financial condition and results of operations.

During 2018, we spent approximately \$12 million for environmental control and wastewater treatment equipment to be incorporated into existing facilities and in planned construction projects. We currently anticipate that we will invest approximately \$10 million and \$13 million for environmental facilities and programs in 2019 and 2020, respectively.

Other

Our Internet address is www.ingredion.com. We make available, free of charge through our Internet website, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. These reports are made available as soon as reasonably practicable after they are electronically filed with or furnished to the Securities and Exchange Commission. Our corporate governance guidelines, board committee charters and code of ethics are posted on our website, the address of which is www.ingredion.com, and each is available in print to any shareholder upon request in writing to Ingredion Incorporated, 5 Westbrook Corporate Center, Westchester, Illinois 60154 Attention: Corporate Secretary. The contents of our website are not incorporated by reference into this report.

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Executive Officers of the Registrant

Set forth below are the names and ages of all of our executive officers, indicating their positions and offices with the Company and other business experience. Our executive officers are elected annually by the Board to serve until the next annual election of officers and until their respective successors have been elected and have qualified, unless removed by the Board.

Name	Age	Positions, Offices and Business Experience
James P. Zallie	57	President and Chief Executive Officer since January 1, 2018. Prior to that, Mr. Zallie served as Executive Vice President, Global Specialties and President, Americas from January 1, 2016 to December 31, 2017. Mr. Zallie previously served as Executive Vice President, Global Specialties and President, North America and EMEA from January 6, 2014 to December 31, 2015; Executive Vice President, Global Specialties and President, EMEA and Asia-Pacific from February 1, 2012 to January 5, 2014; and Executive Vice President and President, Global Ingredient Solutions from October 1, 2010 to January 31, 2012. Mr. Zallie previously served as President and Chief Executive Officer of the National Starch business from January 2007 to September 30, 2010 when it was acquired by Ingredion. Mr. Zallie worked for National Starch for more than 27 years in various positions of increasing responsibility, first in technical, then marketing and then international business management positions. Mr. Zallie served as a director of Innophos Holdings, Inc., a leading international producer of performance-critical and nutritional specialty ingredients with applications in food, beverage, dietary supplements, pharmaceutical, oral care and industrial end markets, from September 30, 2014 to April 1, 2018. Mr. Zallie serves as a director of Northwestern Medicine, North Region, a not-for-profit organization. Mr. Zallie holds Masters degrees in food science and business administration from Rutgers University and a Bachelor of Science degree in food science from Pennsylvania State University.

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- Elizabeth Adefioye 50 Senior Vice President Chief Human Resources Officer of Company since March 1, 2018. Prior to that, Ms. Adefioye served as Vice President, Human Resources, North America and Global Specialties, a position she held from September 12, 2016. Prior to that she served as Vice President Human Resources Americas of Janssen Pharmaceutical, a subsidiary of Johnson & Johnson, with responsibilities for the strategic talent agenda, employee engagement and organizational capabilities efforts with respect to more than 5,000 employees from June 2015 to September 2016. From February 2013 to June 2015 she served as Worldwide Vice President Human Resources, Cardiovascular and Specialty Solutions of Johnson & Johnson Medical Devices Sector. Prior thereto, Ms. Adefioye served as Vice President Human Resources Global Manufacturing and Supply of Novartis Consumer Health from February 2012 to January 2013. Prior to that she served as Vice President, Human Resources, North America of Novartis Consumer Health from September 2008 to January 2012. Ms. Adefioye served as Region Head, Human Resources Emerging Markets of Novartis OTC, from January 2007 to September 2008. Previously she served as Regional Human Resources Director – Central and Eastern Europe, Greece & Israel of Medtronic plc. from February 2001 to December 2006. She served as Senior Human Resources Manager of Bristol-Myers Squibb UK from January 2000 to January 2001. Ms. Adefioye holds a Bachelor's degree in chemistry from Lagos State University in Lagos, Nigeria and a postgraduate diploma in human resources management from the University of Westminster in London, England, United Kingdom. She also received a diploma in building leadership capability from Glasgow Caledonian University in Glasgow, Scotland, United Kingdom. Ms. Adefioye served as a Fellow of the Chartered Institute of Personnel Development and is a member of the Society for Human Resources Management.
- Valdirene Bastos-Licht 51 Senior Vice President and President, Asia-Pacific of Company since March 1, 2018. Ms. Bastos-Licht served as Senior Vice President, Asia-Pacific of Solvay SA's Euro Novocare operation, from August 2012 to February 2018. Solvay is a Belgian leader in the specialty chemical industry. The Euro Novocare operation provides chemicals for home and personal care, agriculture, coatings, oil and gas, and industrial applications. Prior to that she served as Vice President and General Manager – Brazil of Cardinal Health Nuclear Pharmacy – Brazil from August 2011 to August 2012. Ms. Bastos-Licht began her career with BASF where she spent 21 years in various positions of increasing complexity in IT, operational and strategic supply chain and global strategic and operational marketing, most recently serving as Vice President, General Manager Care Chemicals Division – South America. Ms. Bastos-Licht holds both a Bachelor's and a licensing degree in mathematics from Fundacao Santo Andre in Brazil and a Master's of Science degree in management from the MIT Sloan School of Management.

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- 63 Senior Vice President, Corporate Strategy and Chief Innovation Officer since March 1, 2018. Prior to that, Mr. DeLio served as Senior Vice President and Chief Innovation Officer from January 1, 2014 to February 28, 2018. Mr. DeLio served as Vice President, Global Innovation from November 4, 2010 to December 31, 2013, and he served as Vice President, Global Innovation for National Starch (acquired by Ingredion October 1, 2010) from January 1, 2009 to November 3, 2010. Mr. DeLio served as Vice President and General Manager, North America, of National Starch from February 26, 2006 to December 31, 2008. Prior to that he served as Associate Vice Chancellor of Research at the University of Illinois at Urbana-Champaign from August 2004 to February 2006. Previously, Mr. DeLio served as Corporate Vice President of Marketing and External Relations of ADM, one of the world's largest processors of oilseeds, corn, wheat, cocoa and other agricultural commodities and a leading manufacturer of protein meal, vegetable oil, corn sweeteners, flour, biodiesel, ethanol and other value-added food and feed ingredients, from October 2002 to October 2003. Prior to that Mr. DeLio was President of the Protein Specialties and Nutraceutical Divisions of ADM from September 2000 to October 2002 and President of the Nutraceutical Division of ADM from June 1999 to September 2001. He held various senior product development positions with Mars, Inc. from 1980 to May 1999. Mr. DeLio holds a Bachelor of Science degree in chemical engineering from Rensselaer Polytechnic Institute.
- Anthony P. DeLio
- 54 Senior Vice President and Chief Commercial & Sustainability Officer of the Company since July 17, 2018. Prior to that, Mr. Fernandes served as Senior Vice President and Chief Commercial Officer since March 1, 2018. Prior thereto, Mr. Fernandes served as President and General Director, Mexico, from January 1, 2014 to February 28, 2018. Prior thereto he served as Vice President and General Manager, U.S./Canada from May 1, 2013 to December 31, 2013. Prior thereto, Mr. Fernandes was Vice President, Global Beverage and General Manager, Sweetener and Industrial Solutions, U.S./Canada from November 1, 2011 to April 30, 2013. Prior thereto, he served as Vice President Food and Beverage Markets from October 1, 2009 to October 31, 2011. Prior thereto, he served in several roles of increasing responsibility in the Commercial organization from May 7, 1990 to September 30, 2009. Prior to joining Ingredion, Mr. Fernandes worked at QuakerChem Canada Ltd. as a Technical Sales Manager. Mr. Fernandes was a member of the executive board of Nueva Vision para el Desarrollo Agroalimentario de Mexico A.C. (Mexican representation of a New Vision for Agriculture, a global initiative of the World Economic Forum) and a member of the executive board of IDAQUIM (representing Corn Refining in Mexico). Mr. Fernandes was also a member of the board of directors of the Corn Refiners Association (CRA) and the board of directors of the International Stevia Council (ISC). Mr. Fernandes has a Bachelor's degree in chemical engineering with a minor in accounting from McGill University in Montreal, Canada.
- Larry Fernandes

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- James D. Gray 52 Executive Vice President and Chief Financial Officer since March 1, 2017. Prior to that, he served as Vice President, Corporate Finance and Planning, from April 1, 2016 to February 28, 2017. Mr. Gray previously served as Vice President, Finance, North America from January 6, 2014 when he joined the Company to March 31, 2016. Prior to that Mr. Gray was employed by PepsiCo, Inc. from December 1, 2004 to January 3, 2014. He served as Chief Financial Officer, Gatorade division and Vice President Finance of PepsiCo, Inc. from August 16, 2010 to January 3, 2014. Prior to that Mr. Gray served as Vice President Finance PepsiCo Beverages North America from December 1, 2004 to August 14, 2010. Mr. Gray holds a Bachelor's degree in Business Administration from the University of California, Berkeley, and a Master's degree from the Kellogg School of Management, Northwestern University.
- Jorgen Kokke 50 Executive Vice President, Global Specialties, and President, North America since February 5, 2018. Prior to that, Mr. Kokke previously served as Senior Vice President and President, Asia-Pacific and EMEA from January 1, 2016 to February 4, 2018. Previously, Mr. Kokke served as Senior Vice President and President, Asia-Pacific from September 16, 2014 to December 31, 2015; and Vice President and General Manager, Asia-Pacific from January 6, 2014 to September 15, 2014. Prior to that, Mr. Kokke served as Vice President and General Manager, EMEA since joining National Starch (acquired by Ingredion October 1, 2010) on March 1, 2009. Prior to that, he served as a Vice President of CSM NV, a global food ingredients supplier, where he had responsibility for the global Purac Food & Nutrition business from 2006 to 2009. Prior thereto, Mr. Kokke was Director of Strategy and Business Development at CSM NV. Prior to that he held a variety of roles of increasing responsibility in sales, business development, marketing and general management in Unilever's Loders Croklaan Group. Mr. Kokke holds a Master's degree in economics from the University of Amsterdam.
- Pierre Perez y Landazuri 50 Senior Vice President and President, EMEA since January 1, 2018. Prior to that, Mr. Perez y Landazuri served as Vice President and General Manager, EMEA for the Company's subsidiary, Ingredion Germany GmbH, from April 15, 2016 to December 31, 2017. Before joining Ingredion, Mr. Perez y Landazuri was employed by CP Kelco, a global producer of specialty hydrocolloid ingredients from September 2000 to March 2016. He most recently served as Vice President, Asia-Pacific from January 2014 to March 2016 in Shanghai, China and Singapore. Prior thereto he served as Vice President & General Manager, Asia-Pacific from June 2011 to December 2013 and Marketing & Strategy Director from January 2010 to May 2011 in Shanghai. Prior to that, Mr. Perez y Landazuri held a number of marketing, sales and product management roles at CP Kelco in Paris, France. Early in his career, he was employed by Rohm and Haas, BASF and Hercules in sales, marketing and engineering positions. Mr. Perez y Landazuri holds a Master's degree in chemical process engineering from ENSCP Graduate School of Chemistry (now Chimie ParisTech) in Paris, France.

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- Stephen K. Latreille 52 Vice President and Corporate Controller since April 1, 2016. Prior to that Mr. Latreille served as Vice President, Corporate Finance from August 5, 2014 to March 31, 2016. From August 26, 2014 to November 18, 2014, Mr. Latreille also led the Company’s Investor Relations and Corporate Communications function on an interim basis. He previously served as Director, Corporate Finance and Planning from March 4, 2013, when he joined the Company, to August 4, 2014. Prior to that Mr. Latreille was employed by Kraft Foods, Inc., then the world’s second largest food company, from December 1994 to December 28, 2012. Kraft Foods was spun off from Mondelez International on October 1, 2012. He served as Senior Director, Finance and Strategy, North America Customer Service and Logistics from April 1, 2009 to December 28, 2012. Mr. Latreille served as Senior Director, Investor Relations from June 18, 2007 to March 31, 2009. Prior to that, he held several positions of increasing responsibility with Kraft Foods, including Business Unit Finance Director. Prior to his time with Kraft Foods, Mr. Latreille held positions of increasing responsibility with Rand McNally & Company, a leading provider of maps, navigation and travel content, and Price Waterhouse, one of the world’s largest accounting firms. Mr. Latreille is a member of the advisory board of the Department of Finance, Broad College of Business, Michigan State University and of Ladder Up, a not-for-profit entity. Mr. Latreille holds a Bachelor’s degree in accounting from Michigan State University and a Master of Business Administration degree from Northwestern University. He is a member of the American Institute of Certified Public Accountants.
- Ernesto Peres Pousada, Jr. 51 Senior Vice President and President, South America since January 1, 2018. Prior to that Mr. Pousada served as Senior Vice President and President, South America of the Company’s subsidiary, Ingredion Brasil Ingredientes Industriais Ltda., from February 1, 2016 to December 31, 2017. Prior to that Mr. Pousada was employed by Suzano Papel e Celulose, a Brazilian pulp and paper manufacturer, from November 3, 2004 to January 31, 2016. He most recently served as Chief Operating Officer from December 1, 2007 to January 31, 2016. Prior to that Mr. Pousada served as Pulp Project Officer from November 3, 2004 to November 30, 2007. Before joining Suzano Papel e Celulose, Mr. Pousada was employed by The Dow Chemical Company from January 1990 to December 2004 in various positions in Brazil, the U.S. and Switzerland. Mr. Pousada holds a Bachelor’s degree in mechanical engineering from Instituto Mauá de Tecnologia in Brazil and a specialization in business administration from Fundação Instituto de Administração, also in Brazil.

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- 57 Robert J. Stefansic Senior Vice President, Operating Excellence, Information Technology and Chief Supply Chain Officer since September 17, 2018. Prior to that, he served as Senior Vice President, Operating Excellence, Sustainability, Information Technology and Chief Supply Chain Officer since March 1, 2017. Prior to that Mr. Stefansic served as Senior Vice President, Operational Excellence, Sustainability and Chief Supply Chain Officer from May 28, 2014 to February 28, 2017. From January 1, 2014 to May 27, 2014, Mr. Stefansic served as Senior Vice President, Operational Excellence and Environmental, Health, Safety & Sustainability. Prior to that, Mr. Stefansic served as Vice President, Operational Excellence and Environmental, Health, Safety and Sustainability from August 1, 2011 to December 31, 2013. He previously served as Vice President, Global Manufacturing Network Optimization and Environmental, Health, Safety and Sustainability of National Starch, and subsequently Ingredion, from November 1, 2010 to July 31, 2011. Prior to that, he served as Vice President, Global Operations of National Starch from November 1, 2006 to October 31, 2010. Prior to that, he served as Vice President, North America Manufacturing of National Starch from December 13, 2004 to October 31, 2006. Prior to joining National Starch he held positions of increasing responsibility with The Valspar Corporation, General Chemical Corporation and Allied Signal Corporation. Mr. Stefansic holds a Bachelor degree in chemical engineering and a Master's degree in business administration from the University of South Carolina.

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ITEM 1A. RISK FACTORS

Our business and assets are subject to varying degrees of risk and uncertainty. The following are factors that we believe could cause our actual results to differ materially from expected and historical results. Additional risks that are currently unknown to us may also impair our business or adversely affect our financial condition or results of operations. In addition, forward-looking statements within the meaning of the federal securities laws that are contained in this Form 10-K or in our other filings or statements may be subject to the risks described below as well as other risks and uncertainties. Please read the cautionary notice regarding forward-looking statements in Item 7 below.

Changes in consumer preferences and perceptions may lessen the demand for our products, which could reduce our sales and profitability and harm our business.

Food products are often affected by changes in consumer tastes, national, regional and local economic conditions and demographic trends. For instance, changes in prevailing health or dietary preferences causing consumers to avoid food products containing sweetener products, including high fructose corn syrup, in favor of foods that are perceived as being more healthy, could reduce our sales and profitability, and such reductions could be material. Increasing concern among consumers, public health professionals and government agencies about the potential health concerns associated with obesity and inactive lifestyles (reflected, for instance, in taxes designed to combat obesity, which have been imposed recently in North America) represent a significant challenge to some of our customers, including those engaged in the food and soft drink industries.

Current economic conditions may adversely impact demand for our products, reduce access to credit and cause our customers and others with whom we do business to suffer financial hardship, all of which could adversely impact our business, results of operations, financial condition, and cash flows.

Economic conditions in South America, the European Union, and many other countries and regions in which we do business have experienced various levels of weakness over the last few years, and may remain challenging for the foreseeable future. General business and economic conditions that could affect us include barriers to trade (USMCA negotiation, Brexit, border taxes, etc.), the strength of the economies in which we operate, unemployment, inflation, and fluctuations in debt markets. While currently these conditions have not impaired our ability to access credit markets and finance our operations, there can be no assurance that there will not be a further deterioration in the financial markets.

There could be a number of other effects from these economic developments on our business, including reduced consumer demand for products, pressure to extend our customers' payment terms, insolvency of our customers resulting in increased provisions for credit losses, decreased customer demand, including order delays or cancellations, and counterparty failures negatively impacting our operations.

In connection with our defined benefit pension plans, adverse changes in investment returns earned on pension assets and discount rates used to calculate pension and related liabilities or changes in required pension funding levels may have an unfavorable impact on future pension expenses and cash flows.

In addition, volatile worldwide economic conditions and market instability may make it difficult for us, our customers, and our suppliers to accurately forecast future product demand trends, which could cause us to produce excess products that could increase our inventory carrying costs. Alternatively, this forecasting difficulty could cause a shortage of products that could result in an inability to satisfy demand for our products.

Our reliance on certain industries for a significant portion of our sales could have a material adverse effect on our business.

Approximately 53 percent of our 2018 sales were made to companies engaged in the food industry and approximately 11 percent were made to companies in the beverage industry. Additionally, sales to the animal nutrition and brewing industry represented approximately 10 percent and approximately 7 percent, respectively, of our 2018 net sales. If our food customers, beverage customers, animal feed customers, or brewing industry customers were to substantially decrease their purchases, our business might be materially adversely affected.

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The uncertainty of acceptance of products developed through biotechnology could affect our profitability.

The commercial success of agricultural products developed through biotechnology, including genetically modified corn, depends in part on public acceptance of their development, cultivation, distribution and consumption. Public attitudes can be influenced by claims that genetically modified products are unsafe for consumption or that they pose unknown risks to the environment, even if such claims are not based on scientific studies. These public attitudes can influence regulatory and legislative decisions about biotechnology. The sale of our products, which may contain genetically modified corn, could be delayed or impaired because of adverse public perception regarding the safety of our products and the potential effects of these products on human health, the environment, and animals.

Our future growth could be negatively impacted if we fail to introduce sufficient new products and services.

While we do not believe that any individual patent or trademark is material to our business, a portion of our growth comes from innovation in products, processes, and services. We cannot guarantee that our research and development efforts will result in new products and services at a rate or of a quality sufficient to meet expectations.

We operate in a highly competitive environment and it may be difficult to preserve operating margins and maintain market share.

We operate in a highly competitive environment. Many of our products compete with virtually identical or similar products manufactured by other companies in the starch and sweetener industry. In the U.S., there are competitors, several of which are divisions of larger enterprises that have greater financial resources than we do. Some of these competitors, unlike us, have vertically integrated their corn refining and other operations. Many of our products also compete with products made from raw materials other than corn, including cane and beet sugar. Fluctuation in prices of these competing products may affect prices of, and profits derived from, our products. In addition, government programs supporting sugar prices indirectly impact the price of corn sweeteners, especially high fructose corn syrup. Competition in markets in which we compete is largely based on price, quality and product availability.

Due to market volatility, we cannot assure that we can adequately pass potential increases in the cost of corn and other raw materials on to customers through product price increases or purchase quantities of corn and other raw materials at prices sufficient to sustain or increase our profitability.

The price and availability of corn and other raw materials is influenced by economic and industry conditions, including supply and demand factors such as crop disease and severe weather conditions, such as drought, floods, or frost, that are difficult to anticipate and which we cannot control.

Raw material and energy price fluctuations, and supply interruptions and shortages could adversely affect our results of operations.

Our finished products are made primarily from corn. Purchased corn and other raw material costs account for between 40 percent and 65 percent of finished product costs. Some of our products are based upon specific varieties of corn that are produced in significantly less volumes than yellow dent corn. These specialty grains are higher-cost due to their more limited supply and require planning cycles of up to three years in order for us to receive our desired amounts of specialty corn. We also manufacture certain starch-based products from potatoes. Our current potato starch requirements constitute a material portion of the total available North American supply. It is possible that, in the long term, continued growth in demand for potato starch-based ingredients and new product development could result in capacity constraints. Also, we utilize tapioca in the manufacturing of starch products primarily in Thailand, as well as pulses, gum, rice and other raw materials around the world. A significant supply disruption or sharp increase in any of these raw material prices that we are unable to recover through pricing increases to our customers could have an adverse impact on our growth and profitability.

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Energy costs represent approximately 11 percent of our finished product costs. We use energy primarily to create steam required for our production processes and to dry products. We consume coal, natural gas, electricity, wood, and fuel oil to generate energy.

The market prices for our raw materials may vary considerably depending on supply and demand, world economies, trade agreements and tariffs, and other factors. We purchase these commodities based on our anticipated usage and future outlook for these costs. We cannot assure that we will be able to purchase these commodities at prices that we can adequately pass on to customers to sustain or increase profitability.

In North America, we sell a large portion of our finished products derived from corn at firm prices established in supply contracts typically lasting for periods of up to one year. In order to minimize the effect of volatility in the cost of corn related to these firm-priced supply contracts, we enter into corn futures and options contracts, or take other hedging positions in the corn futures market. Additionally, we produce and sell ethanol and enter into swap contracts to hedge price risk associated with fluctuations in market prices of ethanol. We are unable to directly hedge price risk related to co-product sales; however, we occasionally enter into hedges of soybean oil (a competing product to our animal feed and corn oil) in order to mitigate the price risk of animal feed and corn oil sales. These derivative contracts typically mature within one year. At expiration, we settle the derivative contracts at a net amount equal to the difference between the then-current price of the commodity (corn, soybean oil, or ethanol) and the derivative contract price. These hedging instruments are subject to fluctuations in value; however, changes in the value of the underlying exposures we are hedging generally offset such fluctuations. The fluctuations in the fair value of these hedging instruments may affect our cash flow. We fund any unrealized losses or receive cash for any unrealized gains on futures contracts on a daily basis. While the corn futures contracts or hedging positions are intended to minimize the effect of volatility of corn costs on operating profits, the hedging activity can result in losses, some of which may be material. Outside of North America, sales of finished products under long-term, firm-priced supply contracts are not material. We also use over-the-counter natural gas swaps to hedge portions of our natural gas costs, primarily in our North America operations.

An inability to contain costs could adversely affect our future profitability and growth.

Our future profitability and growth depends on our ability to contain operating costs and per unit product costs and to maintain and implement effective cost control programs, while at the same time maintaining competitive pricing and superior quality products, customer service, and support. Our ability to maintain a competitive cost structure depends on continued containment of manufacturing, delivery, freight, and administrative costs, as well as the implementation of cost-effective purchasing programs for raw materials, energy, and related manufacturing requirements.

If we are unable to contain our operating costs and maintain the productivity and reliability of our production facilities, our profitability and growth could be adversely affected.

Increased interest rates could increase our borrowing costs.

We may issue securities to finance acquisitions, capital expenditures, and working capital, or for other general corporate purposes. An increase in interest rates in the general economy could result in an increase in our borrowing costs for these financings, as well as under any existing debt that bears interest at an unhedged floating rate.

Future costs of environmental compliance may be material.

Our business could be affected in the future by national and global regulation or taxation of greenhouse gas emissions, as well as the potential effects of climate change. Changes in precipitation extremes, droughts and water availability have the potential to impact Ingredion's agricultural supply as well as the availability of water for our manufacturing operations. Globally, a number of countries have instituted or are considering climate change legislation and regulations. Ingredion continues to assess the impact of climate change, regulatory pressures and changing consumer behaviors on our business strategy. It is difficult at this time to estimate the likelihood of passage or predict the potential impact of any additional legislation. Potential consequences could include increased energy, transportation, and raw materials costs, and we may be required to make additional investments in our facilities and equipment. Ingredion has built a strong presence around the world and in some of the largest and fastest-growing markets. This positions our

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Company for long-term, profitable growth in a number of local, regional, and global market environments, while balancing potential risk, which is mitigated by the Company's ability to move production or growth projects to other sites within the company's portfolio.

We may not successfully identify and complete acquisitions or strategic alliances on favorable terms or achieve anticipated synergies relating to any acquisitions or alliances, and such acquisitions could result in unforeseen operating difficulties and expenditures and require significant management resources.

We regularly review potential acquisitions of complementary businesses, technologies, services, or products, as well as potential strategic alliances. We may be unable to find suitable acquisition candidates or appropriate partners with which to form partnerships or strategic alliances. Even if we identify appropriate acquisition or alliance candidates, we may be unable to complete such acquisitions or alliances on favorable terms, if at all. In addition, the process of integrating an acquired business, technology, service, or product into our existing business and operations may result in unforeseen operating difficulties and expenditures. Integration of an acquired company also may require significant management resources that otherwise would be available for ongoing development of our business. Moreover, we may not realize the anticipated benefits of any acquisition or strategic alliance, and such transactions may not generate anticipated financial results. Future acquisitions could also require us to issue equity securities, incur debt, assume contingent liabilities, or amortize expenses related to intangible assets, any of which could harm our business.

Operating difficulties at our manufacturing plants could adversely affect our operating results.

Producing starches and sweeteners through corn refining is a capital intensive industry. We have 44 plants and have preventive maintenance and de-bottlenecking programs designed to maintain and improve grind capacity and facility reliability. If we encounter operating difficulties at a plant for an extended period of time or start-up problems with any capital improvement projects, we may not be able to meet a portion of sales order commitments and could incur significantly higher operating expenses, both of which could adversely affect our operating results. We also use boilers to generate steam required in our production processes. An event that impaired the operation of a boiler for an extended period of time could have a significant adverse effect on the operations of any plant in which such event occurred.

Also, we are subject to risks related to such matters as product safety and quality; compliance with environmental, health and safety and food safety regulations; and customer product liability claims. The liabilities that could result from these risks may not always be covered by, or could exceed the limits of, our insurance coverage related to product liability and food safety matters. In addition, negative publicity caused by product liability and food safety matters may damage our reputation. The occurrence of any of the matters described above could adversely affect our revenues and operating results.

We operate a multinational business subject to the economic, political, and other risks inherent in operating in foreign countries and with foreign currencies.

We have operated in foreign countries and with foreign currencies for many years. Our results are subject to foreign currency exchange fluctuations. Our operations are subject to political, economic, and other risks. There has been and continues to be significant political uncertainty in some countries in which we operate. Economic changes, terrorist activity, and political unrest may result in business interruption or decreased demand for our products. Protectionist trade measures and import and export licensing requirements could also adversely affect our results of operations. Our success will depend in part on our ability to manage continued global political and economic uncertainty.

We primarily sell products derived from world commodities. Historically, we have been able to adjust local prices relatively quickly to offset the effect of local currency devaluations, although we cannot guarantee our ability to do this in the future. For example, due to pricing controls on many consumer products imposed in the recent past by the Argentine government, it takes longer than it had previously taken to achieve pricing improvement in response to currency devaluations in that country. The anticipated strength in the U.S. dollar may continue to provide some challenges, as it could take an extended period of time to fully recapture the impact of foreign currency devaluations, particularly in South America.

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We may hedge transactions that are denominated in a currency other than the currency of the operating unit entering into the underlying transaction. We are subject to the risks normally attendant to such hedging activities.

Our information technology systems, processes, and sites may suffer interruptions, security breaches, or failures which may affect our ability to conduct our business.

Our operations rely on certain key information technology systems, which are dependent on services provided by third parties, provide critical data connectivity, information, and services for internal and external users. These interactions include, but are not limited to: ordering and managing materials from suppliers, risk management activities, converting raw materials to finished products, inventory management, shipping products to customers, processing transactions, summarizing and reporting results of operations, human resources benefits and payroll management, complying with regulatory, legal and tax requirements, and other processes necessary to manage our business. Increased information technology security and social engineering threats and more sophisticated computer crime, including advanced persistent threats, pose potential risks to the security of our information technology systems, networks and services, as well as the confidentiality, availability and integrity of our third-party and employee data. We have put in place security measures to protect ourselves against cyber-based attacks and disaster recovery plans for our critical systems. However, if our information technology systems are breached, damaged, or cease to function properly due to any number of causes, such as catastrophic events, power outages, security breaches, or cyber-based attacks, and our disaster recovery plans do not effectively mitigate the risks on a timely basis, we may encounter significant disruptions that could interrupt our ability to manage our operations, cause loss of valuable data and actual or threatened legal actions, and cause us to suffer damage to our reputation, all of which may adversely impact our revenues, operating results, and financial condition.

Our profitability could be negatively impacted if we fail to maintain satisfactory labor relations.

Approximately 32 percent of our U.S. and 37 percent of our non-U.S. employees are members of unions. Strikes, lockouts, or other work stoppages or slowdowns involving our unionized employees could have a material adverse effect on us.

Natural disasters, war, acts and threats of terrorism, pandemics, and other significant events could negatively impact our business.

If the economies of any countries in which we sell or manufacture products or purchase raw materials are affected by natural disasters such as earthquakes, floods, or severe weather; war, acts of war, or terrorism; or the outbreak of a pandemic; it could result in asset write-offs, decreased sales and overall reduced cash flows.

Government policies and regulations could adversely affect our operating results.

Our operating results could be affected by changes in trade, monetary and fiscal policies, laws and regulations, and other activities of the U.S. and foreign governments, agencies, and similar organizations. These conditions include but are not limited to changes in a country's or region's economic or political conditions, modification or termination of trade agreements or treaties promoting free trade, creation of new trade agreements or treaties, trade regulations affecting production, pricing and marketing of products, local labor conditions and regulations, reduced protection of intellectual property rights, changes in the regulatory or legal environment, restrictions on currency exchange activities, currency exchange rate fluctuations, burdensome taxes and tariffs, and other trade barriers. International risks and uncertainties, including changing social and economic conditions as well as terrorism, political hostilities, and war, could limit our ability to transact business in these markets and could adversely affect our revenues and operating results.

Due to cross-border disputes, our operations could be adversely affected by actions taken by the governments of countries in which we conduct business.

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The recognition of impairment charges on goodwill or long-lived assets could adversely impact our future financial position and results of operations.

We have \$1.3 billion of total intangible assets at December 31, 2018, consisting of \$791 million of goodwill and \$460 million of other intangible assets. Additionally, we have \$2.3 billion of long-lived assets at December 31, 2018.

We perform an annual impairment assessment for goodwill and our indefinite-lived intangible assets, and as necessary, for other long-lived assets. If the results of such assessments were to show that the fair value of these assets were less than the carrying values, we could be required to recognize a charge for impairment of goodwill or long-lived assets, and the amount of the impairment charge could be material. Based on the results of the annual assessment, we concluded that as of July 1, 2018, it was more likely than not that the fair value of our reporting units was greater than their carrying values. We continue to monitor our reporting units in struggling economies and recent acquisitions for challenges in these businesses that may negatively impact the fair value of these reporting units.

Even though it was determined that there were no goodwill or long-lived asset impairments as of July 1, 2018, the future occurrence of a potential indicator of impairment, such as a significant adverse change in the business climate that would require a change in our assumptions or strategic decisions made in response to economic or competitive conditions, could require us to perform an assessment prior to the next required assessment date of July 1, 2019.

Changes in our tax rates or exposure to additional income tax liabilities could impact our profitability.

We are subject to income taxes in the U.S. and in various other foreign jurisdictions. Our effective tax rates could be adversely affected by changes in the mix of earnings by jurisdiction, changes in tax laws, or tax rates changes in the valuation of deferred tax assets and liabilities and material adjustments from tax audits.

The Tax Cuts and Jobs Act (“TCJA”), which was enacted in December 2017, significantly altered existing U.S. tax law and includes numerous and complex provisions that substantially affect our business. The U.S. Treasury Department and the Internal Revenue Service continue to interpret and issue guidance on provisions of the TCJA that could be different than our interpretation. Consequently, we may make adjustments to our provision for income taxes based on differences in interpretation in the periods in which guidance is issued.

Significant changes in the tax laws of the U.S. and numerous foreign jurisdictions in which we do business could result from the base erosion and profit shifting (“BEPS”) project undertaken by the Organization for Economic Cooperation and Development (“OECD”). An OECD-led coalition of 44 countries is contemplating changes to long-standing international tax norms that determine each country’s right to tax cross-border transactions. These

contemplated changes, as adopted by countries in which we do business, could increase tax uncertainty and the risk of double taxation, thereby adversely affecting our provision for income taxes.

The recoverability of our deferred tax assets, which are predominantly in Brazil, Canada, Germany, Mexico, and the U.S., is dependent upon our ability to generate future taxable income in these jurisdictions. In addition, the amount of income taxes we pay is subject to ongoing audits in various jurisdictions and a material assessment by a governing tax authority could affect our profitability and cash flows.

We may not have access to the funds required for future growth and expansion.

We may need additional funds to grow and expand our operations. We expect to fund our capital expenditures from operating cash flow to the extent we are able to do so. If our operating cash flow is insufficient to fund our capital expenditures, we may either reduce our capital expenditures or utilize our general credit facilities. For further strategic growth through mergers or acquisitions, we may also seek to generate additional liquidity through the sale of debt or equity securities in private or public markets or through the sale of non-productive assets. We cannot provide any assurance that our cash flows from operations will be sufficient to fund anticipated capital expenditures or that we will be able to obtain additional funds from financial markets or from the sale of assets at terms favorable to us. If we are unable to generate sufficient cash flows or raise sufficient additional funds to cover our capital expenditures or other strategic growth opportunities, we may not be able to achieve our desired operating efficiencies and expansion plans, which may adversely

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impact our competitiveness and, therefore, our results of operations. Our working capital requirements, including margin requirements on open positions on futures exchanges, are directly affected by the price of corn and other agricultural commodities, which may fluctuate significantly and change quickly.

Volatility in the stock market, fluctuations in quarterly operating results, and other factors could adversely affect the market price of our common stock.

The market price for our common stock may be significantly affected by factors such as our announcement of new products or services or such announcements by our competitors; technological innovation by us, our competitors or other vendors; quarterly variations in our operating results or the operating results of our competitors; general conditions in our or our customers' markets; and changes in earnings estimates by analysts or reported results that vary materially from such estimates. In addition, the stock market has experienced significant price fluctuations that have affected the market prices of equity securities of many companies that have been unrelated to the operating performance of any individual company.

No assurance can be given that we will continue to pay dividends.

The payment of dividends is at the discretion of our Board of Directors and will be subject to our financial results and the availability of statutory surplus funds to pay dividends.

Our profitability may be affected by other factors beyond our control.

Our operating income and ability to increase profitability depend to a large extent upon our ability to price finished products at a level that will cover manufacturing and raw material costs and provide an acceptable profit margin. Our ability to maintain appropriate price levels is determined by a number of factors largely beyond our control, such as aggregate industry supply and market demand, which may vary from time to time, and the economic conditions of the geographic regions in which we conduct our operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None

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ITEM 2. PROPERTIES

We own or lease (as noted below), directly and through our consolidated subsidiaries, 44 manufacturing facilities. In addition, we lease our corporate headquarters in Westchester, Illinois and our research and development facility in Bridgewater, New Jersey.

The following list details the locations of our manufacturing facilities within each of our four reportable business segments:

North America	South America	Asia Pacific	EMEA
Cardinal, Ontario, Canada	Baradero, Argentina	Lane Cove, Australia	Hamburg, Germany
London, Ontario, Canada	Chacabuco, Argentina	Guangzhou, China	Cornwala, Pakistan
San Juan del Rio, Queretaro, Mexico	Balsa Nova, Brazil	Shandong Province, China	Faisalabad, Pakistan
Guadalajara, Jalisco, Mexico	Cabo, Brazil	Shanghai, China	Mehran, Pakistan
Mexico City, Edo, Mexico	Mogi-Guacu, Brazil	Icheon, South Korea	Goole, United Kingdom
Oxnard, California, U.S.(a)	Rio de Janeiro, Brazil	Incheon, South Korea	
Stockton, California, U.S.(b)	Barranquilla, Colombia	Ban Kao Dien, Thailand	
Idaho Falls, Idaho, U.S.	Cali, Colombia	Kalasin, Thailand	
Bedford Park, Illinois, U.S.	Lima, Peru	Sikhiu, Thailand	
Mapleton, Illinois, U.S.		Banglen, Thailand	
Indianapolis, Indiana, U.S.			
Cedar Rapids, Iowa, U.S.			
Belcamp, Maryland, U.S.			
North Kansas City, Missouri, U.S.			
Winston-Salem, North Carolina, U.S.			
Salem, Oregon, U.S.			
Berwick, Pennsylvania, U.S.			
Charleston, South Carolina, U.S.			
Richland, Washington, U.S.			
Plover, Wisconsin, U.S.			

(a) Facility is leased.

(b) Ceased manufacturing at this facility in Q4 2018

We believe our manufacturing facilities are sufficient to meet our current production needs. We have preventive maintenance and de-bottlenecking programs designed to further improve grind capacity and facility reliability.

We have electricity co-generation facilities at our plants in London, Ontario, Canada; Cardinal, Ontario, Canada; Bedford Park, Illinois, U.S.; Winston-Salem, North Carolina, U.S.; San Juan del Rio and Mexico City, Mexico; Cali, Colombia; Cornwala, Pakistan; and Balsa Nova and Mogi-Guacu, Brazil, that provide electricity at a lower cost than is available from third parties. We generally own and operate these co-generation facilities, except for the facilities at our Mexico City, Mexico; and Balsa Nova and Mogi-Guacu, Brazil locations, which are owned by, and operated pursuant to co-generation agreements with third parties.

In recent years, we have made significant capital expenditures to update, expand and improve our facilities, spending \$350 million in 2018. We believe these capital expenditures will allow us to operate efficient facilities for the foreseeable future. We currently anticipate that capital expenditures and mechanical stores purchases for 2019 will approximate \$330 to \$360 million.

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ITEM 3. LEGAL PROCEEDINGS

We are currently subject to claims and suits arising in the ordinary course of business, including labor matters, certain environmental proceedings, and other commercial claims. We also routinely receive inquiries from regulators and other government authorities relating to various aspects of our business, including with respect to compliance with laws and regulations relating to the environment, and at any given time, we have matters at various stages of resolution with the applicable governmental authorities. The outcomes of these matters are not within our complete control and may not be known for prolonged periods of time. We do not believe that the results of currently known legal proceedings and inquires will be material to us. There can be no assurance, however, that such claims, suits or investigations or those arising in the future, whether taken individually or in the aggregate, will not have a material adverse effect on our financial condition or results of operations.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Shares of our common stock are traded on the New York Stock Exchange under the ticker symbol "INGR." The number of holders of record of our common stock was 3,911 at January 31, 2019.

We have a history of paying quarterly dividends. The amount and timing of the dividend payment, if any, is based on a number of factors including estimated earnings, financial position and cash flow. The payment of a dividend is solely at the discretion of our Board of Directors. Future dividend payments will be subject to our financial results and the availability of funds and statutory surplus to pay dividends.

Issuer Purchases of Equity Securities:

The following table summarizes information with respect to our purchases of our common stock during the fourth quarter of 2018.

(shares in thousands)	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number (or Approximate Dollar Value) of Shares That May Yet be Purchased Under the Plans or Programs at End of Period
October 1 – October 31, 2018	248	97.17	248	9,855 shares
November 1 – November 30, 2018	4,000	105.67	4,000	5,855 shares
December 1 – December 31, 2018	—	—	—	5,855 shares
Total	4,248	105.17	4,248	

On December 12, 2014, the Board of Directors authorized a stock repurchase program permitting us to purchase up to 5.0 million of our outstanding common shares from January 1, 2015, through December 31, 2019. On October 22, 2018, the Board of Directors authorized a new stock repurchase program permitting the Company to purchase up to an additional 8.0 million of its outstanding common shares from November 5, 2018 through December 31, 2023. At December 31, 2018, we have 5.9 million shares available for repurchase under the stock repurchase programs.

On November 5, 2018, the Company entered into a Variable Timing Accelerated Share Repurchase (“ASR”) program with JPMorgan (“JPM”). Under the ASR program, the Company paid \$455 million on November 5, 2018 and acquired 4.0 million shares of its common stock having an approximate value of \$423 million on that date. At the end of the program, the Company and JPM will settle any difference between the initial price and average daily volume-weighted average price (“VWAP”) less the agreed upon discount during the term of the agreement. On February 5, 2019 the Company was notified that JPM finalized the ASR with a resulting VWAP of \$98.04, which was less than initially paid. The Company elected to settle the difference in cash, resulting in JPM returning \$63 million of the upfront payment to the Company on February 6, 2019 and lowering the total cost of repurchasing the 4.0 million shares of common stock to \$392 million.

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ITEM 6. SELECTED FINANCIAL DATA

Selected financial data is provided below.

(in millions, except per share amounts)	2018	2017	2016 (a)	2015 (b)	2014
Summary of operations:					
Net sales	\$ 5,841	\$ 5,832	\$ 5,704	\$ 5,621	\$ 5,668
Net income attributable to Ingredion	443 (c)	519 (d)	485 (e)	402 (f)	355 (g)
Net earnings per common share of Ingredion:					
Basic	6.25 (c)	7.21 (d)	6.70 (e)	5.62 (f)	4.82 (g)
Diluted	6.17 (c)	7.06 (d)	6.55 (e)	5.51 (f)	4.74 (g)
Cash dividends declared per common share of Ingredion	2.45	2.20	1.90	1.74	1.68
Balance sheet data:					
Working capital	\$ 1,192	\$ 1,458	\$ 1,274	\$ 1,208	\$ 1,423
Property, plant and equipment, net	2,198	2,217	2,116	1,989	2,073
Total assets	5,728	6,080	5,782	5,074	5,085
Long-term debt	1,931	1,744	1,850	1,819	1,798
Total debt	2,100	1,864	1,956	1,838	1,821
Total equity (h)	\$ 2,408	\$ 2,917	\$ 2,595	\$ 2,180	\$ 2,207
Shares outstanding, year end	66.5	72.0	72.4	71.6	71.3
Additional data:					
Depreciation and amortization	\$ 247	\$ 209	\$ 196	\$ 194	\$ 195
Mechanical stores expense	57	57	57	57	56
Capital expenditures and mechanical stores purchases	350	314	284	280	276

(a) Includes TIC Gums Incorporated at December 31, 2016 for balance sheet data only.

(b) Includes Penford Corporation (“Penford”) from March 11, 2015 forward and Kerr Concentrates, Inc. (“Kerr”) from August 3, 2015 forward.

(c) Includes after-tax restructuring charges of \$51 million consisting of costs associated with the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, employee-related severance and other costs in relation to the Cost Smart SG&A program, other costs related to the North America Finance Transformation initiative, and other costs related to abandonment of certain assets related to our leaf extraction process in Brazil. Additionally, includes after-tax charge of \$3 million to the provision for income taxes related to the enactment of the TCJA in December 2017.

(d) Includes after-tax restructuring charges of \$31 million consisting of employee-related severance and other costs associated with the restructuring in Argentina, restructuring charges related to the abandonment of certain assets

related to our leaf extraction process in Brazil, employee-related severance and other costs associated with the Finance Transformation initiative, and other restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities. Additionally, includes after-tax charge of \$23 million to the provision for income taxes related to the enactment of the TCJA in December 2017, \$6 million related to the flow-through of costs primarily associated with the sale of TIC Gums inventory that was adjusted to fair value at the acquisition date in accordance with business combination accounting rules, and \$3 million associated with the integration of acquired operations, partially offset by a tax benefit of \$10 million due to deductible foreign exchange loss resulting from the tax settlement between the U.S. and Canada, and a \$6 million after-tax gain from an insurance settlement primarily related to capital reconstruction.

- (e) Includes after-tax restructuring charges of \$14 million consisting of employee severance-related charges and other costs associated with the execution of global IT outsourcing contracts, severance-related costs attributable to our optimization initiatives in North America and South America, and additional charges pertaining to our 2015 Port Colborne plant sale. Additionally, includes after-tax costs of \$2 million associated with the integration of acquired operations and \$27 million associated with an income tax matter.
- (f) Includes after-tax charges for impaired assets and restructuring costs of \$18 million, after-tax costs of \$7 million relating to the acquisition and integration of both Penford and Kerr, after-tax costs of \$6 million relating to the sale of Penford and Kerr inventory that was adjusted to fair value at the respective acquisition dates in accordance with business combination accounting rules, after-tax costs of \$4 million relating to a litigation settlement and an after-tax gain from the sale of a plant of \$9 million.
- (g) Includes a \$33 million impairment charge to write-off goodwill at our Southern Cone of South America reporting unit and after-tax costs of \$1 million related to the then-pending Penford acquisition.
- (h) Includes non-controlling interests.

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ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Overview

We are a major supplier of high-quality food and industrial ingredient solutions to customers around the world. We have 44 manufacturing plants located in North America, South America, Asia Pacific and Europe, the Middle East and Africa ("EMEA"), and we manage and operate our businesses at a regional level. We believe this approach provides us with a unique understanding of the cultures and product requirements in each of the geographic markets in which we operate, bringing added value to our customers. Our ingredients are used by customers in the food, beverage, brewing, and animal feed industries, among others.

Our growth strategy is centered on delivering value-added ingredient solutions for our customers. The foundation of our strategy is operating excellence, which includes our focus on safety, quality and continuous improvement. We see growth opportunities in three areas: first, we are working to expand our current business through organic growth; second, we are focused on broadening our ingredient portfolio with on-trend products through internal and external business development; finally, we look for growth from geographic expansion as we pursue extension of our reach to new locations. The ultimate goal of these strategies and actions is to deliver increased shareholder value.

Critical success factors in our business include managing our significant manufacturing costs, including costs for corn, other raw materials, and utilities. In addition, due to our global operations we are exposed to fluctuations in foreign currency exchange rates. We use derivative financial instruments, when appropriate, for the purpose of minimizing the risks and costs associated with fluctuations in certain raw material and energy costs, foreign exchange rates, and interest rates. Also, the capital intensive nature of our business requires that we generate significant cash flow over time in order to selectively reinvest in our operations and grow organically, as well as through strategic acquisitions and alliances. We utilize certain key financial metrics relating to return on capital employed and financial leverage to monitor our progress toward achieving our strategic business objectives (see section entitled "Key Financial Performance Metrics").

The financial results of 2018 for operating income, net income and diluted earnings per common share declined from 2017. Operating income declined in 2018 from 2017 primarily due to lower operating results in our North America and Asia Pacific segments, partially offset by operating income growth in South America and EMEA. Lower sweetener demand, commodity margin pressures, higher production and supply chain costs in North America, higher raw material costs in Asia-Pacific, and unfavorable currency translation were the main drivers of the operating income decline.

In July 2018, we announced a \$125 million savings target for our Cost Smart program, designed to improve profitability, further streamline our global business, and deliver increased value to shareholders. We set forth Cost Smart savings targets to include an anticipated \$75 million in cost of sales savings, including freight, and \$50 million in anticipated SG&A savings by year-end 2021. Additionally, the Board of Directors authorized the cessation of wet-milling at the Stockton, California plant and the establishment of a shipping distribution station at that facility, as part of the Cost Smart cost of sales program.

Our Cost Smart program and other initiatives resulted in restructuring charges in 2018. During the year ended December 31, 2018, we recorded \$64 million of pre-tax restructuring charges. We recorded \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, including \$34 million for accelerated depreciation, \$8 million for mechanical stores write downs, \$4 million for other restructuring costs, and \$3 million for employee-related severance. In addition, we recorded \$11 million of restructuring charges related to the Cost Smart SG&A program, including \$7 million of employee-related severance and other costs for restructuring projects in the South America, APAC, and North America segments and \$4 million of costs related to the Latin America finance transformation initiative. Finally, \$4 million of restructuring charges related to other projects were recorded, including \$3 million of costs related to the North America finance transformation and \$1 million of costs related to the prior year abandonment of certain assets of our leaf extraction process in Brazil.

Our cash provided by operating activities decreased to \$703 million for the year ended December 31, 2018, from \$769 million in the prior year primarily due to lower current year net earnings. Our cash used for financing activities

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increased during the year ended December 31, 2018, primarily due to the repurchase of 5.8 million shares of our outstanding common stock of which 4.0 million shares were repurchased in the fourth quarter pursuant to a Variable Timing Accelerated Share Repurchase (“ASR”) program.

Looking ahead, we anticipate that our operating income will remain flat to slightly favorable in 2019 compared to 2018, with the first half unfavorable due to higher anticipated corn costs and unfavorable currency translation relative to 2018. In North America, we expect operating income to remain flat with the first half lower due to current market values of corn and lower co-product values. In South America, we expect operating income to improve over the prior year driven by sales volume growth. We expect modest operating income growth in Asia Pacific weighted toward the latter half of the year given anticipated higher raw material costs and unfavorable foreign exchange in the first half of the year. We also expect modest operating income growth in EMEA in 2019 weighted toward the latter half of the year given unfavorable foreign exchange and higher raw material costs.

We currently expect that our available cash balances, future cash flow from operations, access to debt markets, and borrowing capacity under our credit facilities will provide us with sufficient liquidity to fund our anticipated capital expenditures, dividends, and other investing and financing activities for the foreseeable future.

Results of Operations

We have significant operations in four reporting segments: North America, South America, Asia Pacific and EMEA. For most of our foreign subsidiaries, the local foreign currency is the functional currency. Accordingly, revenues and expenses denominated in the functional currencies of these subsidiaries are translated into U.S. dollars at the applicable average exchange rates for the period. Fluctuations in foreign currency exchange rates affect the U.S. dollar amounts of our foreign subsidiaries’ revenues and expenses. In the second quarter of 2018, the Argentine peso rapidly devalued relative to the U.S. dollar, which along with increased inflation, resulted in a three-year cumulative inflation in that country exceeded 100 percent as of June 30, 2018. As a result, the Company adopted highly inflationary accounting as of July 1, 2018 for its Argentina affiliate in accordance with U.S. Generally Accepted Accounting Principles (“GAAP”). Under highly inflationary accounting, Argentina’s functional currency becomes the U.S. dollar, and its income statement and balance sheet will be measured in U.S. dollars using both current and historical rates of exchange. The effect of changes in exchange rates on Argentine peso-denominated monetary assets and liabilities will be reflected in earnings in financing costs. The impact of all foreign currency exchange rate changes, where significant, is provided below.

We acquired Shandong Huanong Specialty Corn Development Co., Ltd. (“Shandong Huanong”), TIC Gums Incorporated (“TIC Gums”) and Sun Flour Industry Co., Ltd. (“Sun Flour”) on November 29, 2016, December 29, 2016, and March 9, 2017, respectively. The results of the acquired businesses are included in our consolidated financial results from the respective acquisition dates forward. While we identify fluctuations due to the acquisitions, our discussion below also addresses results of operations absent the impact of the acquisitions and the results of the acquired businesses, where appropriate, to provide a more comparable and meaningful analysis.

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2018 Compared to 2017 – Consolidated

(in millions)	Year Ended December 31,		Favorable (Unfavorable)	Favorable (Unfavorable)	
	2018	2017	Variance	Percentage	
Net sales before shipping and handling costs	\$ 6,289	\$ 6,244	\$ 45	1	%
Less: shipping and handling costs	448	412	(36)	(9)	%
Net sales	5,841	5,832	9	—	%
Cost of sales	4,473	4,360	(113)	(3)	%
Gross profit	1,368	1,472	(104)	(7)	%
Operating expenses	611	616	5	1	%
Other income, net	(10)	(18)	(8)	(44)	%
Restructuring/impairment charges	64	38	(26)	(68)	%
Operating income	703	836	(133)	(16)	%
Financing costs, net	86	73	(13)	(18)	%
Other, non-operating income	(4)	(6)	(2)	(33)	%
Income before income taxes	621	769	(148)	(19)	%
Provision for income taxes	167	237	70	30	%
Net income	454	532	(78)	(15)	%
Less: Net income attributable to non-controlling interests	11	13	2	15	%
Net income attributable to Ingredion	\$ 443	\$ 519	\$ (76)	(15)	%

Net Income attributable to Ingredion. Net income attributable to Ingredion for 2018 decreased to \$443 million from \$519 million in 2017. Our results for 2018 included \$54 million of one-time net after-tax costs, driven primarily by after-tax restructuring costs of \$51 million. The restructuring charges consist of costs associated with our Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, costs related to the Cost Smart SG&A program, including employee-related severance and other costs for restructuring projects in the South America, Asia Pacific, and North America segments, costs related to the Latin America and North America Finance Transformation initiatives, and costs related to the cessation of our leaf extraction process in Brazil (see Note 5 of the Notes to the Consolidated Financial Statements for additional information). During the year ended December 31, 2018, we adjusted our provisional amounts related enactment of the Tax Cuts and Jobs Act ("TCJA") and recognized an incremental \$3 million of tax expense related to the TCJA.

Our results for 2017 included \$47 million of one-time net after-tax costs, driven primarily by restructuring costs of \$31 million. The restructuring charges consisted of costs associated with the restructuring in Argentina, charges related to the abandonment of certain assets related to our leaf extraction process in Brazil, costs associated with the Finance Transformation initiative, and other pre-tax restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities (see Note 5 of the Notes to the Consolidated Financial Statements for additional information). Our net after-tax results also included a net \$23 million charge to the provision for income taxes related to the enactment of the TCJA in December 2017, a \$6 million charge

relating to the flow-through of costs primarily associated with the sale of TIC Gums inventory that was adjusted to fair value at the acquisition date in accordance with business combination accounting rules, and a \$3 million charge associated with the integration of acquired operations, partially offset by a tax benefit of \$10 million due to a deductible foreign exchange loss resulting from the tax settlement between the U.S. and Canada and a \$6 million gain from an insurance settlement primarily related to capital reconstruction.

Net sales. Net sales remained relatively flat for the year ended December 31, 2018 as compared to the year ended December 31, 2017. Volume growth of 1 percent driven by specialty products and favorable price/product mix of 2 percent were offset by unfavorable currency translation of 3 percent.

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Cost of sales. Cost of sales for 2018 increased 3 percent to \$4.5 billion from \$4.4 billion in 2017 primarily due to higher raw material and manufacturing expenses. Our gross profit margin was 23 percent and 25 percent the years ended December 31, 2018, and 2017, respectively. The gross profit margin decrease primarily reflects higher raw material costs and manufacturing expenses.

Operating expenses. Our decrease in operating expenses of 1% for the year ended December 31, 2018, as compared to the year ended December 31, 2017 was primarily driven by lower general administrative costs, partially offset by higher selling and research and development expenses. Operating expenses, as a percentage of gross profit, were 45 percent for the year ended December 31, 2018, as compared to 42 percent for the year ended December 31, 2017.

Other income, net. Our change in other income, net for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was as follows:

(in millions)	Year Ended		Favorable
	December 31, 2018	December 31, 2017	(Unfavorable) Variance
Insurance settlement	\$ —	\$ 9	\$ (9)
Value-added tax recovery	5	6	(1)
Other	5	3	2
Other income, net	\$ 10	\$ 18	\$ (8)

Financing costs, net. Our financing costs, net for the year ended December 31, 2018 increased \$13 million from the year ended December 31, 2017, primarily driven by unfavorable currency translation, including the impact of highly inflationary accounting related to Argentina.

Provision for income taxes. Our effective income tax rates for the years ended December 31, 2018 and 2017 were 26.9 percent and 30.8 percent, respectively.

The Tax Cuts and Jobs Act (“TCJA”) was enacted on December 22, 2017. The TCJA introduced numerous changes in the U.S. federal tax laws. Changes that have a significant impact on our effective tax rate are a reduction in the U.S. corporate tax rate from 35 percent to 21 percent, the imposition of a U.S. tax on our global intangible low-taxed income (“GILTI”) and the foreign-derived intangible income (“FDII”) deduction. The TCJA also provided for a one-time transition tax on the deemed repatriation of cumulative foreign earnings as of December 31, 2017, and eliminated the tax on dividends from our foreign subsidiaries by allowing a 100-percent dividends received deduction.

On December 22, 2017, Staff Accounting Bulletin No. 118 (“SAB 118”) was issued to provide guidance on the application of GAAP to situations in which the registrant does not have all the necessary information available, prepared or analyzed (including computations) in sufficient detail to complete the accounting for the income tax effects of the TCJA.

In the fourth quarter of 2017, we calculated a provisional impact of the TCJA in accordance with SAB 118 and our understanding of the TCJA, including published guidance as of December 31, 2017. During the third and fourth quarter of 2018, we recorded \$2 million and \$1 million, respectively, of net incremental tax expense as we finalized our TCJA expense based on additional guidance from federal and state regulatory agencies. (See Note 9 of the Notes to the Consolidated Financial Statements for additional information.) The following table summarizes the provisional and final net tax expense impact of the TCJA:

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	Provisional 2017 TCJA Impact	Final 2017 TCJA Impact
(in millions)		
One-time transition tax	\$ 21	\$ 25
Remeasurement of deferred tax assets and liabilities	(38)	(38)
Net impact of provision for taxes on unremitted earnings	33	35
Other items, net	7	4
Net impact of the TCJA	\$ 23	\$ 26

Additionally, we had been pursuing relief from double taxation under the U.S.-Canada tax treaty for the years 2004 through 2013. In the third quarter of 2017, the two countries finalized the agreement, which eliminated the double taxation, and we paid \$63 million to the U.S. Internal Revenue Service to settle the liability. As a result of that agreement, we were entitled to a net tax benefit of \$10 million primarily due to a foreign exchange loss deduction on our 2017 U.S. federal income tax return, or 1.3 percentage points on the effective tax rate. As a result of the final settlement, we received refunds totaling \$42 million from Canadian revenue agencies and recorded \$2 million, or 0.3 percentage points on the effective tax rate, of interest through tax expense in 2018.

We use the U.S. dollar as the functional currency for our subsidiaries in Mexico. In 2017, a decline in value of the Mexican peso versus the U.S. dollar increased tax expense by \$4 million or 0.5 percentage points on the effective tax rate. This impact was largely associated with foreign currency translation gains and losses for local tax purposes on net-U.S.-dollar-monetary assets held in Mexico for which there was no corresponding gain or loss in pre-tax income.

During 2018, we increased the valuation allowance on the net deferred tax assets in Argentina by \$6 million, or 1.0 percentage points on the effective tax rate, compared to \$16 million, or 2.0 percentage points on the effective tax rate in 2017.

Without the impact of the items described above, our effective tax rate would have been approximately 25.1 percent and 28.1 percent for 2018 and 2017, respectively. The remaining year-over-year decrease in the effective income tax rate is primarily attributable to the impact of U.S. tax reform.

Net income attributable to non-controlling interests. Net income attributable to non-controlling interests for the year ended December 31, 2018, decreased \$2 million from the year ended December 31, 2017, primarily due to unfavorable currency translation at our non-wholly-owned operation in Pakistan

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(in millions)	Year Ended December 31,		Favorable (Unfavorable) Variance	Favorable (Unfavorable) Percentage	
	2018	2017			%
Net sales to unaffiliated customers	\$ 3,511	\$ 3,529	\$ (18)	(1)	%
Operating income	545	654	(109)	(17)	%

Net sales. Our decrease in net sales of 1 percent for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by a 1 percent decrease in price/product mix due to higher freight costs. Volume growth for specialty and Mexico was primarily offset by volume declines for sweeteners in U.S./Canada.

Operating income. Our decrease in operating income of \$109 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by higher production and supply chain costs, lower U.S./Canada sweetener demand, and commodity margin pressures.

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2018 Compared to 2017 – South America

(in millions)	Year Ended December 31,		Favorable (Unfavorable)	Favorable (Unfavorable)	
	2018	2017	Variance	Percentage	
Net sales to unaffiliated customers	\$ 943	\$ 1,007	\$ (64)	(6)	%
Operating income	99	81	18	22	%

Net sales. Our decrease in net sales of 6 percent for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by currency devaluations of 19% in Argentina and Brazil partly offset by a 13% increase in price/product mix from price increases used to offset higher raw material costs and foreign currency fluctuations.

Operating income. Our increase in operating income of \$18 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was primarily driven by improved operational efficiencies and the lapping of the 2017 Argentina manufacturing optimization project, partially offset by unfavorable currency translation reflecting a weaker Brazilian real and Argentine peso.

2018 Compared to 2017 – Asia Pacific

(in millions)	Year Ended December 31,		Favorable (Unfavorable)	Favorable (Unfavorable)	
	2018	2017	Variance	Percentage	
Net sales to unaffiliated customers	\$ 803	\$ 740	\$ 63	9	%
Operating income	104	115	(11)	(10)	%

Net sales. Our increase in net sales of 9 percent for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by volume growth of 3 percent, favorable currency translation of 3 percent, and a 3 percent increase in price/product mix due to favorable pricing to offset higher tapioca costs.

Operating income. Our decrease in operating income of \$11 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by a delay in the pass through of higher tapioca costs, partially offset by specialty volume growth.

2018 Compared to 2017 – EMEA

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(in millions)	Year Ended		Favorable (Unfavorable) Variance	Favorable (Unfavorable) Percentage	
	December 31, 2018	2017			
Net sales to unaffiliated customers	\$ 584	\$ 556	\$ 28	5	%
Operating income	116	114	2	2	%

Net sales. Our increase in net sales of 5 percent for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by volume growth of 6 percent, a 3 percent increase in price/product mix, partially offset by unfavorable currency translation of 4 percent.

Operating income. Our increase in operating income of \$2 million for the year ended December 31, 2018, as compared to the year ended December 31, 2017, was driven by specialty and core volume growth and improved price/product mix, partly offset by unfavorable currency translation in Pakistan and higher raw material costs.

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2017 Compared to 2016 – Consolidated

(in millions)	Year Ended December 31,		Favorable (Unfavorable)	Favorable (Unfavorable)	
	2017	2016	Variance	Percentage	
Net sales before shipping and handling costs	\$ 6,244	\$ 6,082	\$ 162	3	%
Less: shipping and handling costs	412	378	(34)	(9)	%
Net sales	5,832	5,704	128	2	%
Cost of sales	4,360	4,303	(57)	(1)	%
Gross profit	1,472	1,401	71	5	%
Operating expenses	616	580	(36)	(6)	%
Other income, net	(18)	(4)	14	350	%
Restructuring/impairment charges	38	19	(19)	(100)	%
Operating income	836	806	30	4	%
Financing costs, net	73	66	(7)	(11)	%
Other, non-operating income	(6)	(2)	4	200	%
Income before income taxes	769	742	27	4	%
Provision for income taxes	237	246	9	4	%
Net income	532	496	36	7	%
Less: Net income attributable to non-controlling interests	13	11	(2)	(18)	%
Net income attributable to Ingredion	\$ 519	\$ 485	\$ 34	7	%

Net Income attributable to Ingredion. Net income attributable to Ingredion for 2017 increased to \$519 million from \$485 million in 2016. Our results for 2017 included \$47 million of one-time net after-tax costs, driven primarily by restructuring costs of \$31 million. The restructuring charges consisted of costs associated with the restructuring in Argentina, charges related to the abandonment of certain assets related to our leaf extraction process in Brazil, costs associated with the Finance Transformation initiative, and other pre-tax restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities (see Note 5 of the Notes to the Consolidated Financial Statements for additional information). Our net after-tax results also included a net \$23 million charge to the provision for income taxes related to the enactment of the Tax Cuts and Jobs Act (“TCJA”) in December 2017, a \$6 million charge relating to the flow-through of costs primarily associated with the sale of TIC Gums inventory that was adjusted to fair value at the acquisition date in accordance with business combination accounting rules, and a \$3 million charge associated with the integration of acquired operations, partially offset by a tax benefit of \$10 million due to a deductible foreign exchange loss resulting from the tax settlement between the U.S. and Canada and a \$6 million gain from an insurance settlement primarily related to capital reconstruction.

Our results for 2016 included \$43 million of net after-tax costs, primarily driven by a \$27 million charge for the U.S.-Canada income tax settlement and related after-tax reserve and restructuring costs of \$14 million. These restructuring charges consisted of employee-related severance charges and other costs associated with the execution of global IT outsourcing contracts, severance-related costs attributable to optimization initiatives in North America and South America, and additional charges pertaining to our 2015 Port Colborne plant sale. Our net after-tax costs also included \$2 million associated with the integration of acquired operations.

Net sales. Our increase in net sales of 2 percent for the year ended December 31, 2017 as compared to the year ended December 31, 2016, was driven by volume growth of 3 percent, which was comprised of 2 percent growth from recent acquisitions and 1 percent increase in organic volume growth, and favorable currency translation of 1 percent reflecting a stronger Brazilian real. The increase was partially offset by a 2 percent decrease in price/product mix.

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Cost of sales. Cost of sales for 2017 increased 1 percent to \$4.4 billion from \$4.3 billion in 2016 primarily driven by higher net sales volume, partially offset by lower net raw material cost. Gross corn costs per ton for 2017 decreased approximately 2 percent from 2016 driven by lower market prices for corn. Our gross profit margin was 25 percent for the year ended December 31, 2017, and 2016. The gross profit margin remained flat reflecting favorable currency translation offset by higher input costs as a result of the temporary manufacturing interruption in Argentina.

Operating expenses. Our increase in operating expenses of 6 percent for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by the incremental operating expenses of acquired operations. Operating expenses, as a percentage of gross profit, was 42 percent and 41 percent for the years ended December 31, 2017 and 2016, respectively.

Other income, net. Our change in other income, net for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was as follows:

(in millions)	Year Ended		Favorable (Unfavorable) Variance
	2017	2016	
Insurance settlement	\$ 9	\$ —	\$ 9
Value-added tax recovery	6	5	1
Other	3	(1)	4
Other income, net	\$ 18	\$ 4	\$ 14

Financing costs, net. Our financing costs, net for the year ended December 31, 2017 increased \$7 million from the year ended December 31, 2016, due to an increase in interest expense, driven by increased short-term borrowings with higher interest rates and unfavorable currency translation.

Provision for income taxes. Our effective income tax rates for the years ended December 31, 2017 and 2016 were 30.8 percent and 33.1 percent, respectively.

The TCJA was enacted on December 22, 2017. The TCJA introduced numerous changes in the U.S. federal tax laws. Changes that have a significant impact on our effective tax rate are a reduction in the U.S. corporate tax rate from 35 percent to 21 percent and the imposition of a U.S. tax on our global intangible low-taxed income (“GILTI”). The TCJA also provided for a one-time transition tax on the deemed repatriation of cumulative foreign earnings as of December 31, 2017, and eliminates the tax on dividends from our foreign subsidiaries by allowing a 100 percent dividends received deduction.

On December 22, 2017, SAB 118 was issued to provide guidance on the application of GAAP to situations in which the registrant does not have all the necessary information available, prepared or analyzed (including computations) in sufficient detail to complete the accounting for the income tax effects of the TCJA.

We calculated what we believed to be a reasonable estimate of the impact of the TCJA in accordance with SAB 118 and our understanding of the TCJA, including published guidance as of the date of the filing of our 2017 annual report on Form 10-K, and we recorded \$23 million of provisional income tax expense in the fourth quarter of 2017, the period in which the TCJA was enacted. (See Note 9 of the Notes to the Consolidated Financial Statements for additional information.)

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The provisional amount recorded in 2017 of \$23 million was composed of the following four items:

(in millions)

One-time transition tax	\$ 21
Remeasurement of deferred tax assets and liabilities	(38)
Net impact of provision for taxes on unremitted earnings	33
Other items, net	7
Net impact of the TCJA on our 2017 income tax expense	\$ 23

Additionally, we had been pursuing relief from double taxation under the U.S.-Canada tax treaty for the years 2004 through 2013. During the fourth quarter of 2016, a tentative settlement was reached between the U.S. and Canada and, consequently, we established a net reserve of \$24 million, including interest thereon, recorded as a \$70 million cost and a \$46 million benefit, or 3.2 percentage points on the effective tax rate. In addition, as a result of the settlement, for the years 2014 through 2016, we had established a net reserve of \$7 million, or 1.0 percentage points on the effective tax rate in 2016. In the third quarter of 2017, the two countries finalized the agreement, which eliminated the double taxation, and we paid \$63 million to the Internal Revenue Service to settle the U.S. federal portion of the accrued liability. As a result of that agreement, we were entitled to a tax affected benefit of \$10 million primarily due to a foreign exchange loss deduction on our 2017 U.S. federal income tax return, or 1.3 percentage points on the effective tax rate.

We use the U.S. dollar as the functional currency for our subsidiaries in Mexico. Because of the increase in the value of the Mexican peso versus the U.S. dollar in 2017, the Mexican tax provision includes decreased tax expense of approximately \$4 million, or 0.5 percentage points on the effective tax rate. In 2016, a decline in the value of the Mexican peso versus the U.S. dollar increased tax expense by \$18 million, or 2.4 percentage points on the effective tax rate. These impacts are largely associated with foreign currency translation gains and losses for local tax purposes on net U.S. dollar monetary assets held in Mexico for which there was no corresponding gain or loss in pre-tax income.

During 2017, we increased the valuation allowance on the net deferred tax assets in Argentina. As a result, we recorded a valuation allowance in the amount of \$16 million, or 2.0 percentage points on the effective tax rate, compared to \$7 million and or 1.0 percentage points on the effective tax rate in 2016. Additionally in 2017, distributions were repatriated from foreign affiliates resulting in the reversal of \$4 million or 0.5 percentage points on the effective tax rate.

During 2016, our foreign tax credits increased in the amount of \$22 million, or 3.0 percentage points on the effective tax rate. In addition, we accrued taxes on unremitted earnings of foreign subsidiaries in the amount of \$4 million, or 0.5 percentage points on effective tax rate, and had net favorable reversals of previously unrecognized tax benefits of \$2 million, or 0.3 percentage points on effective tax rate.

Without the impact of the items described above, our effective tax rate would have been approximately 28.1 percent and 28.3 percent for 2017 and 2016, respectively.

Net income attributable to non-controlling interests. Net income attributable to non-controlling interests for the year ended December 31, 2017, increased \$2 million from the year ended December 31, 2016, due to improved net income at our non-wholly-owned operation in Pakistan

2017 Compared to 2016 – North America

(in millions)	Year Ended December 31,		Favorable (Unfavorable) Variance	Favorable (Unfavorable) Percentage	
	2017	2016			
Net sales to unaffiliated customers	\$ 3,529	\$ 3,447	\$ 82	2	%
Operating income	654	606	48	8	%

Net sales. Our increase in net sales of 2 percent for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by volume growth of 3 percent primarily from the TIC Gums acquisition, and was partially offset by a 1 percent decrease in price/product mix driven by lower raw material costs.

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Operating income. Our increase in operating income of \$48 million for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was primarily driven by net margin improvement from favorable raw material costs compared to the prior period and organic and acquisition-related volume growth, in addition to operational efficiencies and partially offset by a decrease in price/product mix.

2017 Compared to 2016 – South America

(in millions)	Year Ended December 31,		Favorable (Unfavorable) Variance	Favorable (Unfavorable) Percentage	
	2017	2016			%
Net sales to unaffiliated customers	\$ 1,007	\$ 1,010	\$ (3)	—	%
Operating income	81	90	(9)	(10)	%

Net sales. Net sales remained relatively flat for the year ended December 31, 2017, as compared to the year ended December 31, 2016, as a 3 percent favorable currency translation primarily reflecting a stronger Brazilian real was offset by a 3 percent decrease in price/product mix.

Operating income. Our decrease in operating income of \$9 million for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was primarily driven by unfavorable price/product mix and difficult macroeconomic conditions in the region and interruption of manufacturing activities resulting in temporary higher operating costs in Argentina during the second quarter of 2017. This decrease was partially offset by a net margin improvement from favorable raw material costs and a favorable currency translation primarily reflecting a stronger Brazilian real and Argentine peso.

2017 Compared to 2016 – Asia Pacific

(in millions)	Year Ended December 31,		Favorable (Unfavorable) Variance	Favorable (Unfavorable) Percentage	
	2017	2016			%
Net sales to unaffiliated customers	\$ 740	\$ 709	\$ 31	4	%
Operating income	115	113	2	2	%

Net sales. Our increase in net sales of 4 percent for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by organic volume growth of 8 percent and favorable currency translation of 2 percent primarily reflecting a stronger Korean won, partially offset by a 6 percent decrease in price/product mix due to core customer mix diversification.

Operating income. Our increase in operating income of \$2 million for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by volume growth, improved operational efficiencies, and favorable currency translation primarily reflecting a stronger Korean won, partially offset by a decrease in price/product mix due to core customer mix diversification.

2017 Compared to 2016 – EMEA

(in millions)	Year Ended December 31,		Favorable (Unfavorable)	Favorable (Unfavorable)	
	2017	2016	Variance	Percentage	
Net sales to unaffiliated customers	\$ 556	\$ 538	\$ 18	3	%
Operating income	114	107	7	7	%

Net sales. Our increase in net sales of 3 percent for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by a 2 percent increase in price/product mix and organic volume growth of 1 percent.

Operating income. Our increase in operating income of \$7 million for the year ended December 31, 2017, as compared to the year ended December 31, 2016, was driven by favorable price/product mix and volume growth, partially offset by increased operational costs.

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Liquidity and Capital Resources

At December 31, 2018, our total assets were \$5.7 billion, as compared to \$6.1 billion at December 31, 2017. The decrease was driven principally by higher cash usage for common stock repurchases of \$657 million during the current year and by unfavorable exchange rate movement. Total equity decreased to \$2.4 billion at December 31, 2018, from \$2.9 billion at December 31, 2017. This decrease primarily reflects an increase in treasury stock due to common stock repurchases, partially offset by our current year earnings.

On August 18, 2017, we entered into a Term Loan Credit Agreement (“Term Loan”) to establish a senior unsecured term loan credit facility. Under the Term Loan, we were allowed three borrowings in an amount of up to \$500 million total. The Term Loan matures 18 months from the date of the final borrowing. We initiated all three borrowings under the Term Loan in 2017 totaling \$420 million, due April 25, 2019. The proceeds were used to refinance \$300 million of 1.8 percent senior notes due September 25, 2017, and pay down borrowings outstanding on the revolving credit facility. We paid down \$25 million of the Term Loan in December 2017 and paid an additional \$230 million towards the Term Loan during 2018. All payments were made with cash on-hand. As of December 31, 2018, the remaining Term Loan balance is \$165 million. This borrowing is included in the long-term debt as we have the ability and intent to refinance it on a long-term basis prior to the April 25, 2019 maturity date. See also Note 7 of the Consolidated Financial Statements for additional information.

On October 11, 2016, we entered into a five-year, senior, unsecured \$1 billion revolving credit agreement (the “Revolving Credit Agreement”) that replaced our previously existing \$1 billion senior unsecured revolving credit facility that would have matured on October 22, 2017. See also Note 7 of the Consolidated Financial Statements for additional information.

Subject to certain terms and conditions, we may increase the amount of the revolving facility under the Revolving Credit Agreement by up to \$500 million in the aggregate. We may also obtain up to two one-year extensions of the maturity date of the Revolving Credit Agreement at our request and subject to the agreement of our lenders. All committed pro rata borrowings under the revolving facility will bear interest at a variable annual rate based on either the LIBOR or base rate, at our election, subject to the terms and conditions thereof, plus, in each case, an applicable margin based on our leverage ratio (as reported in the financial statements delivered pursuant to the Revolving Credit Agreement) or our credit rating. Subject to specified conditions, we may designate one or more of our subsidiaries as additional borrowers under the Revolving Credit Agreement provided that we guarantee all borrowings and other obligations of any such subsidiaries thereunder.

The Revolving Credit Agreement contains customary representations, warranties, covenants, events of default and other terms and conditions, including limitations on liens, incurrence of subsidiary debt and mergers. We must also comply with a leverage ratio covenant and an interest coverage ratio covenant. The occurrence of an event of default

under the Revolving Credit Agreement could result in all loans and other obligations under the agreement being declared due and payable and the revolving credit facility being terminated. We met all covenant requirements as of December 31, 2018. As of December 31, 2018, there were \$418 million in borrowings outstanding under the Revolving Credit Agreement, with an additional \$582 million available for use under the Revolving Credit Agreement as of the end of the year. In addition, we have a number of short-term credit facilities consisting of operating lines of credit outside of the U.S.

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As of December 31, 2018, we had a total debt outstanding of \$2.1 billion. As of December 31, 2018, our total debt consisted of the following:

(in millions)	
3.2% senior notes due October 1, 2026	\$ 496
4.625% senior notes due November 1, 2020	399
6.625% senior notes due April 15, 2037	254
5.62% senior notes due March 25, 2020	200
Term loan credit agreement due April 25, 2019	165
Revolving credit facility	418
Fair value adjustment related to hedged fixed rate debt instruments	(1)
Long-term debt	1,931
Short-term borrowings	169
Total debt	\$ 2,100

We, as the parent company, guarantee certain obligations of our consolidated subsidiaries. As of December 31, 2018, such guarantees aggregated \$57 million. We believe that such consolidated subsidiaries will meet their financial obligations as they become due.

Historically, the principal source of our liquidity has been our internally generated cash flow, which we supplement as necessary with our ability to borrow on our bank lines and to raise funds in the capital markets. In addition to borrowing availability under our Revolving Credit Agreement, we also have approximately \$507 million of unused operating lines of credit in the various foreign countries in which we operate.

The weighted average interest rate on our total indebtedness was approximately 4.8 percent and 4.0 percent for 2018 and 2017, respectively.

Net Cash Flows

A summary of operating cash flows is shown below:

(in millions)	2018	2017	2016
Net income	\$ 454	\$ 532	\$ 496
Depreciation and amortization	247	209	196

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Mechanical stores expense	57	57	57
Charge for fair value mark-up of acquired inventory	—	9	—
Deferred income taxes	(23)	67	(5)
Changes in working capital	(118)	(121)	(8)
Other	86	16	35
Cash provided by operations	\$ 703	\$ 769	\$ 771

Cash provided by operations was \$703 million in 2018, as compared with \$769 million in 2017. The decrease in 2018 is primarily due to lower current year net earnings and the change in deferred income tax provision versus the prior year. Cash provided by operations in 2017 remained relatively flat in comparison to 2016. The increase in 2017 net earnings over 2016 was offset by an increase of cash outflow in working capital primarily due to the outflow in accounts payable and accrued liabilities for the \$63 million payment made to the IRS in the third quarter of 2017 to complete the double taxation settlement between the U.S. and Canada.

To manage price risk related to corn purchases in North America, we use derivative instruments (corn futures and options contracts) to lock in our corn costs associated with firm-priced customer sales contracts. We are unable to directly hedge price risk related to co-product sales; however, we occasionally enter into hedges of soybean oil (a competing product to our animal feed and corn oil) in order to mitigate the price risk of animal feed and corn oil sales. Additionally, we enter into futures contracts to hedge price risk associated with fluctuations in market prices of ethanol. As the market price of these commodities fluctuate, our derivative instruments change in value and we fund any unrealized losses or

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receive cash for any unrealized gains related to outstanding commodity futures and option contracts. We plan to continue to use derivative instruments to hedge such price risk and, accordingly, we will be required to make cash deposits to or be entitled to receive cash from our margin accounts depending on the movement in the market price of the underlying commodities.

Listed below are our primary investing and financing activities:

(in millions)	2018	2017	2016
Payments for acquisitions	\$ —	\$ (17)	\$ (407)
Capital expenditures and mechanical stores purchases	(350)	(314)	(284)
Payments on debt	(738)	(1,240)	(874)
Proceeds from borrowings	987	1,144	1,000
Dividends paid (including to non-controlling interests)	(182)	(165)	(141)
Repurchases of common stock	(657)	(123)	(8)

On December 15, 2018, our board of directors declared a quarterly cash dividend of \$0.625 per share of common stock. This dividend was paid on January 25, 2019, to stockholders of record at the close of business on January 2, 2019.

We paid \$657 million during 2018 to repurchase common stock. We purchased 1.8 million shares of our common stock in open market transactions for \$202 million during the second, third and fourth quarters of 2018. Additionally on November 5, 2018, we repurchased 4 million shares of our outstanding common stock pursuant to an ASR agreement at an upfront cost of \$455 million. At the end of the ASR program, we will settle any difference between the initial price and VWAP less the agree upon discount during the term of the agreement either by receiving cash or additional shares, or by paying cash or delivering additional shares, depending on the final settlement price. We received notification of settlement of the ASR from the bank on February 5, 2019 with a final average share price of \$98.04. This price resulted in a final cost of \$392 million to repurchase the 4.0 million shares. We elected to receive the \$63 million difference in cash, with final settlement occurring on February 6, 2019.

We currently anticipate that capital expenditures and mechanical stores purchases for 2019 will be approximately \$330 million to \$360 million.

In 2017, we repurchased 1 million common shares in open market transactions at a cost of \$123 million. Additionally in March 2017, we completed our acquisition of Sun Flour in Thailand for \$18 million. As of December 31, 2017, we paid \$16 million in cash and recorded \$2 million in accrued liabilities for the final deferred payment due to the previous owner.

During 2016, we acquired TIC Gums, a U.S.-based company that provides advanced texture systems to the food and beverage industry. We funded the \$396 million acquisition with cash and short-term borrowings. Additionally, we completed our acquisition of Shandong Huanong in China for \$12 million in cash.

We currently expect that our available cash balances, future cash flow from operations, access to debt markets, and borrowing capacity under our credit facilities will provide us with sufficient liquidity to fund our anticipated capital expenditures, dividends, and other investing and financing activities for the foreseeable future.

We have not provided foreign withholding taxes, state income taxes, and federal and state taxes on foreign currency gains/losses on accumulated undistributed earnings of certain foreign subsidiaries because these earnings are considered to be permanently reinvested. It is not practicable to determine the amount of the unrecognized deferred tax liability related to the undistributed earnings. We do not anticipate the need to repatriate funds to the U.S. to satisfy domestic liquidity needs arising in the ordinary course of business, including liquidity needs associated with our domestic debt service requirements. Approximately \$311 million of our total cash and cash equivalents and short-term investments of \$334 million at December 31, 2018, were held by our operations outside of the U.S. We expect that available cash balances and credit facilities in the U.S., along with cash generated from operations and access to debt markets, will be sufficient to meet our operating and other cash needs for the foreseeable future.

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Hedging and Financial Risk

Hedging: We are exposed to market risk stemming from changes in commodity prices (primarily corn and natural gas), foreign currency exchange rates, and interest rates. In the normal course of business, we actively manage our exposure to these market risks by entering into various hedging transactions, authorized under established policies that place clear controls on these activities. These transactions utilize exchange-traded derivatives or over-the-counter derivatives with investment grade counterparties. Our hedging transactions may include, but are not limited to, a variety of derivative financial instruments such as commodity-related futures, options and swap contracts, forward currency-related contracts and options, interest rate swap agreements, and Treasury lock agreements (“T-Locks”). See Note 6 of the Notes to the Consolidated Financial Statements for additional information.

Commodity Price Risk: Our principal use of derivative financial instruments is to manage commodity price risk in North America relating to anticipated purchases of corn and natural gas to be used in our manufacturing process. We periodically enter into futures, options and swap contracts for a portion of our anticipated corn and natural gas usage, generally over the following 12 to 24 months, in order to hedge price risk associated with fluctuations in market prices. We also enter into futures contracts to hedge price risk associated with fluctuations in the market price of ethanol. We are unable to directly hedge price risk related to co-product sales; however, we occasionally enter into hedges of soybean oil (a competing product to our corn oil) in order to mitigate the price risk of corn oil sales. Unrealized gains and losses associated with marking our commodities-based derivative instruments to market are recorded as a component of other comprehensive income (“OCI”). At December 31, 2018, our accumulated other comprehensive loss account (“AOCI”) included \$2 million of losses (net of income taxes of \$2 million) related to these derivative instruments. It is anticipated that \$1 million of these losses (net of an insignificant amount of income taxes) will be reclassified into earnings during the next 12 months. We expect the losses to be offset by changes in the underlying commodities costs.

Foreign Currency Exchange Risk: Due to our global operations, including operations in many emerging markets, we are exposed to fluctuations in foreign currency exchange rates. As a result, we have exposure to translational foreign exchange risk when our foreign operations’ results are translated to U.S. dollars and to transactional foreign exchange risk when transactions not denominated in the functional currency of the operating unit are revalued. We primarily use derivative financial instruments such as foreign currency forward contracts, swaps and options to manage our foreign currency transactional exchange risk. At December 31, 2018, we had foreign currency forward sales contracts with an aggregate notional amount of \$621 million and foreign currency forward purchase contracts that are designated as fair value hedges with an aggregate notional amount of \$165 million that hedged transactional exposures. The fair value of these derivative instruments is an asset of \$5 million at December 31, 2018.

We also have foreign currency derivative instruments that hedge certain foreign currency transactional exposures and are designated as cash flow hedges. As of December 31, 2018, the amount included in AOCI related to these hedges was not significant.

Interest Rate Risk: We occasionally use interest rate swaps and T-Locks to hedge our exposure to interest rate changes, to reduce the volatility of our financing costs, or to achieve a desired proportion of fixed versus floating rate debt, based on current and projected market conditions. We did not have any T-Locks outstanding as of December 31, 2018.

As of December 31, 2018, our AOCI account included \$2 million of losses (net of income taxes of \$1 million) related to settled T-Locks. These deferred losses are being amortized to financing costs over the terms of the senior notes with which they are associated. It is anticipated that \$1 million of these losses (net of income taxes of \$1 million) will be reclassified into earnings during the next 12 months.

As of December 31, 2018, we have an interest rate swap agreement that effectively converts the interest rates on \$200 million of our \$400 million of 4.625 percent senior notes due November 1, 2020, to variable rates. This swap agreement calls for us to receive interest at the fixed coupon rate of the respective notes and to pay interest at a variable rate based on the six-month U.S. dollar LIBOR rate plus a spread. We have designated this interest rate swap agreement as a hedge of the changes in fair value of the underlying debt obligation attributable to changes in interest rates and account for it as a fair value hedge. The fair value of this interest rate swap agreement was a \$1 million loss at December 31, 2018,

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and is reflected in the Consolidated Balance Sheets within other non-current liabilities, with an offsetting amount recorded in long-term debt to adjust the carrying amount of the hedged debt obligations.

Contractual Obligations and Off-Balance Sheet Arrangements

The table below summarizes our significant contractual obligations as of December 31, 2018. Information included in the table is cross-referenced to the Notes to the Consolidated Financial Statements elsewhere in this report, as applicable.

	Note reference	Total	Payments due by period			
			Less than 1 year	2 – 3 years	4 – 5 years	More than 5 years
Contractual Obligations (in millions)						
Long-term debt	7	\$ 1,931	\$ 165	\$ 1,016	\$ —	\$ 750
Interest on long-term debt	7	510	84	89	65	272
Operating lease obligations	8	213	53	84	49	27
Pension and other postretirement obligations	10	123	5	14	16	88
Purchase obligations (a)		925	294	256	197	178
Total (b)		\$ 3,702	\$ 601	\$ 1,459	\$ 327	\$ 1,315

- (a) The purchase obligations relate principally to raw material and power supply sourcing agreements, including take or pay contracts, which help to provide us with adequate power and raw material supply at certain of our facilities.
- (b) The above table does not reflect unrecognized income tax benefits of \$30 million, the timing of which is uncertain. See Note 9 of the Notes to the Consolidated Financial Statements for additional information with respect to unrecognized income tax benefits.

Key Financial Performance Metrics

We use certain key financial metrics to monitor our progress towards achieving our long-term strategic business objectives. These metrics relate to our return on capital employed (“ROCE”) and our financial leverage, each of which is tracked on an ongoing basis. We assess whether we are achieving an adequate return on invested capital by measuring our ROCE against our cost of capital. We monitor our financial leverage by regularly reviewing our ratio of net debt to adjusted earnings before interest, taxes, depreciation and amortization (“Net Debt to Adjusted EBITDA”), and our “Net Debt to Capitalization” percentage to assure that we are properly financed. We believe these metrics provide valuable managerial information to help us run our business and are useful to investors.

The metrics below include certain information (including Capital Employed, Adjusted Operating Income, Adjusted EBITDA, and Net Debt) that is not calculated in accordance with GAAP. Management uses non-GAAP financial measures internally for strategic decision-making, forecasting future results and evaluating current performance. By disclosing non-GAAP financial measures, management intends to provide a more meaningful, consistent comparison of our operating results and trends for the periods presented. These non-GAAP financial measures are used in addition to and in conjunction with results presented in accordance with GAAP and reflect an additional way of viewing aspects of our operations that, when viewed with our GAAP results, provide a more complete understanding of factors and trends affecting our business. These non-GAAP measures should be considered as a supplement to, and not as a substitute for, or superior to, the corresponding measures calculated in accordance with GAAP.

Non-GAAP financial measures are not prepared in accordance with GAAP; therefore, the information is not necessarily comparable to other companies. A reconciliation of non-GAAP historical financial measures to the most comparable GAAP measure is provided in the tables below.

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Our calculations of these key financial metrics for 2018 with comparisons to the prior year are as follows:

Return on Capital Employed (dollars in millions)	2018	2017
Total equity *	\$ 2,917	\$ 2,595
Add:		
Cumulative translation adjustment *	951	1,008
Share-based payments subject to redemption*	36	30
Total debt *	1,864	1,956
Less:		
Cash and cash equivalents *	(595)	(512)
Capital employed * (a)	5,173	5,077
Operating income	703	836
Adjusted for:		
Impairment/restructuring charges	64	38
Acquisition/integration costs	—	4
Charge for fair value mark-up of acquired inventory	—	9
Insurance settlement	—	(9)
Adjusted operating income	767	878
Income taxes (at effective tax rates of 25.8% and 28.6%, respectively)**	(198)	(251)
Adjusted operating income, net of tax (b)	\$ 569	\$ 627
Return on Capital Employed (b ÷ a)	11.0%	12.3%

* Balance sheet amounts used in computing capital employed represent beginning of period balances.

** The effective income tax rate for 2018 and 2017 excludes the impacts of impairment/restructuring charges, acquisition and integration related costs, sale of acquiree inventory that was adjusted to fair value at the acquisition date, income tax reform, and an insurance settlement. Including these items, our effective income tax rate for 2018 and 2017 was 26.9 percent and 30.8 percent, respectively. Listed below is a schedule that reconciles our effective income tax rate under GAAP to the adjusted income tax rate:

(dollars in millions)	Year Ended December 31, 2018			Year Ended December 31, 2017		
	Income before Taxes	Provision for Income Taxes	Effective Tax Rate	Income before Taxes	Provision for Income Taxes	Effective Tax Rate
As reported	\$ 621	\$ 167	26.9%	\$ 769	\$ 237	30.8%
Add back (deduct):						
Income tax settlement	—	—		—	10	
Impairment/restructuring charges	64	13		38	7	

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Acquisition/integration costs	—	—		4	1	
Charge for fair value mark-up of acquired inventory	—	—		9	3	
Insurance settlement	—	—		(9)	(3)	
Income tax reform	—	(3)		—	(23)	
Adjusted non-GAAP	\$ 685	\$ 177	25.8%	\$ 811	\$ 232	28.6%

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Net Debt to Adjusted EBITDA ratio (dollars in millions)	2018	2017
Short-term debt	\$ 169	\$ 120
Long-term debt	1,931	1,744
Less: Cash and cash equivalents	(327)	(595)
Short-term investments	(7)	(9)
Total net debt (a)	1,766	1,260
Net income attributable to Ingredion	443	519
Add back:		
Restructuring/impairment charges (i)	30	38
Acquisition/integration costs	—	4
Charge for fair value mark-up of acquired inventory	—	9
Insurance settlement	—	(9)
Net income attributable to non-controlling interest	11	13
Provision for income taxes	167	237
Financing costs, net of interest income of \$9 and \$11, respectively	86	73
Depreciation and amortization	247	209
Adjusted EBITDA (b)	\$ 984	\$ 1,093
Net Debt to Adjusted EBITDA ratio (a ÷ b)	1.8	1.2

(i) 2018 restructuring / impairment charge is reduced above by \$34 million to exclude the accelerated depreciation from cessation of wet-milling at the Stockton, California plant. The accelerated depreciation is included within in Depreciation and amortization above, and to include in restructuring / impairment charge would include the charge twice. See Note 5 for reconciliation to the \$64 million restructuring charges recorded in 2018.

Net Debt to Capitalization percentage (dollars in millions)	2018	2017
Short-term debt	\$ 169	\$ 120
Long-term debt	1,931	1,744
Less: Cash and cash equivalents	(327)	(595)
Short-term investments	(7)	(9)
Total net debt (a)	1,766	1,260
Deferred income tax liabilities	189	199
Share-based payments subject to redemption	37	36
Total equity	2,408	2,917
Total capital	2,634	3,152
Total net debt and capital (b)	\$ 4,400	\$ 4,412
Net Debt to Capitalization percentage (a ÷ b)	40.1%	28.6%

Commentary on Key Financial Performance Metrics: In accordance with our long-term objectives, we set certain objectives relating to these key financial performance metrics that we strive to meet. As of December 31, 2018, we had achieved all of our established objectives for the above metrics, except for the net debt to capitalization percentage. However, no assurance can be given that we will continue to meet our financial performance metric targets. See Item 1A. Risk Factors and Item 7A. Quantitative and Qualitative Disclosures About Market Risk. The

objectives set out below reflect our current aspirations in light of our present plans and existing circumstances. We may change these objectives from time to time in the future to address new opportunities or changing circumstances as appropriate to meet our long-term needs and those of our shareholders.

ROCE — Our long-term objective is to maintain a ROCE in excess of 10.0 percent. In determining this performance metric, the negative cumulative translation adjustment is added back to total equity to calculate returns based on our original investment costs. Our ROCE for 2018 decreased to 11.0 percent from 12.3 percent in 2017, reflecting lower 2018 adjusted operating income, net of tax.

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Net Debt to Adjusted EBITDA ratio — Our long-term objective is to maintain a ratio of net debt to adjusted EBITDA of less than 2.25. This ratio was 1.7 as of December 31, 2018, up from 1.2 last year and remains below our target. The increase primarily reflects a greater amount of net debt and weaker EBITDA results in 2018.

Net Debt to Capitalization percentage — Our long-term objective is to maintain a Net Debt to Capitalization percentage in the range of 32 to 35 percent. As of December 31, 2018, our Net Debt to Capitalization percentage was 40.1 percent, up from 28.6 percent a year ago, primarily reflecting our increase of net debt in 2018 and reduction of equity due to the repurchase of 4 million shares of common stock pursuant to an ASR agreement in the fourth quarter of 2018.

Critical Accounting Policies and Estimates

Our consolidated financial statements 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 the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenues and expenses during the reporting period. Actual results may differ from these estimates under different assumptions and conditions.

We have identified below the most critical accounting policies upon which the financial statements are based and that involve our most complex and subjective decisions and assessments. Our senior management has discussed the development, selection and disclosure of these policies with members of the Audit Committee of our Board of Directors. These accounting policies are provided in the Notes to the Consolidated Financial Statements. The discussion that follows should be read in conjunction with the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K.

Business Combinations: Our acquisition of Sun Flour in 2017 was accounted for in accordance with ASC Topic 805, Business Combinations, as amended. In purchase accounting, identifiable assets acquired and liabilities assumed, are recognized at their estimated fair values at the acquisition date, and any remaining purchase price is recorded as goodwill. In determining the fair values of assets acquired and liabilities assumed, we make significant estimates and assumptions, particularly with respect to long-lived tangible and intangible assets. Critical estimates used in valuing tangible and intangible assets include, but are not limited to, future expected cash flows, discount rates, market prices and asset lives. Although our estimates of fair value are based upon assumptions believed to be reasonable, actual results may differ. See Note 3 of the Notes to the Consolidated Financial Statements for more information related to our acquisitions.

Property, Plant and Equipment and Definite-Lived Intangible Assets: We have substantial investments in property, plant and equipment (“PP&E”) and definite-lived intangible assets. For PP&E, we recognize the cost of depreciable

assets in operations over the estimated useful life of the assets and evaluate the recoverability of these assets whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. For definite-lived intangible assets, we recognize the cost of these amortizable assets in operations over their estimated useful life and evaluate the recoverability of the assets whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. The carrying values of PP&E and definite-lived intangible assets at December 31, 2018, were \$2.2 billion and \$282 million, respectively.

In assessing the recoverability of the carrying value of PP&E and definite-lived intangible assets, we may have to make projections regarding future cash flows. In developing these projections, we make a variety of important assumptions and estimates that have a significant impact on our assessments of whether the carrying values of PP&E and definite-lived intangible assets should be adjusted to reflect impairment. Among these are assumptions and estimates about the future growth and profitability of the related business unit or asset group, anticipated future economic, regulatory and political conditions in the business unit's or asset group's market and estimates of terminal or disposal values. No impairment charges for PP&E or definite-lived intangible assets were recorded in 2018.

Through our continual assessment to optimize our operations, we address whether there is a need for additional consolidation of manufacturing facilities or to redeploy assets to areas where we can expect to achieve a higher return on our investment. This review may result in the closing or selling of certain of our manufacturing facilities. The closing or

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selling of any of the facilities could have a significant negative impact on the results of operations in the year that the closing or selling of a facility occurs.

Even though it was determined that there was no long-lived asset impairment as of December 31, 2018, the future occurrence of a potential indicator of impairment, such as a significant adverse change in the business climate that would require a change in our assumptions or strategic decisions made in response to economic or competitive conditions, could require us to perform tests of recoverability in the future.

Goodwill and Indefinite-Lived Intangible Assets: Our methodology for allocating the purchase price of acquisitions is based on established valuation techniques that reflect the consideration of a number of factors, including valuations performed by third-party appraisers when appropriate. Goodwill is measured as the excess of the cost of an acquired business over the fair value assigned to identifiable assets acquired and liabilities assumed. We have identified several reporting units for which cash flows are determinable and to which goodwill may be allocated. Goodwill is either assigned to a specific reporting unit or allocated between reporting units based on the relative excess fair value of each reporting unit. In addition, we have certain indefinite-lived intangible assets in the form of trade names and trademarks. The carrying value of goodwill and indefinite-lived intangible assets at December 31, 2018, was \$791 million and \$178 million, respectively, compared to \$803 million and \$178 million a year ago.

We perform our goodwill and indefinite-lived intangible asset impairment tests annually as of July 1, or more frequently if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. In testing goodwill for impairment, we first assess qualitative factors in determining whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. After assessing the qualitative factors, if we determine that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then we do not perform the two-step impairment test. If we conclude otherwise, then we perform the first step of the two-step impairment test as described in ASC Topic 350. In the first step (“Step One”), the fair value of the reporting unit is compared to its carrying value. If the fair value of the reporting unit exceeds the carrying value of its net assets, goodwill is not considered impaired and no further testing is required. If the carrying value of the net assets exceeds the fair value of the reporting unit, a second step (“Step Two”) of the impairment assessment is performed in order to determine the implied fair value of a reporting unit’s goodwill.

In performing our impairment tests for goodwill, management makes certain estimates and judgments. These estimates and judgments include the identification of reporting units and the determination of fair values of reporting units, which management estimates using both discounted cash flow analyses and an analysis of market multiples. Significant assumptions used in the determination of fair value for reporting units include estimates for discount and long-term net sales growth rates, in addition to operating and capital expenditure requirements. We considered changes in discount rates for the reporting units based on current market interest rates and specific risk factors within each geographic region. We also evaluated qualitative factors, such as legal, regulatory, or competitive forces, in estimating the impact to the fair value of the reporting units noting no significant changes that would result in any reporting unit failing the impairment test. Changes in assumptions concerning projected results or other underlying assumptions could have a significant impact on the fair value of the reporting units in the future. Based on the results of the annual assessment, we concluded that as of July 1, 2018, it was more likely than not that the fair value of our

reporting units was greater than their carrying value. We continue to monitor our reporting units in struggling economies and recent acquisitions for challenges in these businesses that may negatively impact the fair value of these reporting units.

In performing the annual qualitative impairment assessment for other indefinite-lived intangible assets, we considered various factors in determining if it was more likely than not that the fair values of these indefinite-lived intangible assets were greater than their carrying values. We evaluated net sales attributable to these intangible assets as compared to original projections and evaluated future projections of net sales related to these assets. In addition, we considered market and industry conditions in the reporting units in which these intangible assets reside noting no significant changes that would result in a failed Step One impairment test as described in ASC Topic 350. Based on the results of this qualitative assessment as of July 1, 2018, we concluded that it was more likely than not that the fair values of these indefinite-lived intangible assets were greater than their carrying values.

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Income Taxes: We recognize the expected future tax consequences of temporary differences between book and tax bases of assets and liabilities and provide a valuation allowance when deferred tax assets are not more likely than not to be realized. We have considered forecasted earnings, future taxable income, the mix of earnings in the jurisdictions in which we operate, and prudent and feasible tax planning strategies in determining the need for a valuation allowance. In the event we were to determine that we would not be able to realize all or part of our deferred tax assets in the future, we would increase the valuation allowance and make a corresponding charge to earnings in the period in which we make such determination. Likewise, if we later determine that we are more likely than not to realize the deferred tax assets, we would reverse the applicable portion of the previously provided valuation allowance. We had a valuation allowance of \$31 million and \$34 million at December 31, 2018 and 2017, respectively. The decrease in the valuation allowance from 2018 to 2017 is primarily attributable to the devaluation of the Argentina Peso and deferred tax rate re-measurement offset by an increased allowance on the net deferred tax assets (including net operating losses) in Argentina.

We are regularly audited by various taxing authorities, and sometimes these audits result in proposed assessments where the ultimate resolution may result in us owing additional taxes. We establish reserves when, despite our belief that our tax return positions are appropriate and supportable under local tax law, we believe there is uncertainty with respect to certain positions and we may not succeed in realizing the tax benefits. We evaluate these unrecognized tax benefits and related reserves each quarter and adjust the reserves and the related interest and penalties in light of changing facts and circumstances regarding the probability of realizing tax benefits, such as the settlement of a tax audit or the expiration of a statute of limitations. We believe the estimates and assumptions used to support our evaluation of tax benefit realization are reasonable. However, final determinations of prior-year tax liabilities, either by settlement with tax authorities or expiration of statutes of limitations, could be materially different than estimates reflected in assets and liabilities and historical income tax provisions. The outcome of these final determinations could have a material effect on our income tax provision, net income, or cash flows in the period in which that determination is made. We believe our tax positions comply with applicable tax law and that we have adequately provided for any known tax contingencies. We had been pursuing relief from double taxation under the U.S.-Canada tax treaty for the years 2004-2013. During the fourth quarter of 2016, a tentative settlement was reached between the U.S. and Canada and, consequently, we established a net reserve of \$24 million, including interest thereon, recorded as a \$70 million liability and a \$46 million benefit. In the third quarter of 2017, the two countries finalized the agreement, which eliminated the double taxation, and we paid \$63 million to the IRS to settle the liability. As a result of that agreement, we were entitled to deduct a foreign exchange loss of \$10 million on our 2017 U.S. federal income tax return due to the foreign exchange loss deduction. Our liability for unrecognized tax benefits, excluding interest and penalties at December 31, 2018 and 2017 was \$30 million and \$39 million, respectively.

No foreign withholding taxes, state income taxes, and federal and state taxes on foreign currency gains and losses have been provided on approximately \$3.0 billion of undistributed earnings of certain foreign earnings that are considered indefinitely reinvested. If future events, including changes in tax law, material changes in estimates of cash, working capital, and long-term investment requirements, necessitate that these earnings be distributed, an additional provision for income taxes may apply, which could materially affect our future effective tax rate and cash flows.

Retirement Benefits: We and our subsidiaries sponsor noncontributory defined benefit pension plans (qualified and non-qualified) covering a substantial portion of employees in the U.S. and Canada, and certain employees in other

foreign countries. We also provide healthcare and life insurance benefits for retired employees in the U.S., Canada, and Brazil. In order to measure the expense and obligations associated with these benefits, our management must make a variety of estimates and assumptions including discount rates, expected long-term rates of return, rate of compensation increases, employee turnover rates, retirement rates, mortality rates and other factors. We review our actuarial assumptions on an annual basis as of December 31 (or more frequently if a significant event requiring remeasurement occurs) and modify our assumptions based on current rates and trends when it is appropriate to do so. The effects of modifications are recognized immediately on the balance sheet, but are generally amortized into operating earnings over future periods, with the deferred amount recorded in accumulated other comprehensive income. We believe the assumptions utilized in recording our obligations under our plans, which are based on our experience, market conditions, and input from our actuaries, are reasonable. We use third-party specialists to assist management in evaluating our assumptions and estimates, as well as to appropriately measure the costs and obligations associated with our retirement benefit plans. Had we used different estimates and assumptions with respect to these plans, our retirement benefit obligations and related expense could vary from the actual amounts recorded, and such differences could be material. Additionally, adverse changes in investment returns earned on pension assets and discount rates used to calculate pension and postretirement benefit related

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liabilities or changes in required funding levels may have an unfavorable impact on future expense and cash flow. Net periodic pension and postretirement benefit cost for all of our plans was \$6 million in 2018 and \$4 million in 2017.

We determine our assumption for the discount rate used to measure year-end pension and postretirement obligations based on high-quality fixed-income investments that match the duration of the expected benefit payments, which has been benchmarked using a long-term, high-quality AA corporate bond index. We use a full yield curve approach in the estimation of the service and interest cost components of benefit cost by applying the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows. The weighted average discount rate used to determine our obligations under U.S. pension plans for December 31, 2018 and 2017 was 4.38 percent and 3.70 percent, respectively. The weighted average discount rate used to determine our obligations under non-U.S. pension plans for December 31, 2018 and 2017 was 4.33 percent and 4.02 percent, respectively. The weighted average discount rate used to determine our obligations under our postretirement plans for December 31, 2018 and 2017 was 5.24 percent and 4.92 percent, respectively.

A one percentage point decrease in the discount rates at December 31, 2018, would have increased the accumulated benefit obligation and projected benefit obligation by the following amounts (millions):

U.S. Pension Plans	
Accumulated benefit obligation	\$ 43
Projected benefit obligation	44
Non-U.S. Pension Plans	
Accumulated benefit obligation	\$ 25
Projected benefit obligation	28
Postretirement Plans	
Accumulated benefit obligation	\$ 7

We changed our investment approach and related asset allocation for the U.S. and Canada plans during 2016 to a liability-driven investment approach by which a higher proportion of investments will be in interest-rate sensitive investments (fixed income) under an active-management approach as compared to the prior passive investment strategy. The approach seeks to protect the current funded status of the plans from market volatility with a greater asset allocation to interest-rate sensitive assets. The greater allocation to interest-rate sensitive assets is expected to reduce volatility in plan funded status by more closely matching movements in asset values to changes in liabilities.

Our current investment policy for our pension plans is to balance risk and return through diversified portfolios of actively-managed equity index instruments, fixed income index securities, and short-term investments. Maturities for fixed income securities are managed such that sufficient liquidity exists to meet near-term benefit payment obligations. The asset allocation is reviewed regularly and portfolio investments are rebalanced to the targeted

allocation when considered appropriate or to raise sufficient liquidity when necessary to meet near-term benefit payment obligations. For 2019 net periodic pension cost, we assumed an expected long-term rate of return on assets, which is based on the fair value of plan assets, of 5.30 percent for U.S. plans and approximately 3.86 percent for Canadian plans. In developing the expected long-term rate of return assumption on plan assets, which consist mainly of U.S. and Canadian debt and equity securities, management evaluated historical rates of return achieved on plan assets and the asset allocation of the plans, input from our independent actuaries and investment consultants, and historical trends in long-term inflation rates. Projected return estimates made by such consultants are based upon broad equity and bond indices. We also maintain several funded pension plans in other international locations. The expected returns on plan assets for these plans are determined based on each plan's investment approach and asset allocations. A hypothetical 25 basis point decrease in the expected long-term rate of return assumption would increase 2019 net periodic pension cost for the U.S. and Canada plans by less than \$1 million each.

Healthcare cost trend rates are used in valuing our postretirement benefit obligations and are established based upon actual health care cost trends and consultation with actuaries and benefit providers. At December 31, 2018, the health care cost trend rate assumptions for the next year for the U.S., Canada, and Brazil plans were 6.30 percent, 5.92 percent and 7.90 percent, respectively.

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The sensitivities of service cost and interest cost and year-end benefit obligations to changes in healthcare cost trend rates (both initial and ultimate rates) for the postretirement benefit plans as of December 31, 2018, are as follows:

(in millions)	2018
One-percentage point increase in trend rates:	
Increase in service cost and interest cost components	\$ 1
Increase in year-end benefit obligations	5
One-percentage point decrease in trend rates:	
Decrease in service cost and interest cost components	1
Decrease in year-end benefit obligations	7

See Note 10 of the Notes to the Consolidated Financial Statements for more information related to our benefit plans.

New Accounting Standards

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), which supersedes Topic 840, Leases. This Update increases the transparency and comparability of organizations by recognizing lease assets and lease liabilities on the balance sheet for leases longer than 12 months and disclosing key information about leasing arrangements. The recognition, measurement and presentation of expenses and cash flows arising from a lease by a lessee have not significantly changed. The FASB also issued ASU 2018-11 to provide further updates and clarification to this Update. This Update is effective for annual periods beginning after December 15, 2018. The Company will conclude its evaluation on the new guidance in the first quarter of 2019. The Company expects the impact to the Company's Consolidated Balance Sheet to be material. The Company is in the process of analyzing existing leases, practical expedients, and deploying its implementation strategy. The Company is also in the process of updating its controls and systems, and is still finalizing the new disclosures required in 2019. The Company will adopt ASU 2016-02 at the beginning of its 2019 fiscal year.

In January 2017, the FASB issued ASU No. 2017-04, Intangibles – Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. This Update simplifies the subsequent measurement of goodwill as the Update eliminates Step 2 from the goodwill impairment test. Instead, under the Update, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An entity should then recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value, with the loss recognized not to exceed the total amount of goodwill allocated to that reporting unit. This Update is effective for annual periods beginning after December 15, 2019, with early adoption permitted.

In August 2017, the FASB issued ASU No. 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. This Update modifies accounting guidance for hedge accounting by making more hedge strategies eligible for hedge accounting, amending presentation and disclosure requirements, and changing how companies assess ineffectiveness. The intent is to simplify the application of hedge accounting and increase transparency of information about an entity's risk management activities. The amended guidance is effective for annual periods beginning after December 15, 2018, with early adoption permitted. We completed our assessment of these updates, including potential changes to existing hedging arrangements, and have determined the adoption of the guidance will not have a material impact on our Consolidated Financial Statements.

In October 2018, the FASB issued ASU 2018-16, Derivatives and Hedging (Topic 815): Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as Benchmark Interest Rate for Hedge Accounting Purposes. This Update permits use of the OIS rate based on the SOFR as a U.S. benchmark interest rate for hedge accounting purposes. The guidance should be adopted on a prospective basis. This Update is effective for fiscal years beginning after December 15, 2018, with early adoption permitted. We are assessing the impact of this new standard; however the adoption of the guidance in this Update is not expected to have a material impact on our Consolidated Financial Statements.

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Forward-Looking Statements

This Form 10-K contains or may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. The Company intends these forward-looking statements to be covered by the safe harbor provisions for such statements.

Forward-looking statements include, among other things, any statements regarding the Company's prospects or future financial condition, earnings, revenues, tax rates, capital expenditures, cash flows, expenses or other financial items, any statements concerning the Company's prospects or future operations, including management's plans or strategies and objectives therefor and any assumptions, expectations or beliefs underlying the foregoing.

These statements can sometimes be identified by the use of forward looking words such as "may," "will," "should," "anticipate," "assume," "believe," "plan," "project," "estimate," "expect," "intend," "continue," "pro forma," "forecast," "outlook," "opportunities," "potential," "provisional", or other similar expressions or the negative thereof. All statements other than statements of historical facts in this report or referred to in or incorporated by reference into this report are "forward-looking statements."

These statements are based on current circumstances or expectations, but are subject to certain inherent risks and uncertainties, many of which are difficult to predict and are beyond our control. Although we believe our expectations reflected in these forward-looking statements are based on reasonable assumptions, investors are cautioned that no assurance can be given that our expectations will prove correct.

Actual results and developments may differ materially from the expectations expressed in or implied by these statements, based on various factors, including the effects of global economic conditions, including, particularly, economic, currency and political conditions in South America and economic and political conditions in Europe, and their impact on our sales volumes and pricing of our products, our ability to collect our receivables from customers and our ability to raise funds at reasonable rates; fluctuations in worldwide markets for corn and other commodities, and the associated risks of hedging against such fluctuations; fluctuations in the markets and prices for our co-products, particularly corn oil; fluctuations in aggregate industry supply and market demand; the behavior of financial markets, including foreign currency fluctuations and fluctuations in interest and exchange rates; volatility and turmoil in the capital markets; the commercial and consumer credit environment; general political, economic, business, market and weather conditions in the various geographic regions and countries in which we buy our raw materials or manufacture or sell our products; future financial performance of major industries which we serve, including, without limitation, the food, beverage, paper and corrugated, and brewing industries; energy costs and availability; freight and shipping costs; and changes in regulatory controls regarding quotas; tariffs, duties, taxes and income tax rates, particularly United States tax reform enacted in 2017; operating difficulties; availability of raw materials, including potato starch, tapioca, gum Arabic, and the specific varieties of corn upon which some of our products are based; our ability to develop or acquire new products and services at rates or of qualities sufficient to meet expectations; energy issues in Pakistan; boiler reliability; our ability to effectively integrate and operate acquired

businesses; our ability to achieve budgets and to realize expected synergies; our ability to achieve expected savings under our Cost Smart program; our ability to complete planned maintenance and investment projects successfully and on budget; labor disputes; genetic and biotechnology issues; changing consumption preferences including those relating to high fructose corn syrup; increased competitive and/or customer pressure in the corn-refining industry; and the outbreak or continuation of serious communicable disease or hostilities including acts of terrorism.

Our forward-looking statements speak only as of the date on which they are made and we do not undertake any obligation to update any forward-looking statement to reflect events or circumstances after the date of the statement as a result of new information or future events or developments. If we do update or correct one or more of these statements, investors and others should not conclude that we will make additional updates or corrections. For a further description of these and other risks, see Item 1A-Risk Factors above and subsequent reports on Forms 10-Q and 8-K.

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ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Exposure: We are exposed to interest rate risk on our variable-rate debt and price risk on our fixed-rate debt. As of December 31, 2018, approximately 55 percent or \$1.2 billion of our total debt are fixed-rate debt and 45 percent or approximately \$952 million of our total debt is subject to changes in short-term rates, which could affect our interest costs. We assess market risk based on changes in interest rates utilizing a sensitivity analysis that measures the potential change in earnings, fair values and cash flows based on a hypothetical 1 percentage point change in interest rates at December 31, 2018. A hypothetical increase of 1 percentage point in the weighted average floating interest rate would increase our annual interest expense by approximately \$5 million. See Note 7 of the Notes to the Consolidated Financial Statements entitled “Financing Arrangements” for further information.

At December 31, 2018 and 2017, the carrying and fair values of long-term debt were as follows:

(in millions)	2018		2017	
	Carrying amount	Fair value	Carrying amount	Fair value
3.2% senior notes due October 1, 2026	\$ 496	\$ 462	\$ 496	\$ 492
4.625% senior notes, due November 1, 2020	399	409	398	421
6.625% senior notes, due April 15, 2037	254	295	254	325
5.62% senior notes, due March 25, 2020	200	205	200	212
Term loan credit agreement due April 25, 2019	165	165	395	395
U.S. revolving credit facility	418	418	—	—
Fair value adjustment related to hedged fixed rate debt instruments	(1)	—	1	—
Total long-term debt	\$ 1,931	\$ 1,954	\$ 1,744	\$ 1,845

A hypothetical change of 1 percentage point in interest rates would change the fair value of our fixed rate debt at December 31, 2018, by approximately \$74 million. Since we have no current plans to repurchase our outstanding fixed-rate instruments before their maturities, the impact of market interest rate fluctuations on our long-term debt is not expected to have a significant effect on our consolidated financial statements.

We have an interest rate swap agreement that effectively converts the interest rates on \$200 million of our \$400 million 4.625 percent senior notes due November 1, 2020, to variable rates. This swap agreement calls for us to receive interest at the fixed coupon rate of the respective notes and to pay interest at a variable rate based on the six-month U.S. dollar LIBOR rate plus a spread. We have designated this interest rate swap agreement as a hedge of the changes in fair value of the underlying debt obligations attributable to changes in interest rates and account for it as a fair value hedge. The fair value of the interest rate swap agreements was a \$1 million loss at December 31, 2018, and is reflected in the Consolidated Balance Sheets within non-current liabilities, with an offsetting amount recorded in long-term debt to adjust the carrying amount of the hedged debt obligations.

Raw Material, Energy, and Other Commodity Exposure: Our finished products are made primarily from corn. In North America, we sell a large portion of finished products at firm prices established in supply contracts typically lasting for periods of up to one year. In order to minimize the effect of volatility in the cost of corn related to these firm-priced supply contracts, we enter into corn futures contracts or take other hedging positions in the corn futures market. These contracts typically mature within one year. At expiration, we settle the derivative contracts at a net amount equal to the difference between the then-current price of corn and the futures contract price. While these hedging instruments are subject to fluctuations in value, changes in the value of the underlying exposures we are hedging generally offset such fluctuations. While the corn futures contracts or other hedging positions are intended to minimize the volatility of corn costs on operating profits, occasionally the hedging activity can result in losses, some of which may be material. Outside of North America, sales of finished products under long-term, firm-priced supply contracts are not material.

Energy costs represent approximately 11 percent of our cost of sales. The primary use of energy is to create steam in the production process and to dry product. We consume coal, natural gas, electricity, wood, and fuel oil to generate energy. The market prices for these commodities vary depending on supply and demand, world economies and other factors. We purchase these commodities based on our anticipated usage and the future outlook for these costs. We cannot assure that we will be able to purchase these commodities at prices that we can adequately pass on to customers to sustain

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or increase profitability. We use derivative financial instruments, such as over-the-counter natural gas swaps, to hedge portions of our natural gas costs generally over the following 12 to 24 months, primarily in our North American operations.

At December 31, 2018, we had outstanding futures and option contracts that hedged the forecasted purchase of approximately 85 million bushels of corn. We are unable to directly hedge price risk related to co-product sales; however, we occasionally enter into hedges of soybean oil (a competing product to corn oil) in order to mitigate the price risk of corn oil sales. At December 31, 2018, we had no outstanding futures or options contracts for soybean oil. We also had outstanding swap and option contracts that hedged the forecasted purchase of approximately 28 million mmbtu's of natural gas at December 31, 2018. Additionally at December 31, 2018, we had no outstanding ethanol futures contracts. Based on our overall commodity hedge position at December 31, 2018, a hypothetical 10 percent decline in market prices applied to the fair value of the instruments would result in a charge to other comprehensive income of approximately \$26 million, net of income tax benefit. It should be noted that any change in the fair value of the contracts, real or hypothetical, would be substantially offset by an inverse change in the value of the underlying hedged item.

Foreign Currencies: Due to our global operations, we are exposed to fluctuations in foreign currency exchange rates. As a result, we have exposure to translational foreign exchange risk when our foreign operation results are translated to U.S. dollars and to transactional foreign exchange risk when transactions not denominated in the functional currency of the operating unit are revalued.

We selectively use derivative instruments such as forward contracts, currency swaps and options to manage transactional foreign exchange risk. Based on our overall foreign currency transactional exposure at December 31, 2018, we estimate that a hypothetical 10 percent decline in the value of the U.S. dollar would have resulted in a transactional foreign exchange gain of approximately \$2 million. At December 31, 2018, our accumulated other comprehensive loss account included in the equity section of our Consolidated Balance Sheets includes a cumulative translation loss of approximately \$1.1 billion. The aggregate net assets of our foreign subsidiaries where the local currency is the functional currency approximated \$1.3 billion at December 31, 2018. A hypothetical 10 percent decline in the value of the U.S. dollar relative to foreign currencies would have resulted in a reduction to our cumulative translation loss and a credit to other comprehensive income of approximately \$150 million.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Ingredion Incorporated:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated balance sheets of Ingredion Incorporated and subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of income, comprehensive income, equity and redeemable equity, and cash flows for each of the years in the three-year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018 based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are

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recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

We have served as the Company's auditor since 1997.

Chicago, Illinois
February 25, 2019

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Ingredion Incorporated (“Ingredion”)

Consolidated Statements of Income

(in millions, except per share amounts)	Year Ended December 31,		
	2018	2017	2016
Net sales before shipping and handling costs	\$ 6,289	\$ 6,244	\$ 6,082
Less: shipping and handling costs	448	412	378
Net sales	5,841	5,832	5,704
Cost of sales	4,473	4,360	4,303
Gross profit	1,368	1,472	1,401
Operating expenses	611	616	580
Other income, net	(10)	(18)	(4)
Restructuring/impairment charges	64	38	19
Operating income	703	836	806
Financing costs, net	86	73	66
Other, non-operating income	(4)	(6)	(2)
Income before income taxes	621	769	742
Provision for income taxes	167	237	246
Net income	454	532	496
Less: Net income attributable to non-controlling interests	11	13	11
Net income attributable to Ingredion	\$ 443	\$ 519	\$ 485
Weighted average common shares outstanding:			
Basic	70.9	72.0	72.3
Diluted	71.8	73.5	74.1
Earnings per common share of Ingredion:			
Basic	\$ 6.25	\$ 7.21	\$ 6.70
Diluted	6.17	7.06	6.55

See the Notes to the Consolidated Financial Statements.

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Ingredion Incorporated (“Ingredion”)

Consolidated Statements of Comprehensive Income (Loss)

(in millions)	2018	2017	2016
Net income	\$ 454	\$ 532	\$ 496
Other comprehensive income:			
Gains (losses) on cash flow hedges, net of income tax effect of \$2, \$6, and \$6, respectively	6	(10)	(11)
Losses on cash flow hedges reclassified to earnings, net of income tax effect of \$2, \$2, and \$16, respectively	4	4	33
Actuarial (losses) gains on pension and other postretirement obligations, settlements and plan amendments, net of income tax effect of \$5, \$2, and \$4, respectively	(15)	6	(10)
(Gains) losses related to pension and other postretirement obligations reclassified to earnings, net of income tax effect of \$ —, \$1, and \$ —, respectively	—	(1)	1
Unrealized gains on investments, net of income tax effect of \$ —, \$1, and \$ —, respectively	—	2	1
Currency translation adjustment	(129)	57	7
Comprehensive income	320	590	517
Less: Comprehensive income attributable to non-controlling interests	3	13	12
Comprehensive income attributable to Ingredion	\$ 317	\$ 577	\$ 505

See the Notes to the Consolidated Financial Statements.

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Ingredion Incorporated (“Ingredion”)

Consolidated Balance Sheets

(in millions, except share and per share amounts)	As of December 31,	
	2018	2017
Assets		
Current assets:		
Cash and cash equivalents	\$ 327	\$ 595
Short-term investments	7	9
Accounts receivable, net	951	961
Inventories	824	823
Prepaid expenses	29	27
Total current assets	2,138	2,415
Property, plant and equipment:		
Land	199	225
Buildings	715	731
Machinery and equipment	4,199	4,252
Property, plant and equipment, at cost	5,113	5,208
Accumulated depreciation	(2,915)	(2,991)
Property, plant and equipment, net	2,198	2,217
Goodwill	791	803
Other intangible assets, net of accumulated amortization of \$167 and \$139, respectively	460	493
Deferred income tax assets	10	9
Other assets	131	143
Total assets	\$ 5,728	\$ 6,080
Liabilities and equity		
Current liabilities:		
Short-term borrowings	\$ 169	\$ 120
Accounts payable	452	493
Accrued liabilities	325	344
Total current liabilities	946	957
Non-current liabilities		
Long-term debt	1,931	1,744
Deferred income tax liabilities	189	199
Share-based payments subject to redemption	37	36
Ingredion stockholders' equity:		
Preferred stock — authorized 25,000,000 shares — \$0.01 par value, none issued	—	—
Common stock — authorized 200,000,000 shares — \$0.01 par value, 77,810,875 issued at December 31, 2018 and December 31, 2017, respectively	1	1

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Additional paid-in capital	1,096	1,138
Less: Treasury stock (common stock: 11,284,681 and 5,815,904 shares at December 31, 2018 and December 31, 2017, respectively) at cost	(1,091)	(494)
Accumulated other comprehensive loss	(1,154)	(1,013)
Retained earnings	3,536	3,259
Total Ingredion stockholders' equity	2,388	2,891
Non-controlling interests	20	26
Total equity	2,408	2,917
Total liabilities and equity	\$ 5,728	\$ 6,080

See the Notes to the Consolidated Financial Statements.

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Ingredion Incorporated (“Ingredion”)

Consolidated Statements of Equity and Redeemable Equity

(in millions)	Total Equity			Accumulated Other Comprehensive Loss	Retained Earnings	Non- Controlling Interests	Share-based Payments Subject to Redemption
	Common Stock	Paid-In Capital	Treasury Stock				
Balance, December 31, 2015	\$ 1	\$ 1,160	\$ (467)	\$ (1,102)	\$ 2,552	\$ 36	\$ 24
Net income attributable to Ingredion					485		
Net income attributable to non-controlling interests						11	
Dividends declared					(138)	(7)	
Share-based compensation, net of issuance		(11)	54				6
Other comprehensive income (loss)				31		(10)	
Balance, December 31, 2016	1	1,149	(413)	(1,071)	2,899	30	30
Net income attributable to Ingredion					519		
Net income attributable to non-controlling interests						13	
Dividends declared					(159)	(15)	
Repurchases of common stock			(123)				
Share-based compensation, net of issuance		(11)	42				6
Other comprehensive income (loss)				58		(2)	
Balance, December 31, 2017	1	1,138	(494)	(1,013)	3,259	26	36
Net income attributable to Ingredion					443		
Net income attributable to non-controlling interests						11	
Dividends declared					(173)	(9)	

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Repurchases of common stock		(33)	(624)				
Share-based compensation, net of issuance		(5)	27				1
Other comprehensive loss				(134)		(7)	
Other		(4)		(7)	7	(1)	
Balance, December 31, 2018	\$ 1	\$ 1,096	\$ (1,091)	\$ (1,154)	\$ 3,536	\$ 20	\$ 37

See the Notes to the Consolidated Financial Statements.

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Ingredion Incorporated (“Ingredion”)

Consolidated Statements of Cash Flows

(in millions)	Year Ended December 31,		
	2018	2017	2016
Cash provided by operating activities			
Net income	\$ 454	\$ 532	\$ 496
Non-cash charges to net income:			
Depreciation and amortization	247	209	196
Mechanical stores expense	57	57	57
Deferred income taxes	(23)	67	(5)
Charge for fair value markup of acquired inventory	-	9	—
Other	39	39	44
Changes in working capital:			
Accounts receivable and prepaid expenses	(70)	(44)	(131)
Inventories	(50)	(34)	(19)
Accounts payable and accrued liabilities	(3)	(49)	127
Margin accounts	5	6	15
Other	47	(23)	(9)
Cash provided by operating activities	703	769	771
Cash used for investing activities			
Capital expenditures and mechanical stores purchases	(350)	(314)	(284)
Payments for acquisitions, net of cash acquired of \$ — , \$ — , and \$4, respectively	—	(17)	(407)
Investment in a non-consolidated affiliate	(15)	—	(2)
Short-term investments	1	(3)	1
Proceeds from disposal of plants and properties	1	8	3
Other	2	—	—
Cash used for investing activities	(361)	(326)	(689)
Cash used for financing activities			
Proceeds from borrowings	987	1,144	1,000
Payments on debt	(738)	(1,240)	(874)
Debt issuance costs	—	—	(6)
Repurchases of common stock	(657)	(123)	(8)
Issuances of common stock for share-based compensation, net of settlements	1	9	29
Dividends paid, including to non-controlling interests	(182)	(165)	(141)
Cash used for financing activities	(589)	(375)	—
Effects of foreign exchange rate changes on cash	(21)	15	(4)
(Decrease) increase in cash and cash equivalents	(268)	83	78
Cash and cash equivalents, beginning of period	595	512	434

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Cash and cash equivalents, end of period	\$ 327	\$ 595	\$ 512
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See the Notes to the Consolidated Financial Statements.

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Ingredion Incorporated (“Ingredion”)

Notes to Consolidated Financial Statements

NOTE 1 – Description of the Business

Ingredion Incorporated (“the Company”) was founded in 1906 and became an independent and public company as of December 31, 1997. The Company primarily manufactures and sells sweeteners, starches, nutrition ingredients, and biomaterial solutions derived from the wet milling and processing of corn and other starch-based materials to a wide range of industries, both domestically and internationally.

NOTE 2 – Summary of Significant Accounting Policies

Basis of presentation: The consolidated financial statements consist of the accounts of the Company, including all significant subsidiaries. Intercompany accounts and transactions are eliminated in consolidation.

The preparation of the accompanying consolidated financial statements in conformity with U.S. Generally Accepted Accounting Principles (“GAAP”) requires management to make estimates and assumptions about future events. These estimates and the underlying assumptions affect the amounts of assets and liabilities reported, disclosures about contingent assets and liabilities, and reported amounts of revenues and expenses. Such estimates include the value of purchase consideration, valuation of accounts receivable, inventories, goodwill, intangible assets and other long-lived assets, legal contingencies, guarantee obligations, and assumptions used in the calculation of income taxes, and pension and other postretirement benefits, among others. These estimates and assumptions are based on management’s best estimates and judgment. Management evaluates its estimates and assumptions on an ongoing basis using historical experience and other factors, including the current economic environment, which management believes to be reasonable under the circumstances. Management will adjust such estimates and assumptions when facts and circumstances dictate. Foreign currency devaluations, corn price volatility, access to difficult credit markets, and adverse changes in the global economic environment have combined to increase the uncertainty inherent in such estimates and assumptions. As future events and their effects cannot be determined with precision, actual results could differ significantly from these estimates. Changes in these estimates will be reflected in the financial statements in future periods.

Assets and liabilities of foreign subsidiaries, other than those whose functional currency is the U.S. dollar, are translated at current exchange rates with the related translation adjustments reported in equity as a component of accumulated other comprehensive income (loss). Income statement accounts are translated at the average exchange rate during the period. However, significant non-recurring items related to a specific event are recognized at the exchange rate on the date of the significant event. The U.S. dollar is the functional currency for the Company’s

subsidiaries in Mexico and as of July 1, 2018, in Argentina. In the second quarter of 2018, the Argentine peso rapidly devalued relative to the U.S. dollar, which along with increased inflation, resulted in a three-year cumulative inflation in that country exceeded 100 percent as of June 30, 2018. As a result, the Company elected to adopt highly inflationary accounting as of July 1, 2018 for its Argentina affiliate in accordance with GAAP. Under highly inflationary accounting, Argentina's functional currency becomes the U.S. dollar. For foreign subsidiaries where the U.S. dollar is the functional currency, monetary assets and liabilities are translated at current exchange rates with the related adjustment included in net income. Non-monetary assets and liabilities are translated at historical exchange rates. Although the Company hedges the predominance of its transactional foreign exchange risk (see Note 6), the Company incurs foreign currency transaction gains and losses relating to assets and liabilities that are denominated in a currency other than the functional currency. For 2018, 2017 and 2016, the Company incurred foreign currency transaction net losses of \$14 million, \$5 million, and \$3 million, respectively. The Company's accumulated other comprehensive loss included in equity on the Consolidated Balance Sheets includes cumulative translation losses of \$1.1 billion and \$1 billion at December 31, 2018 and 2017, respectively.

Cash and cash equivalents: Cash equivalents consist of all instruments purchased with an original maturity of three months or less, and which have virtually no risk of loss in value.

Accounts receivable, net: Accounts receivable, net, consist of trade and other receivables carried at approximate fair value, net of an allowance for doubtful accounts based on specific identification of material amounts at risk and a general reserve based on historical collection experience.

Inventories: Inventories are stated at the lower of cost or net realizable value. Costs are predominantly determined using the weighted average method.

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Investments: Investments are included in other assets in the Consolidated Balance Sheets. The Company holds equity and cost method investments, and equity securities as of December 31, 2018. Investments that enable the Company to exercise significant influence, but do not represent a controlling interest, are accounted for under the equity method; such investments are carried at cost, adjusted to reflect the Company's proportionate share of income or loss, less dividends received. In December 2018, the Company entered into a \$15 million equity method investment with Verdient Foods, Inc., a Canadian company based in Vanscoy, Saskatchewan. Investments are being made within the existing facility to make pulse-based protein concentrates and flours from peas, lentils and fava beans for human food applications. The Company did not have any investments accounted for under the equity method at December 31, 2017. The Company has equity interests in the CME Group Inc. and CBOE Holdings, Inc., which are classified as available for sale securities. The investments are carried at fair value with unrealized gains and losses recorded to Other income, net in accordance with ASC 825. Investments in the common stock of affiliated companies over which the Company does not exercise significant influence are accounted for under the cost method. In 2016, the Company invested in SweeGen Inc., which it accounts for under the cost method and which had a carrying value of \$2 million as of both December 31, 2018 and 2017.

Leases: The Company leases rail cars, certain machinery and equipment, and office space. The Company classifies its leases as either capital or operating based on the terms of the related lease agreement and the criteria contained in Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 840, Leases, and related interpretations.

Property, plant and equipment and depreciation: Property, plant and equipment ("PP&E") are stated at cost less accumulated depreciation. Depreciation is generally computed on the straight-line method over the estimated useful lives of depreciable assets, which range from 25 to 50 years for buildings and from two to 25 years for all other assets. Where permitted by law, accelerated depreciation methods are used for tax purposes. The Company recognized depreciation expense of \$217 million, \$179 million, and \$171 million for the years ended December 31, 2018, 2017, and 2016, respectively. The Company reviews the recoverability of the net book value of PP&E for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable from estimated future cash flows expected to result from its use and eventual disposition. If this review indicates that the carrying values will not be recovered, the carrying values would be reduced to fair value and an impairment loss would be recognized. As required under accounting principles generally accepted in the U.S., the impairment analysis for long-lived assets occurs before the goodwill impairment assessment described below.

Goodwill and other intangible assets: ASC Topic 350 requires that an entity test its goodwill balance for impairment at the reporting unit level at least annually. Historically, the Company has performed this test on October 1, the first day of its fourth quarter. During the first half of 2018, the Company elected to change the timing of its annual goodwill impairment test and annual indefinite-lived intangibles impairment test from the first day of the fourth quarter to the first day of the third quarter. Management believes this voluntary change is preferable as the timing of its annual impairment testing will better align with its annual strategic planning process. This impairment test date change was applied prospectively beginning on July 1, 2018 and had no effect on the Company's consolidated financial statements.

Goodwill (\$791 million and \$803 million at December 31, 2018 and 2017, respectively) represents the excess of the cost of an acquired entity over the fair value assigned to identifiable assets acquired and liabilities assumed. The Company also has other intangible assets of \$460 million and \$493 million at December 31, 2018 and 2017, respectively. The carrying value of goodwill by reportable business segment at December 31, 2018 and 2017 was as follows:

(in millions)	North America	South America	Asia Pacific	EMEA	Total
Balance at December 31, 2016	\$ 610	\$ 26	\$ 85	\$ 63	\$ 784
Acquisitions	(10)	(a) —	15	—	5
Currency translation	—	—	7	7	14
Balance at December 31, 2017	600	26	107	70	803
Acquisitions	—	—	—	—	—
Currency translation	—	(4)	(3)	(5)	(12)
Balance at December 31, 2018	\$ 600	\$ 22	\$ 104	\$ 65	\$ 791

(a) Related to TIC Gums Incorporated (“TIC Gums”) purchase price accounting adjustments

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The original carrying value of goodwill by reportable business segment and accumulated impairment charges by reportable business segment at December 31, 2018 and 2017 were as follows:

(in millions)	North America	South America	Asia Pacific	EMEA	Total
Goodwill before impairment charges	\$ 601	\$ 59	\$ 228	\$ 70	\$ 958
Accumulated impairment charges	(1)	(33)	(121)	—	(155)
Balance at December 31, 2017	600	26	107	70	803
Goodwill before impairment charges	601	55	225	65	946
Accumulated impairment charges	(1)	(33)	(121)	—	(155)
Balance at December 31, 2018	\$ 600	\$ 22	\$ 104	\$ 65	\$ 791

The following table summarizes the Company's other intangible assets for the periods presented:

(in millions)	As of December 31, 2018			Weighted Average Useful Life (years)
	Gross	Accumulated Amortization	Net	
Trademarks/tradenames (indefinite-lived)	\$ 178	\$ —	\$ 178	—
Customer relationships	325	(77)	248	20
Technology	103	(80)	23	9
Other	21	(10)	11	16
Total other intangible assets	\$ 627	\$ (167)	\$ 460	18
(in millions)	As of December 31, 2017			Weighted Average Useful Life (years)
	Gross	Accumulated Amortization	Net	
Trademarks/tradenames (indefinite-lived)	\$ 178	\$ —	\$ 178	—
Customer relationships	329	(62)	267	20
Technology	103	(68)	35	9
Other	22	(9)	13	16
Total other intangible assets	\$ 632	\$ (139)	\$ 493	18

For definite-lived intangible assets, the Company recognizes the cost of such amortizable assets in operations over their estimated useful lives and evaluates the recoverability of the assets whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. Amortization expense related to intangible assets was \$30 million in 2018, \$30 million in 2017, and \$25 million in 2016.

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Based on acquisitions completed through December 31, 2018, intangible asset amortization expense for the next five years is shown below.

(in millions)

Year	Amortization Expense
2019	\$ 29
2020	27
2021	19
2022	18
2023	18
Balance thereafter	171

The Company assesses goodwill and other indefinite-lived intangible assets for impairment annually (or more frequently if impairment indicators arise). The Company has chosen to perform this annual impairment assessment as of July 1 of each year.

In testing goodwill for impairment, the Company first assesses qualitative factors in determining whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. After assessing the qualitative

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factors, if the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount then the Company does not perform the two-step impairment test. If the Company concludes otherwise, then it performs the first step of the two-step impairment test as described in ASC Topic 350. In the first step (“Step One”), the fair value of the reporting unit is compared to its carrying value. If the fair value of the reporting unit exceeds the carrying value of its net assets, goodwill is not considered impaired and no further testing is required. If the carrying value of the net assets exceeds the fair value of the reporting unit, a second step (“Step Two”) of the impairment assessment is performed in order to determine the implied fair value of a reporting unit's goodwill. Determining the implied fair value of goodwill requires a valuation of the reporting unit's tangible and intangible assets and liabilities in a manner similar to the allocation of purchase price in a business combination. If the carrying value of the reporting unit's goodwill exceeds the implied fair value of its goodwill, goodwill is deemed impaired and is written down to the extent of the difference. Based on the results of the annual assessment, the Company concluded that as of July 1, 2018, it was more likely than not that the fair value of its reporting units was greater than their carrying value. The Company continues to monitor its reporting units in struggling economies and recent acquisitions for challenges in the business that may negatively impact the fair value of these reporting units.

In testing indefinite-lived intangible assets for impairment, the Company first assesses qualitative factors to determine whether it is more likely than not that the fair value of an indefinite-lived intangible asset is impaired. If the Company determines that it is not more likely than not that the fair value of an indefinite-lived intangible asset is less than its carrying amount, then it would not be required to compute the fair value of the indefinite-lived intangible asset. In the event the qualitative assessment leads the Company to conclude otherwise, then it would be required to determine the fair value of the indefinite-lived intangible asset and perform the quantitative impairment test in accordance with ASC subtopic 350-30. In performing the qualitative analysis, the Company considers various factors including net sales derived from these intangibles and certain market and industry conditions. Based on the results of its qualitative assessment, the Company concluded that as of July 1, 2018, it was more likely than not that the fair value of the indefinite-lived intangible assets was greater than their carrying value.

Revenue recognition: The Company accounts for revenue in accordance with ASC Topic 606, Revenue from Contracts with Customers, which was adopted on January 1, 2018, using the full retrospective method. The recently adopted accounting standard is more fully described in the Company's Recently Adopted Accounting Standards and Note 4 of the Notes to the Consolidated Financial Statements.

Hedging instruments: The Company uses derivative financial instruments principally to offset exposure to market risks arising from changes in commodity prices, foreign currency exchange rates and interest rates. Derivative financial instruments used by the Company consist of commodity futures and option contracts, forward currency contracts and options, interest rate swap agreements and Treasury lock agreements (“T-Locks”). The Company enters into futures and option contracts, which are designated as hedges of specific volumes of commodities (primarily corn and natural gas) that will be purchased in a future month. These derivative financial instruments are recognized in the Consolidated Balance Sheets at fair value. The Company has also entered into interest rate swap agreements that effectively convert the interest rate on certain fixed rate debt to a variable interest rate and, on certain variable rate debt, to a fixed interest rate. The Company periodically enters into T-Locks to hedge its exposure to interest rate changes. See also Note 6 and Note 7 of the Notes to the Consolidated Financial Statements for additional information.

On the date a derivative contract is entered into, the Company designates the derivative as either a hedge of variable cash flows to be paid related to interest on variable rate debt, as a hedge of market variation in the benchmark rate for a future fixed rate debt issue, as a hedge of foreign currency cash flows associated with certain forecasted commercial transactions or loans, as a hedge of certain forecasted purchases of corn, natural gas or ethanol used in the manufacturing process (“a cash flow hedge”), or as a hedge of the fair value of certain debt obligations (“a fair value hedge”). This process includes linking all derivatives that are designated as fair value or cash flow hedges to specific assets and liabilities on the Consolidated Balance Sheets, or to specific firm commitments or forecasted transactions. For all hedging relationships, the Company documents the hedging relationships and its risk-management objective and strategy for undertaking the hedge transactions, the hedging instrument, the hedged item, the nature of the risk being hedged, how the hedging instrument’s effectiveness in offsetting the hedged risk will be assessed and a description of the method of measuring ineffectiveness. The Company also formally assesses both, at the hedge’s inception and on an ongoing basis, whether the derivatives that are used in hedging transactions are highly effective in offsetting changes in cash flows or fair values of hedged items. When it is determined that a derivative is not highly effective as a hedge or has ceased to be a highly effective hedge, the Company discontinues hedge accounting prospectively.

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Changes in the fair value of floating-to-fixed interest rate swaps, T-Locks, commodity futures, and option contracts or foreign currency forward contracts, swaps, and options that are highly effective and that are designated and qualify as cash flow hedges are recorded in other comprehensive income, net of applicable income taxes. Realized gains and losses associated with changes in the fair value of interest rate swaps and T-Locks are reclassified from accumulated other comprehensive income (“AOCI”) to the Consolidated Statements of Income over the life of the underlying debt. Gains and losses on hedges of foreign currency cash flows associated with certain forecasted commercial transactions or loans are reclassified from AOCI to the Consolidated Statements of Income when such transactions or obligations are settled. Gains and losses on commodity hedging contracts are reclassified from AOCI to the Consolidated Statement of Income when the finished goods produced using the hedged item are sold. The maximum term over which the Company hedges exposures to the variability of cash flows for commodity price risk is generally 24 months. Changes in the fair value of a fixed-to-floating interest rate swap agreement that is highly effective and that is designated and qualifies as a fair value hedge, along with the loss or gain on the hedged debt obligation, are recorded in earnings. The ineffective portion of the change in fair value of a derivative instrument that qualifies as either a cash flow hedge or a fair value hedge is reported in earnings.

The Company discontinues hedge accounting prospectively when it is determined that the derivative is no longer effective in offsetting changes in the cash flows or fair value of the hedged item, the derivative is de-designated as a hedging instrument because it is unlikely that a forecasted transaction will occur, or management determines that designation of the derivative as a hedging instrument is no longer appropriate. When hedge accounting is discontinued, the Company continues to carry the derivative on the Consolidated Balance Sheets at its fair value, and gains and losses that were included in AOCI are recognized in earnings in the same line item affected by the hedged transaction and in the same period or periods during which the hedged transaction affects earnings, or in the month a hedge is determined to be ineffective.

The Company uses derivative financial instruments such as foreign currency forward contracts, swaps and options to manage the transactional foreign exchange risk that is created when transactions not denominated in the functional currency of the operating unit are revalued. The changes in fair value of these derivative instruments and the offsetting changes in the value of the underlying non-functional currency denominated transactions are recorded in earnings on a monthly basis.

Share-based compensation: The Company has a stock incentive plan that provides for share-based employee compensation, including the granting of stock options, shares of restricted stock, restricted stock units, and performance shares to certain key employees. Compensation expense is recognized in the Consolidated Statements of Income for the Company’s share-based employee compensation plan. The plan is more fully described in Note 12 of the Notes to the Consolidated Financial Statements.

Earnings per common share: Basic earnings per common share (“EPS”) is computed by dividing net income attributable to Ingredion by the weighted average number of shares outstanding, which totaled 70.9 million for 2018, 72.0 million for 2017 and 72.3 million for 2016. Diluted EPS is calculated using the treasury stock method, computed by dividing net income attributable to Ingredion by the weighted average number of shares outstanding, including the dilutive effect of outstanding stock options and other instruments associated with long-term incentive compensation plans. The

weighted average number of shares outstanding for diluted EPS calculations was 71.8 million, 73.5 million and 74.1 million for 2018, 2017 and 2016, respectively. Approximately 0.5 million, 0.3 million, and 0.0 share-based awards of common stock were excluded in 2018, 2017, and 2016, respectively, from the calculation of the weighted average number of shares outstanding for diluted EPS because their effects were anti-dilutive.

Risks and uncertainties: The Company operates domestically and internationally. In each country, the business and assets are subject to varying degrees of risk and uncertainty. The Company insures its business and assets in each country against insurable risks in a manner that it deems appropriate. Because of this geographic dispersion, the Company believes that a loss from non-insurable events in any one country would not have a material adverse effect on the Company's operations as a whole. Additionally, the Company believes there is no significant concentration of risk with any single customer or supplier whose failure or non-performance would materially affect the Company's results.

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Recently Adopted Accounting Standards

ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606):

In May 2014, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) No. 2014-09, Revenue from Contracts with Customers (Topic 606) that introduced a five-step revenue recognition model in which an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The ASU requires disclosures sufficient to enable users to understand the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers, including qualitative and quantitative disclosures about contracts with customers, significant judgments and changes in judgments, and assets recognized from the costs to obtain or fulfill a contract. The FASB also issued additional ASUs to provide further updates and clarification to this Update, including ASU 2015-14, ASU 2016-08, ASU 2016-10, ASU 2016-12 and ASU 2016-20. This standard is effective for fiscal years beginning after December 15, 2017, including interim periods within that reporting period.

As of January 1, 2018, the Company adopted Accounting Standards Codification (“ASC”) 606, Revenue from Contracts with Customers, and all the related amendments (“new revenue standard”). The Company performed detailed procedures to review its revenue contracts held with its customers and did not identify any changes to the nature, amount, timing or uncertainty of revenue and cash flows arising from the contracts with customers as a result of the new revenue standard.

The new revenue standard requires the Company to recognize revenue under the core principle to depict the transfer of products to customers in an amount reflecting the consideration the Company expects to receive. In order to achieve that core principle, the Company applies the following five-step approach: (1) identify the contract with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract, and (5) recognize revenue when a performance obligation is satisfied.

The Company identified customer purchase orders, which in some cases are governed by a master sales agreement, as the contracts with its customers. For each contract, the Company considers the transfer of products, each of which is distinct, to be the identified performance obligation. In determining the transaction price for the performance obligation, the Company evaluates whether the price is subject to adjustment to determine the consideration to which the Company expects to be entitled. The pricing model can be fixed or variable within the contract. The variable pricing model is based on historical commodity pricing and is determinable prior to completion of the performance obligation. Additionally, the Company has certain sales adjustments for volume incentive discounts and other discount arrangements that reduce the transaction price. The reduction of transaction price is estimated using the expected value method based on an analysis of historical volume incentives or discounts, over a period of time considered adequate to account for current pricing and business trends. Historically, actual volume incentives and discounts

relative to those estimated and included when determining the transaction price have not materially differed. The product price as specified in the contract, net of any discounts, is considered the standalone selling price as it is an observable input which depicts the price as if sold to a similar customer in similar circumstances. Payment is received shortly after the performance obligation is satisfied, therefore, the Company has elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component.

Revenue is recognized when the Company's performance obligation is satisfied and control is transferred to the customer, which occurs at a point in time, either upon delivery to an agreed upon location or to the customer. Further, in determining whether control has transferred, the Company considers if there is a present right to payment and legal title, along with risks and rewards of ownership having transferred to the customer.

Historically, the Company included warehousing costs as a reduction of net sales before shipping and handling costs. In connection with the adoption of the new revenue standard, the Company determined these warehousing costs which were previously included as a reduction in net sales before shipping and handling costs are more appropriately classified as fulfillment activities based on the guidance of ASC 606. Therefore, upon adoption of the new revenue standard, the Company elected to include these costs within shipping and handling costs. The Company has elected to continue to classify shipping and handling costs as a reduction of net sales after implementing the new revenue standard consistent with its historical presentation. The Company has elected to make this adjustment on a retrospective basis,

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resulting in the change to the Consolidated Statements of Income shown below. The Company notes that the reclassification does not change reported net sales.

(in millions)	2017		2016	
	As Reported	As Adjusted	As Reported	As Adjusted
Consolidated Statements of Income:				
Net sales before shipping and handling costs	\$ 6,180	\$ 6,244	\$ 6,022	\$ 6,082
Less: shipping and handling costs	348	412	318	378
Net sales	\$ 5,832	\$ 5,832	\$ 5,704	\$ 5,704

The Company used the full retrospective method, which requires the restatement of all previously presented financial results. The adoption of the new standard did not result in any retrospective changes to the Company's Consolidated Statements of Comprehensive Income, Consolidated Balance Sheets, Consolidated Statements of Equity and Redeemable Equity, or the Consolidated Statements of Cash Flows. For detailed information about the Company's revenue recognition refer to Note 4 of the Notes to the Consolidated Financial Statements.

ASU No. 2017-07, Compensation-Retirement Benefits (Topic 715):

In March 2017, the FASB issued ASU No. 2017-07, Compensation – Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost. This Update requires an entity to change the classification of the net periodic benefit cost for pension and postretirement plans within the statement of income by eliminating the ability to net all of the components of the costs together within operating income. The Update requires the service cost component to continue to be presented within operating income, classified within either cost of sales or operating expenses depending on the employees covered within the plan. The remaining components of the net periodic benefit cost, however, must be presented in the statement of income as a non-operating income (loss) below operating income. The Update was effective for annual periods beginning after December 15, 2017.

As of January 1, 2018, the Company adopted the amendments to ASC 715. The Company retrospectively adopted the presentation of service cost separate from the other components of net periodic costs for all periods presented. The interest cost, expected return on assets, amortization of prior service costs, net remeasurement, and other costs have been reclassified from cost of sales and operating expenses to other, non-operating income. The Company elected to apply the practical expedient which allows it to reclassify amounts disclosed previously in the retirement benefits note as the basis for applying retrospective presentation for comparative periods as it is impracticable to determine the disaggregation of the cost components for amounts capitalized and amortized in those periods. On a prospective basis, the other components of net periodic benefit costs will not be included in amounts capitalized in inventory.

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The adoption of the new standard did not result in any retrospective changes to the Company's Consolidated Statements of Comprehensive Income, Consolidated Balance Sheets, Consolidated Statements of Equity and Redeemable Equity, or the Consolidated Statements of Cash Flows. The adoption of the new standard impacted the presentation of the Company's previously reported results in the Consolidated Statements of Income and Note 13 of the Consolidated Financial Statements as follows:

(in millions)	2017		2016	
	As Reported	As Adjusted	As Reported	As Adjusted
Consolidated Statements of Income:				
Cost of sales	\$ 4,359	\$ 4,360	\$ 4,302	\$ 4,303
Gross profit	1,473	1,472	1,402	1,401
Operating expenses	611	616	579	580
Operating income	842	836	808	806
Other, non-operating income	-	(6)	-	(2)

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(in millions)	2017		2016	
	As Reported	As Adjusted	As Reported	As Adjusted
Operating income:				
North America	\$ 661	\$ 654	\$ 610	\$ 606
South America	80	81	89	90
Asia Pacific	112	115	111	113
EMEA	113	114	106	107
Corporate	(82)	(86)	(86)	(88)
Subtotal	884	878	830	828
Total operating income	\$ 842	\$ 836	\$ 808	\$ 806

Adoption of Highly Inflationary Accounting in Argentina

ASC 830, Foreign Currency Matters requires the use of highly inflationary accounting for countries whose cumulative three-year inflation exceeds 100 percent. The Company has been closely monitoring the inflation data and currency volatility in Argentina, where there are multiple data sources for measuring and reporting inflation. In the second quarter of 2018, the Argentine peso rapidly devalued relative to the U.S. dollar, which along with increased inflation, triggered that the three-year cumulative inflation in that country exceeded 100 percent as of June 30, 2018. As a result, the Company adopted highly inflationary accounting as of July 1, 2018 for its affiliate, Ingredion Argentina S.A. (“Argentina”). Under highly inflationary accounting, Argentina’s functional currency becomes the U.S. dollar, and its income statement and balance sheet will be measured in U.S. dollars using both current and historical rates of exchange. The effect of changes in exchange rates on Argentine peso-denominated monetary assets and liabilities will be reflected in earnings in financing costs. For the year ended December 31, 2018, the Company recognized a \$2 million charge related to the remeasurement of Argentina’s balance sheet. Net sales of Argentina were approximately three percent of the Company’s consolidated net sales for the year ended December 31, 2018.

ASU No. 2016-01, Financial Instruments - Overall (Subtopic 825-10):

In January 2016, the FASB issued ASU 2016-01, Financial Instruments - Overall. The amendments in ASU 2016-01 are intended to improve the recognition, measurement, presentation and disclosure of financial assets and liabilities to provide users of financial statements with information that is more useful for decision-making purposes. Among other changes, ASU 2016-01 requires equity securities to be measured at fair value with changes in fair value recognized through net income and no longer through other comprehensive income. The Company is required to apply the guidance by means of a cumulative-effect adjustment to the balance sheet as of the beginning of the fiscal year of adoption.

The Company adopted the amendments to ASC 825 by recognizing a \$2 million cumulative-effect adjustment to retained earnings and accumulated other comprehensive income, classified in “other” on the Consolidated Statements of

Equity and Redeemable Equity. Prospectively the Company will recognize changes in the fair value of its equity securities through other income, net on the Consolidated Statements of Income.

ASU No. 2018-02, Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income:

In February 2018, the FASB issued ASU No. 2018-02, Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income. This Update allows for the reclassification of stranded tax effects on items resulting from the Tax Cuts and Jobs Act (“TCJA”) from accumulated other comprehensive income to retained earnings. Tax effects unrelated to the 2017 Tax Act are released from AOCI using either the specific identification approach or the portfolio approach based on the nature of the underlying item. The Company early adopted the provisions of ASU No. 2018-02 during the third quarter of 2018 using the specific identification approach and reclassified \$5 million from accumulated other comprehensive income to retained earnings, classified in “other” on the Consolidated Statements of Equity and Redeemable Equity.

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New Accounting Standards

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), which supersedes Topic 840, Leases. This Update increases the transparency and comparability of organizations by recognizing lease assets and lease liabilities on the balance sheet for leases longer than 12 months and disclosing key information about leasing arrangements. The recognition, measurement and presentation of expenses and cash flows arising from a lease by a lessee have not significantly changed. The FASB also issued ASU 2018-11 to provide further updates and clarification to this Update. This Update is effective for annual periods beginning after December 15, 2018. The Company will conclude its evaluation on the new guidance in the first quarter of 2019. The Company expects the impact to the Company's Consolidated Balance Sheet to be material. The Company is in the process of analyzing existing leases, practical expedients, and deploying its implementation strategy. The Company is also in the process of updating its controls and systems, and is still finalizing the new disclosures required in 2019. The Company will adopt ASU 2016-02 at the beginning of its 2019 fiscal year.

In January 2017, the FASB issued ASU No. 2017-04, Intangibles – Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. This Update simplifies the subsequent measurement of goodwill as the Update eliminates Step 2 from the goodwill impairment test. Under the Update, an entity will continue to perform its annual, or interim, goodwill impairment test to determine if the fair value of a reporting unit is greater than its carrying amount. An entity should then recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value using the results of its Step 1 assessment, with the loss recognized not to exceed the total amount of goodwill allocated to that reporting unit. This Update is effective for annual periods beginning after December 15, 2019, with early adoption permitted.

In August 2017, the FASB issued ASU No. 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. This Update modifies accounting guidance for hedge accounting by making more hedge strategies eligible for hedge accounting, amending presentation and disclosure requirements, and changing how companies assess ineffectiveness. The intent is to simplify the application of hedge accounting and increase transparency of information about an entity's risk management activities. The amended guidance is effective for annual periods beginning after December 15, 2018, with early adoption permitted. The Company has completed its assessment of these updates, including potential changes to existing hedging arrangements, and has determined the adoption of the guidance will not have a material impact on the Company's Consolidated Financial Statements.

In October 2018, the FASB issued ASU 2018-16, Derivatives and Hedging (Topic 815): Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as Benchmark Interest Rate for Hedge Accounting Purposes. This Update permits use of the OIS rate based on the SOFR as a U.S. benchmark interest rate for hedge accounting purposes. The guidance should be adopted on a prospective basis. This Update is effective for fiscal years beginning after December 15, 2018, with early adoption permitted. The Company is assessing the impact of this new standard; however the adoption of the guidance in this Update is not expected to have a material impact on the Company's Consolidated Financial Statements.

NOTE 3 – Acquisitions

On March 9, 2017, the Company completed its acquisition of Sun Flour in Thailand for \$18 million. As of December 31, 2018, the Company has paid \$16 million in cash and recorded \$2 million in accrued liabilities for deferred payments due to the previous owner. The Company funded the acquisition primarily with cash on-hand. The acquisition of Sun Flour adds a fourth manufacturing facility to the Company's operations in Thailand. Sun Flour produces rice-based ingredients used primarily in the food industry. The results of the acquired operation are included in the Company's consolidated results from the acquisition date forward within the Asia Pacific business segment, and \$14 million of goodwill was allocated to that segment. The Company finalized the purchase price allocation for all areas for the Sun Flour acquisition during the first quarter of 2018. The finalization of goodwill and intangible assets did not have a significant impact on previously estimated amounts. The acquisition of Sun Flour added \$15 million to goodwill and identifiable intangible assets and \$3 million to net tangible assets as of the acquisition date.

Goodwill represents the amount by which the purchase price exceeds the estimated fair value of the net assets acquired. The goodwill related to Sun Flour is not tax deductible.

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The fair value adjustments for the year ended December 31, 2018 were not material. Included in the results of the acquired business for the year ended December 31, 2017 was an increase in pre-tax cost of sales of \$9 million relating to the sale of inventory that was adjusted to fair value at the acquisition date for the acquired business in accordance with business combination accounting rules.

Pro-forma results of operations for the acquisitions made in 2017 and 2016 have not been presented as the effect of each acquisition individually and in aggregate would not be material to the Company's results of operations for any periods presented.

The Company incurred immaterial pre-tax acquisition and integration costs in 2018. The Company incurred \$4 million and \$3 million of pre-tax acquisition and integration costs in 2017 and 2016, respectively, associated with its acquisitions.

NOTE 4 – Revenue Recognition

The Company applies the provisions of ASC 606-10, Revenue from Contracts with Customers. The Company recognizes revenue under the core principle to depict the transfer of products to customers in an amount reflecting the consideration the Company expects to receive. In order to achieve that core principle, the Company applies the following five-step approach: (1) identify the contract with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract, and (5) recognize revenue when a performance obligation is satisfied.

The Company identified customer purchase orders, which in some cases are governed by a master sales agreement, as the contracts with its customers. For each contract, the Company considers the transfer of products, each of which is distinct, to be the identified performance obligation. In determining the transaction price for the performance obligation, the Company evaluates whether the price is subject to adjustment to determine the consideration to which the Company expects to be entitled. The pricing model can be fixed or variable within the contract. The variable pricing model is based on historical commodity pricing and is determinable prior to completion of the performance obligation. Additionally, the Company has certain sales adjustments for volume incentive discounts and other discount arrangements that reduce the transaction price. The reduction of transaction price is estimated using the expected value method based on an analysis of historical volume incentives or discounts, over a period of time considered adequate to account for current pricing and business trends. Historically, actual volume incentives and discounts relative to those estimated and included when determining the transaction price have not materially differed. Volume incentives and discounts are accrued at the satisfaction of the performance obligation and accounted for in accounts payable and accrued expenses in the Consolidated Balance Sheets. These amounts are not significant as of December 31, 2018 and 2017. The product price as specified in the contract, net of any discounts, is considered the standalone selling price as it is an observable input which depicts the price as if sold to a similar customer in similar circumstances. Payment is received shortly after the performance obligation is satisfied, therefore, the Company has elected the practical expedient under ASC 606-10-32-18 to not assess whether a contract has a significant financing component.

Revenue is recognized when the Company's performance obligation is satisfied and control is transferred to the customer, which occurs at a point in time, either upon delivery to an agreed upon location or to the customer. Further, in determining whether control has transferred, the Company considers if there is a present right to payment and legal title, along with risks and rewards of ownership having transferred to the customer.

Shipping and handling activities related to contracts with customers represent fulfillment costs and are presented as a reduction of net sales before shipping and handling costs. Taxes assessed by governmental authorities and collected from customers are accounted for on a net basis and excluded from revenues. The Company applies a practical expedient to expense costs to obtain a contract as incurred as most contracts are one year or less. These costs are comprised primarily from the Company's internal sales force compensation program. Under the terms of these programs these are generally earned and the costs are recognized at the time the revenue is recognized.

From time to time the Company may enter into long term contracts with its customers. Historically, the contracts entered into by the Company do not result in significant contract assets or liabilities. Any such arrangements are accounted for in other assets or accounts payable and accrued liabilities in the Consolidated Balance Sheets. There were not significant contract assets or liabilities as of December 31, 2018 and 2017.

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The Company is principally engaged in the production and sale of starches and sweeteners for a wide range of industries, and is managed geographically on a regional basis. The Company's operations are classified into four reportable business segments: North America, South America, Asia Pacific and Europe, Middle East and Africa ("EMEA"). The nature, amount, timing and uncertainty of the Company's net sales are managed by the Company primarily based on its geographic segments. Each region's product sales are unique to each region and have unique risks.

(in millions)	2018	2017	2016
Net sales to unaffiliated customers:			
North America:			
Net sales before shipping and handling costs	\$ 3,857	\$ 3,843	\$ 3,734
Less: shipping and handling costs	346	314	287
Net sales	\$ 3,511	\$ 3,529	\$ 3,447
South America:			
Net sales before shipping and handling costs	\$ 988	\$ 1,052	\$ 1,054
Less: shipping and handling costs	45	45	44
Net sales	\$ 943	\$ 1,007	\$ 1,010
Asia Pacific:			
Net sales before shipping and handling costs	\$ 837	\$ 772	\$ 738
Less: shipping and handling costs	34	32	29
Net sales	\$ 803	\$ 740	\$ 709
EMEA:			
Net sales before shipping and handling costs	\$ 607	\$ 577	\$ 556
Less: shipping and handling costs	23	21	18
Net sales	\$ 584	\$ 556	\$ 538

NOTE 5 – Restructuring and Impairment Charges

In 2018, the Company recorded \$64 million of pre-tax restructuring charges. During the second quarter of 2018, the Company introduced its Cost Smart program, designed to improve profitability, further streamline its global business and deliver increased value to shareholders through anticipated savings in cost of sales, including freight, and SG&A. For the year ended December 31, 2018, the Company recorded \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, consisting of \$34 million of accelerated depreciation, \$8 million of mechanical stores, \$3 million of employee-related severance and \$4 million of other costs. The Company expects to incur up to \$3 million of additional restructuring costs during 2019.

As part of its Cost Smart SG&A program, during the third quarter of 2018, the Company announced a Finance Transformation initiative in Latin America to strengthen organizational capabilities and drive efficiencies to support the growth strategy of the Company. The Company recorded \$4 million of employee-related severance and other costs for the year ended December 31, 2018, in relation to this initiative. The Company expects to incur between \$1 million and \$2 million in 2019 related to this initiative. In addition, restructuring expenses of \$7 million (\$6 million employee-related severance and \$1 million of consulting costs) were recorded as part of the Cost Smart SG&A program for the year ended December 31, 2018 in the South America, APAC and North America segments.

Additionally, for the year ended December 31, 2018, the Company recorded \$3 million of other restructuring costs associated with the North America Finance Transformation initiative as well as \$1 million of other restructuring costs related to the leaf extraction process in Brazil. The Company does not expect to incur any additional costs related to the North America Finance Transformation or the leaf extraction process in Brazil.

In 2017, the Company recorded \$38 million of pre-tax restructuring charges. The charges consist of \$17 million of employee-related severance and other costs in connection to an organizational restructuring effort in Argentina, \$13 million of pre-tax restructuring charges in relation to its leaf extraction process in Brazil, \$6 million of employee-related severance and other costs associated with the Company's optimization initiative in North America and \$2 million of other

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pre-tax restructuring charges, including other employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities.

A summary of the Company's severance accrual at December 31, 2018, is as follows (in millions):

Balance in severance accrual as of December 31, 2017	\$ 11
Cost Smart cost of sales and SG&A	8
Foreign exchange translation	(3)
Latin American Finance Transformation	2
Other	1
Payments made to terminated employees	(9)
Balance in severance accrual as of December 31, 2018	\$ 10

Of the \$10 million severance accrual at December 31, 2018, \$9 million is expected to be paid within the next 12 months.

The Company assesses goodwill and other indefinite-lived intangible assets for impairment annually, or more frequently if impairment indicators arise. No goodwill or indefinite-lived intangible asset impairment was recognized in 2018, 2017 or 2016 related to the Company's annual impairment testing.

NOTE 6 – Financial Instruments, Derivatives and Hedging Activities

The Company is exposed to market risk stemming from changes in commodity prices (primarily corn and natural gas), foreign currency exchange rates and interest rates. In the normal course of business, the Company actively manages its exposure to these market risks by entering into various hedging transactions, authorized under established policies that place clear controls on these activities. These transactions utilize exchange-traded derivatives or over-the-counter derivatives with investment grade counterparties. Derivative financial instruments currently used by the Company consist of commodity-related futures, options, and swap contracts, foreign currency-related forward contracts, interest rate swaps and T-Locks.

Commodity price hedging: The Company's principal use of derivative financial instruments is to manage commodity price risk in North America relating to anticipated purchases of corn and natural gas to be used in the manufacturing process, generally over the next 12 to 24 months. The Company maintains a commodity-price risk management strategy that uses derivative instruments to minimize significant, unanticipated earnings fluctuations caused by commodity-price volatility. For example, the manufacturing of the Company's products requires a significant volume

of corn and natural gas. Price fluctuations in corn and natural gas cause the actual purchase price of corn and natural gas to differ from anticipated prices.

To manage price risk related to corn purchases in North America, the Company uses corn futures and options contracts that trade on regulated commodity exchanges to lock-in its corn costs associated with firm-priced customer sales contracts. The Company uses over-the-counter natural gas swaps to hedge a portion of its natural gas usage in North America. These derivative financial instruments limit the impact that volatility resulting from fluctuations in market prices will have on corn and natural gas purchases and have been designated as cash flow hedges. The Company also enters into futures contracts to hedge price risk associated with fluctuations in the market price of ethanol. Unrealized gains and losses associated with marking the commodity hedging contracts to market (fair value) are recorded as a component of other comprehensive income (“OCI”) and included in the equity section of the Consolidated Balance Sheets as part of AOCI. These amounts are subsequently reclassified into earnings in the same line item affected by the hedged transaction and in the same period or periods during which the hedged transaction affects earnings, or in the month a hedge is determined to be ineffective. The Company assesses the effectiveness of a commodity hedge contract based on changes in the contract’s fair value. The changes in the market value of such contracts have historically been, and are expected to continue to be, highly effective at offsetting changes in the price of the hedged items. The amounts representing the ineffectiveness of these cash flow hedges are not significant.

As of December 31, 2018, AOCI included \$2 million of losses (net of tax of \$2 million) pertaining to commodities-related derivative instruments designated as cash flow hedges. As of December 31, 2017, AOCI included \$12 million of losses (net of tax of \$7 million) pertaining to commodities-related derivative instruments designated as cash flow hedges.

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Interest rate hedging: The Company assesses its exposure to variability in interest rates by identifying and monitoring changes in interest rates that may adversely impact future cash flows and the fair value of existing debt instruments, and by evaluating hedging opportunities. The Company maintains risk management control systems to monitor interest rate risk attributable to both the Company's outstanding and forecasted debt obligations as well as the Company's offsetting hedge positions. The risk management control systems involve the use of analytical techniques, including sensitivity analysis, to estimate the expected impact of changes in interest rates on future cash flows and the fair value of the Company's outstanding and forecasted debt instruments.

Derivative financial instruments that have been used by the Company to manage its interest rate risk consist of interest rate swaps and T-Locks. The Company periodically enters into T-Locks to hedge its exposure to interest rate changes. The T-Locks are designated as hedges of the variability in cash flows associated with future interest payments caused by market fluctuations in the benchmark interest rate until the fixed interest rate is established, and are accounted for as cash flow hedges. Accordingly, changes in the fair value of the T-Locks are recorded to AOCI until the consummation of the underlying debt offering, at which time any realized gain (loss) is amortized to earnings over the life of the debt. The Company also has an interest rate swap agreement that effectively converts the interest rates on \$200 million of its \$400 million of 4.625 percent senior notes, due November 1, 2020, to variable rates. This swap agreement calls for the Company to receive interest at the fixed coupon rate of the respective notes and to pay interest at a variable rate based on the six-month U.S. LIBOR rate plus a spread. The Company has designated this interest rate swap agreement as a hedge of the changes in fair value of the underlying debt obligations attributable to changes in interest rates and accounts for it as fair value hedges. Changes in the fair value of interest rate swaps designated as hedging instruments that effectively offset the variability in the fair value of outstanding debt obligations are reported in earnings. These amounts offset the gain or loss (the change in fair value) of the hedged debt instrument that is attributable to changes in interest rates (the hedged risk), which is also recognized in earnings. The fair value of the interest rate swap agreement as of December 31, 2018 was a \$1 million loss, and is reflected in the Consolidated Balance Sheets within non-current liabilities, with an offsetting amount recorded in long-term debt to adjust the carrying amount of the hedged debt obligations. As of December 31, 2017, the fair value of the interest rate swap agreement was a \$1 million gain, and is reflected in the Consolidated Balance Sheets within other assets, with an offsetting amount recorded in long-term debt to adjust the carrying amount of hedged debt obligations. The Company did not have any T-Locks outstanding as of December 31, 2018, or 2017. As of December 31, 2018 and 2017, AOCI included \$2 million of losses (net of income taxes of \$1 million) and \$2 million of losses (net of income taxes of \$1 million), respectively, related to settled T-Locks. These deferred losses are being amortized to financing costs over the terms of the senior notes with which they are associated.

Foreign currency hedging: Due to the Company's global operations, including operations in many emerging markets, it is exposed to fluctuations in foreign currency exchange rates. As a result, the Company has exposure to translational foreign exchange risk when the results of its foreign operations are translated to U.S. dollars and to transactional foreign exchange risk when transactions not denominated in the functional currency are revalued. The Company primarily uses derivative financial instruments such as foreign currency forward contracts, swaps and options to manage its transactional foreign exchange risk. As of December 31, 2018, the Company had foreign currency forward sales contracts that are designated as fair value hedges with an aggregate notional amount of \$621 million and foreign currency forward purchase contracts with an aggregate notional amount of \$165 million that hedged transactional exposures. As of December 31, 2017, the Company had foreign currency forward sales contracts with an aggregate notional amount of \$447 million and foreign currency forward purchase contracts with an aggregate notional amount

of \$121 million that hedged transactional exposures. The fair values of these derivative instruments were assets of \$5 million and \$11 million at December 31, 2018 and December 31, 2017, respectively.

The Company also has foreign currency derivative instruments that hedge certain foreign currency transactional exposures and are designated as cash flow hedges. The amount included in AOCI related to these hedges at December 31, 2018 was not significant. As of December 31, 2017, AOCI included \$1 million of gains (net of income taxes of \$1 million) related to these hedges.

By using derivative financial instruments to hedge exposures, the Company exposes itself to credit risk and market risk. Credit risk is the risk that the counterparty will fail to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is negative, the Company owes the counterparty and, therefore, it does not possess credit risk. The Company minimizes the credit risk in derivative instruments by entering into over-the-counter transactions only with investment grade counterparties or by utilizing exchange-traded derivatives. Market risk is

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the adverse effect on the value of a financial instrument that results from a change in commodity prices, interest rates or foreign exchange rates. The market risk associated with commodity-price, interest rate or foreign exchange contracts is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.

The fair value and balance sheet location of the Company's derivative instruments, presented gross in the Consolidated Balance Sheets, are reflected below:

Derivatives Designated as Hedging Instruments (in millions):	Fair Value of Derivative Instruments as of December 31, 2018			
	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Commodity and foreign currency	Accounts receivable, net	\$ 22	Accounts payable and accrued liabilities	\$ 18
Commodity, foreign currency and interest rate contracts	Other assets	2	Non-current liabilities	8
		\$ 24		\$ 26
	Fair Value of Derivative Instruments as of December 31, 2017			
Derivatives Designated as Hedging Instruments (in millions):	Balance Sheet Location	Fair Value	Balance Sheet Location	Fair Value
Commodity and foreign currency	Accounts receivable, net	\$ 11	Accounts payable and accrued liabilities	\$ 23
Commodity, foreign currency and interest rate contracts	Other assets	3	Non-current liabilities	8
		\$ 14		\$ 31

As of December 31, 2018, the Company had outstanding futures and option contracts that hedged the forecasted purchase of approximately 85 million bushels of corn. The Company is unable to directly hedge price risk related to co-product sales; however, it occasionally enters into hedges of soybean oil (a competing product to corn oil) in order to mitigate the price risk of corn oil sales. As of December 31, 2018, the Company had no outstanding futures or option contracts for soybean oil. The Company also had outstanding swap and option contracts that hedged the forecasted purchase of approximately 28 million mmbtu's of natural gas at December 31, 2018. Additionally, as of December 31, 2018, the Company had no outstanding ethanol futures contracts.

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Additional information relating to the Company's derivative instruments is presented below (in millions, pre-tax):

	Year Ended December 31, 2018		Amount of
	Amount		Gains
	of		(Losses)
	Gains		Reclassified
	(Losses)		from
Derivatives in Cash Flow Hedging Relationships	Recognition of Gains (Losses) Reclassified from OCI on Derivatives	Location of Gains (Losses) Reclassified from OCI on Derivatives	AOCI into Income
Commodity contracts	\$ 8	Cost of sales	\$ (6)
Foreign currency contracts	—	Net sales/cost of sales	1
Interest rate contracts	—	Financing costs, net	(1)
Total	\$ 8		\$ (6)
	Year Ended December 31, 2017		Amount of
	Amount		Gains
	of		(Losses)
	Gains		Reclassified
	(Losses)		from
Derivatives in Cash Flow Hedging Relationships	Recognition of Gains (Losses) Reclassified from OCI on Derivatives	Location of Gains (Losses) Reclassified from OCI on Derivatives	AOCI into Income
Commodity contracts	\$ (22)	Cost of sales	\$ (5)
Foreign currency contracts	6	Net sales/cost of sales	1
Interest rate contracts	—	Financing costs, net	(2)
Total	\$ (16)		\$ (6)
	Year ended December 31, 2016		Amount of
	Amount		Gains
	of		(Losses)
	Gains		Reclassified
	(Losses)		from
Derivatives in Cash Flow Hedging Relationships	Recognition of Gains (Losses) Reclassified from OCI on Derivatives	Location of Gains (Losses) Reclassified from OCI on Derivatives	AOCI into Income
Commodity contracts	\$ (15)	Cost of sales	\$ (45)
Foreign currency contracts	(2)	Net sales/Cost of sales	(2)
Interest rate contracts	—	Financing costs, net	(2)
Total	\$ (17)		\$ (49)

As of December 31, 2018, AOCI included approximately \$1 million of losses (net of an insignificant amount of income taxes), on commodities-related derivative instruments designated as cash flow hedges that are expected to be reclassified into earnings during the next 12 months. Transactions and events expected to occur over the next twelve months that will necessitate reclassifying these derivative losses to earnings include the sale of finished goods

inventory that includes previously hedged purchases of corn, natural gas and ethanol. The Company expects the losses to be offset by changes in the underlying commodities costs. Additionally at December 31, 2018, AOCI included \$1 million of losses (net of an insignificant amount of income taxes) on settled T-Locks and an insignificant amount of gains related to foreign currency hedges which are expected to be reclassified into earnings during the next 12 months. Cash flow hedges discontinued during 2018 or 2017 were not significant.

Presented below are the fair values of the Company's financial instruments and derivatives for the periods presented:

(in millions)	As of December 31, 2018				As of December 31, 2017			
	Total	Level 1 (a)	Level 2 (b)	Level 3 (c)	Total	Level 1 (a)	Level 2 (b)	Level 3 (c)
Available for sale securities	\$ 11	\$ 11	\$ —	\$ —	\$ 10	\$ 10	\$ —	\$ —
Derivative assets	24	4	20	—	14	3	11	—
Derivative liabilities	26	6	20	—	31	11	20	—
Long-term debt	1,954	—	1,954	—	1,845	—	1,845	—

- (a) Level 1 inputs consist of quoted prices (unadjusted) in active markets for identical assets or liabilities.
- (b) Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly for substantially the full term of the financial instrument. Level 2 inputs are based on quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs other than quoted prices that are observable for the asset or liability or can be derived principally from or corroborated by observable market data.
- (c) Level 3 inputs are unobservable inputs for the asset or liability. Unobservable inputs shall be used to measure fair value to the extent that observable inputs are not available, thereby allowing for fair value estimates to be made in situations in which there is little, if any, market activity for the asset or liability at the measurement date.

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The carrying values of cash equivalents, short-term investments, accounts receivable, accounts payable, and short-term borrowings approximate fair values. Commodity futures, options, and swap contracts are recognized at fair value. Foreign currency forward contracts, swaps, and options are also recognized at fair value. The fair value of the Company's long-term debt is estimated based on quotations of major securities dealers who are market makers in the securities. Presented below are the carrying amounts and the fair values of the Company's long-term debt at December 31, 2018 and 2017.

(in millions)	December 31, 2018		December 31, 2017	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
3.2% senior notes due October 1, 2026	\$ 496	\$ 462	\$ 496	\$ 492
4.625% senior notes due November 1, 2020	399	409	398	421
6.625% senior notes due April 15, 2037	254	295	254	325
5.62% senior notes due March 25, 2020	200	205	200	212
Term loan credit agreement due April 25, 2019	165	165	395	395
Revolving credit facility	418	418	—	—
Fair value adjustment related to hedged fixed rate debt instrument	(1)	—	1	—
Total long-term debt	\$ 1,931	\$ 1,954	\$ 1,744	\$ 1,845

NOTE 7 – Financing Arrangements

The Company had total debt outstanding of \$2.1 billion and \$1.9 billion at December 31, 2018 and 2017, respectively. Short-term borrowings at December 31, 2018 and 2017 consist primarily of amounts outstanding under various unsecured local country operating lines of credit.

On August 18, 2017, the Company entered into a new Term Loan Credit Agreement (“Term Loan”) to establish a senior unsecured term loan credit facility. Under the Term Loan, the Company is allowed three borrowings in an amount of up to \$500 million total. The Term Loan matures 18 months from the date of the final borrowing. As of October 25, 2017, the Company had initiated all three borrowings under the Term Loan totaling \$420 million, due April 25, 2019. The proceeds were used to refinance \$300 million of 1.8 percent senior notes due September 25, 2017, and pay down borrowings outstanding on the revolving credit facility. The Company paid \$25 million towards the Term Loan in December 2017 and an additional \$230 million towards the Term Loan for the year ended December 31, 2018. All payments were made with cash on-hand. The Company's long-term debt as of December 31, 2018 includes the remaining Term Loan balance of \$165 million that matures on April 25, 2019. This borrowing is included in long-term debt as the Company has the ability and intent to refinance it on a long-term basis prior to the maturity date.

All borrowings under the Term Loan facility will bear interest at a variable annual rate based on the LIBOR or base rate, at the Company's election, subject to the terms and conditions thereof, plus, in each case, an applicable margin. The Term Loan Credit Agreement contains customary representations, warranties, covenants, events of default, terms and conditions, including limitations on liens, incurrence of debt, mergers and significant asset dispositions. The Company must also comply with a leverage ratio and interest coverage ratio. The occurrence of an event of default under the Term Loan Credit Agreement could result in all loans and other obligations being declared due and payable and the term loan credit facility being terminated.

On October 11, 2016, the Company entered into a new five-year, senior, unsecured \$1 billion revolving credit agreement (the "Revolving Credit Agreement") that replaced its previously existing \$1 billion senior unsecured revolving credit facility.

Subject to certain terms and conditions, the Company may increase the amount of the revolving facility under the Revolving Credit Agreement by up to \$500 million in the aggregate. The Company may also obtain up to two one-year extensions of the maturity date of the Revolving Credit Agreement at its requests and subject to the agreement of the lenders. All committed pro rata borrowings under the revolving facility will bear interest at a variable annual rate based on the LIBOR or base rate, at the Company's election, subject to the terms and conditions thereof, plus, in each case, an applicable margin based on the Company's leverage ratio (as reported in the financial statements delivered pursuant to the Revolving Credit Agreement) or the Company's credit rating. Subject to specified conditions, the Company may designate one or more of its subsidiaries as additional borrowers under the Revolving Credit Agreement provided that the Company guarantees all borrowings and other obligations of any such subsidiaries thereunder.

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The Revolving Credit Agreement contains customary representations, warranties, covenants, events of default, terms and conditions, including limitations on liens, incurrence of subsidiary debt and mergers. The Company must also comply with a leverage ratio covenant and an interest coverage ratio covenant. The occurrence of an event of default under the Revolving Credit Agreement could result in all loans and other obligations under the agreement being declared due and payable and the revolving credit facility being terminated.

As of December 31, 2018, there were \$418 million in borrowings outstanding under the Revolving Credit Agreement. In addition to borrowing availability under its Revolving Credit Agreement, the Company has approximately \$507 million of unused operating lines of credit in the various foreign countries in which it operates.

Long-term debt, net of related discounts, premiums and debt issuance costs consists of the following at December 31:

(in millions)	As of December 31, 2018	As of December 31, 2017
3.2% senior notes due October 1, 2026	\$ 496	\$ 496
4.625% senior notes due November 1, 2020	399	398
6.625% senior notes due April 15, 2037	254	254
5.62% senior notes due March 25, 2020	200	200
Term loan credit agreement due April 25, 2019	165	395
Revolving credit facility	418	—
Fair value adjustment related to hedged fixed rate debt instruments	(1)	1
Long-term debt	1,931	1,744
Short-term borrowings	169	120
Total debt	\$ 2,100	\$ 1,864

The Company's long-term debt matures as follows: \$600 million in 2020, \$500 million in 2026, and \$250 million in 2037. The Company's Term Loan of \$165 million matures in 2019. This borrowing is included in long-term debt as the Company has the ability and intent to refinance it on a long-term basis prior to the maturity date.

The Company guarantees certain obligations of its consolidated subsidiaries. The amount of the obligations guaranteed aggregated \$57 million and \$56 million at December 31, 2018 and 2017, respectively.

NOTE 8 – Leases

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The Company leases rail cars, certain machinery and equipment, and office space under various operating leases. Rental expense under operating leases was \$60 million, \$51 million and \$53 million in 2018, 2017 and 2016, respectively. Minimum lease payments due on non-cancellable leases existing at December 31, 2018, are shown below:

Year (in millions)	Minimum Lease Payments
2019	\$ 53
2020	44
2021	40
2022	27
2023	22
Balance thereafter	27

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NOTE 9 – Income Taxes

The components of income before income taxes and the provision for income taxes are shown below:

(in millions)	2018	2017	2016
Income before income taxes:			
U.S.	\$ 121	\$ 226	\$ 176
Foreign	500	543	566
Total income before income taxes	621	769	742
Provision for income taxes:			
Current tax (benefit) expense:			
U.S. federal	17	(13)	95
State and local	1	4	8
Foreign	172	179	148
Total current tax expense	190	170	251
Deferred tax expense (benefit):			
U.S. federal	(14)	77	13
State and local	(2)	4	1
Foreign	(7)	(14)	(19)
Total deferred tax expense (benefit)	(23)	67	(5)
Total provision for income taxes	\$ 167	\$ 237	\$ 246

Deferred income taxes are provided for the tax effects of temporary differences between the financial reporting basis and tax basis of assets and liabilities. Significant temporary differences as of December 31, 2018 and 2017 are summarized as follows:

Deferred income taxes are provided for the tax effects of temporary differences between the financial reporting basis and tax basis of assets and liabilities. Significant temporary differences as of December 31, 2018 and 2017 are summarized as follows:

(in millions)	2018	2017
Deferred tax assets attributable to:		
Employee benefit accruals	\$ 20	\$ 20
Pensions and postretirement plans	23	20
Derivative contracts	1	5
Net operating loss carryforwards	26	32
Foreign tax credit carryforwards	1	—
Other	—	—
Gross deferred tax assets	71	77
Valuation allowances	(31)	(34)
Net deferred tax assets	40	43

Deferred tax liabilities attributable to:		
Property, plant and equipment	177	185
Identified intangibles	39	37
Other	3	11
Gross deferred tax liabilities	219	233
Net deferred tax liabilities	\$ 179	\$ 190

Of the \$26 million of tax-effected net operating loss carryforwards as of December 31, 2018, approximately \$11 million are for state loss carryforwards and approximately \$15 million are for foreign loss carryforwards. Of the \$32 million of tax-effected net operating loss carryforwards as of December 31, 2017, approximately \$9 million are for state loss carryforwards and approximately \$23 million are for foreign loss carryforwards. Income tax accounting requires that a valuation allowance be established when it is more likely than not that all or a portion of a deferred tax asset will not be realized. In making this assessment, management considers the level of historical taxable income, scheduled reversal of deferred tax liabilities, tax planning strategies, tax carryovers and projected future taxable income. As of December 31, 2018, the Company maintains valuation allowances of \$11 million for state loss carryforwards, \$3 million for state credits and \$14 million for foreign loss carryforwards that management has determined will more likely than not expire prior to realization. As of December 31, 2017, the Company maintained valuation allowances of \$9 million for state loss carryforwards, \$2 million for state credits and \$21 million for foreign loss carryforwards that management has determined will more likely than not expire prior to realization. In addition, the Company maintains valuation allowances

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on foreign subsidiaries' net deferred tax assets of \$3 million and \$2 million, respectively, for the years ended December 31, 2018 and 2017.

A reconciliation of the U.S. federal statutory tax rate to the Company's effective tax rate follows:

	2018	2017	2016
Provision for tax at U.S. statutory rate	21.0 %	35.0 %	35.0 %
Tax rate difference on foreign income	5.3	(5.6)	(5.5)
State and local taxes, net	—	0.7	0.3
Tax impact of fluctuations in Mexican peso to U.S. dollar	—	(0.5)	2.4
Net impact of U.S. foreign tax credits	0.5	0.3	(2.3)
Net impact of U.S.-Canada tax settlement	0.3	(1.3)	3.2
Net impact of valuation allowance in Argentina	1.0	2.0	1.0
Net impact of transition tax	0.6	2.7	—
Net impact of U.S. deferred tax remeasurement	—	(4.9)	—
Net impact of provision for taxes on unremitted earnings	0.3	4.3	0.5
Other items, net	(2.1)	(1.9)	(1.5)
Provision at effective tax rate	26.9 %	30.8 %	33.1 %

The Company has significant operations in Mexico, Pakistan, and Colombia where the statutory tax rates are 30 percent, 29 percent and 37 percent in 2018, respectively. In addition, the Company's subsidiary in Brazil has a statutory tax rate of 34 percent before local incentives that vary each year.

The Tax Cuts and Jobs Act ("TCJA") was enacted on December 22, 2017. The TCJA introduced numerous changes in the U.S. federal tax laws. Changes that have a significant impact on the Company's effective tax rate are a reduction in the U.S. corporate tax rate from 35 percent to 21 percent, the imposition of a U.S. tax on global intangible low-taxed income ("GILTI") and the foreign-derived intangible income ("FDII") deduction. The TCJA also provided for a one-time transition tax on the deemed repatriation of cumulative foreign earnings as of December 31, 2017, and eliminated the tax on dividends from foreign subsidiaries by allowing a 100 percent dividends received deduction.

On December 22, 2017, Staff Accounting Bulletin No. 118 ("SAB 118") was issued to provide guidance on the application of GAAP to situations in which the registrant does not have all the necessary information available, prepared or analyzed (including computations) in sufficient detail to complete the accounting for the income tax effects of the TCJA.

In the fourth quarter of 2017, the Company calculated a provisional impact of the TCJA in accordance with SAB 118 and its understanding of the TCJA, including published guidance as of December 31, 2017. During the third and

fourth quarter of 2018, the Company recorded \$2 million and \$1 million, respectively, of net incremental tax expense as the Company finalized its TCJA expense based on additional guidance from federal and state regulatory agencies. The following table summarizes the provisional and final impact of the TCJA:

(in millions)	Provisional 2017 TCJA Impact	Final 2017 TCJA Impact
One-time transition tax	\$ 21	\$ 25
Remeasurement of deferred tax assets and liabilities	(38)	(38)
Net impact of provision for taxes on unremitted earnings	33	35
Other items, net	7	4
Net impact of the TCJA	\$ 23	\$ 26

Pro-form results related to TCJA have not been presented, as the effect would not be material to the Company's results for the periods presented.

Under a provision in the TCJA, all of the undistributed earnings of the Company's foreign subsidiaries were deemed to be repatriated at December 31, 2017, and were subjected to a transition tax. As a result, a provisional transition tax liability of \$21 million, or 2.7 percentage points on the effective tax rate, was recorded in income from continuing operations in the fourth quarter of 2017. During the third quarter of 2018, the Company finalized the transition tax analysis and recorded an incremental \$4 million liability, or 0.6 percentage points on the effective tax rate.

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As a result of the reduction in the U.S. corporate tax rate, the Company recorded a provisional tax benefit of \$38 million, or 4.9 percentage points on the effective tax rate, due to the remeasurement of its U.S. net deferred tax liabilities, in the fourth quarter of 2017.

Due to a change in the U.S. tax treatment of dividends received from foreign subsidiaries, in the fourth quarter of 2017, the Company recorded a provisional tax liability of \$33 million, or 4.3 percentage points on the effective tax rate, for foreign dividend withholding and state income taxes payable upon the distribution of unremitted earnings from certain foreign subsidiaries from which it expects to receive cash distributions in 2018 and beyond. During the second half of 2018, the Company finalized the provision for taxes on unremitted earnings and recorded an additional \$2 million liability, or 0.3 percentage points on the effective rate.

The net impact of the TCJA on the Company's 2017 tax expense included a provisional tax liability of \$7 million, or 0.9 percentage points on the effective tax rate (included in other items, net), for the difference in its 2017 tax expense as calculated with and without the changes triggered by the TCJA. During the second half of 2018, the Company finalized other items, net and recorded a net \$3 million benefit, or 0.4 percentage points on the effective tax rate.

In the fourth quarter of 2018, the Company made an accounting election to treat taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the "period cost method")

The Company had been pursuing relief from double taxation under the U.S.-Canada tax treaty for the years 2004 through 2013. During the fourth quarter of 2016, a tentative settlement was reached between the U.S. and Canada and, consequently, the Company established a net reserve of \$24 million, including interest thereon, recorded as a \$70 million cost and a \$46 million benefit, or 3.2 percentage points on the effective tax rate. In addition, as a result of the settlement, for the years 2014 through 2016, the Company had established a net reserve of \$7 million, or 1.0 percentage points on the effective tax rate in 2016. In the third quarter of 2017, the two countries finalized the agreement, which eliminated the double taxation, and the Company paid \$63 million to the U.S. Internal Revenue Service to settle the liability. As a result of that agreement, the Company was entitled to a net tax benefit of \$10 million primarily due to a foreign exchange loss deduction on its 2017 U.S. federal income tax return, or 1.3 percentage points on the effective tax rate. As a result of the final settlement, the Company received refunds totaling \$42 million from Canadian revenue agencies and recorded \$2 million, or 0.3 percentage points on the effective tax rate, of interest and penalties through tax expense in 2018.

The Company uses the U.S. dollar as the functional currency for its subsidiaries in Mexico. In 2017 and 2016, a decline in value of the Mexican peso versus the U.S. dollar increased tax expense by \$4 million and \$18 million, or 0.5 percentage points and 2.4 percentage points on the effective tax rate, respectively. These impacts are largely associated with foreign currency translation gains and losses for local tax purposes on net-U.S.-dollar-monetary assets held in Mexico for which there was no corresponding gain or loss in pre-tax income.

During 2018, the Company increased the valuation allowance on the net deferred tax assets in Argentina. As a result, the Company recorded a valuation allowance in the amount of \$6 million, or 1.0 percentage points on the effective tax rate, compared to \$16 million, or 2.0 percentage points on the effective tax rate, and \$7 million, or 1.0 percentage points on the effective tax rate in 2017 and 2016, respectively.

As of December 31, 2017, for U.S. tax purposes all of the undistributed earnings and profits of the Company's foreign subsidiaries were deemed to be repatriated and subjected to a transition tax. In addition, during 2017 and 2018 the Company recorded a liability of \$33 million and \$2 million, respectively, for foreign withholding and state income taxes on certain unremitted earnings from foreign subsidiaries. However, the Company has not provided for foreign withholding taxes, state income taxes and federal and state taxes on foreign currency gains/losses on distributions of approximately \$3.0 billion of unremitted earnings of our foreign subsidiaries; as such amounts are considered permanently reinvested. It is not practicable to estimate the additional income taxes, including applicable foreign withholding taxes that would be due upon the repatriation of these earnings.

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A reconciliation of the beginning and ending amounts of unrecognized tax benefits, excluding interest and penalties, for 2018 and 2017 is as follows:

(in millions)	2018	2017
Balance at January 1	\$ 39	\$ 86
Additions for tax positions related to prior years	—	—
Reductions for tax positions related to prior years	(2)	—
Additions based on tax positions related to the current year	—	12
Settlements	—	(58)
Reductions related to a lapse in the statute of limitations	(7)	(1)
Balance at December 31	\$ 30	\$ 39

Of the \$30 million of unrecognized tax benefits as of December 31, 2018, \$10 million represents the amount that, if recognized, could affect the effective tax rate in future periods. The remaining \$20 million includes an offset of \$19 million for an income tax receivable and \$1 million of federal benefit created as part of the U.S.-Canada tax settlement described previously.

The Company accounts for interest and penalties related to income tax matters within the provision for income taxes. The Company has accrued \$2 million of interest expense related to the unrecognized tax benefits as of December 31, 2018. The accrued interest expense was \$2 million as of December 31, 2017.

The Company is subject to U.S. federal income tax as well as income tax in multiple states and non-U.S. jurisdictions. The U.S. federal tax returns are subject to audit for the years 2015 to 2018. In general, the Company's foreign subsidiaries remain subject to audit for years 2012 and later.

It is also reasonably possible that the total amount of unrecognized tax benefits including interest and penalties will increase or decrease within 12 months of December 31, 2018. The Company believe it is reasonably possible approximately \$8 million of unrecognized tax benefits may be recognized within 12 months of December 31, 2018 as a result of a lapse of the statute of limitations. Of which, \$4 million, could affect the effective tax rate. The Company has classified none of the unrecognized tax benefits as current because they are not expected to be resolved within the next 12 months.

NOTE 10 – Benefit Plans

The Company and its subsidiaries sponsor noncontributory defined benefit pension plans (qualified and non-qualified) covering a substantial portion of employees in the U.S. and Canada, and certain employees in other foreign countries. Plans for most salaried employees provide pay-related benefits based on years of service. Plans for hourly employees generally provide benefits based on flat dollar amounts and years of service. The Company's general funding policy is to make contributions to the plans in amounts that comply with minimum funding requirements and are within the limits of deductibility under current tax regulations. Certain foreign countries allow income tax deductions without regard to contribution levels, and the Company's policy in those countries is to make contributions required by the terms of the applicable plan.

Included in the Company's pension obligation are nonqualified supplemental retirement plans for certain key employees. Benefits provided under these plans are unfunded and payments to plan participants are made directly by the Company.

The Company also provides healthcare and/or life insurance benefits for retired employees in the U.S., Canada, and Brazil. Healthcare benefits for retirees outside of the U.S., Canada, and Brazil are generally covered through local government plans.

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Pension Obligation and Funded Status: The changes in pension benefit obligations and plan assets during 2018 and 2017, as well as the funded status and the amounts recognized in the Company's Consolidated Balance Sheets related to the Company's pension plans at December 31, 2018 and 2017, were as follows:

(in millions)	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Benefit obligation				
At January 1	\$ 393	\$ 367	\$ 248	\$ 223
Service cost	6	6	3	3
Interest cost	13	13	10	11
Benefits paid	(26)	(23)	(12)	(12)
Actuarial (gain) loss	(27)	30	(8)	7
Curtailment/settlement/amendments	(2)	—	—	—
Foreign currency translation	—	—	(18)	16
Benefit obligation at December 31	\$ 357	\$ 393	\$ 223	\$ 248
Fair value of plan assets				
At January 1	\$ 404	\$ 368	\$ 235	\$ 211
Actual return on plan assets	(25)	59	—	17
Employer contributions	2	—	4	5
Benefits paid	(26)	(23)	(12)	(12)
Plan settlements	(2)	—	—	—
Foreign currency translation	—	—	(20)	14
Fair value of plan assets at December 31	\$ 353	\$ 404	\$ 207	\$ 235
Funded status	\$ (4)	\$ 11	\$ (16)	\$ (13)

Amounts recognized in the Consolidated Balance Sheets as of December 31, 2018 and 2017 were as follows:

(in millions)	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Non-current asset	\$ 7	\$ 23	\$ 32	\$ 37
Current liabilities	(1)	(2)	(1)	(1)
Non-current liabilities	(10)	(10)	(47)	(49)
Net asset (liability) recognized	\$ (4)	\$ 11	\$ (16)	\$ (13)

Amounts recognized in accumulated other comprehensive loss, excluding tax effects, that have not yet been recognized as components of net periodic benefit cost at December 31, 2018 and 2017 were as follows:

(in millions)	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Net actuarial loss	\$ 40	\$ 21	\$ 57	\$ 55
Transition obligation	—	—	1	1
Prior service credit	(6)	(6)	(1)	(1)
Net amount recognized	\$ 34	\$ 15	\$ 57	\$ 55

The increase in the net amount recognized in accumulated comprehensive loss at December 31, 2018, for the U.S. plans as compared to December 31, 2017, is mainly due to the actual return on assets being lower than the expected return on assets. This is partially offset by the effect of the increase in discount rates used to measure the Company's obligations under its U.S. pension plans.

The increase in the net amount recognized in accumulated comprehensive loss at December 31, 2018, for the Non-U.S. plans, as compared to December 31, 2017, is mainly due to the actual return on assets being lower than the expected return on assets. This is partially offset by the effect of the increase in discount rates used to measure the Company's obligations under its Non-U.S. pension plans.

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The accumulated benefit obligation for all defined benefit pension plans was \$543 million and \$603 million at December 31, 2018 and 2017, respectively.

Information about plan obligations and assets for plans with an accumulated benefit obligation in excess of plan assets is as follows:

(in millions)	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Projected benefit obligation	\$ 11	\$ 12	\$ 49	\$ 51
Accumulated benefit obligation	9	11	41	41
Fair value of plan assets	—	—	2	2

All U.S. plans and most non-U.S. plans value the vested benefit obligation based on the actuarial present value of the vested benefits to which employees are currently entitled based on employees' expected date of separation or retirement.

Components of net periodic benefit cost consist of the following for the years ended December 31, 2018, 2017, and 2016:

(in millions)	Year Ended December 31,					
	U.S. Plans			Non-U.S. Plans		
	2018	2017	2016	2018	2017	2016
Service cost	\$ 6	\$ 6	\$ 6	\$ 3	\$ 3	\$ 3
Interest cost	13	13	14	10	11	10
Expected return on plan assets	(21)	(21)	(20)	(9)	(10)	(10)
Amortization of actuarial loss	—	—	1	2	2	2
Amortization of prior service credit	—	(1)	—	—	—	—
Settlement loss	—	—	—	—	—	1
Net periodic benefit cost	\$ (2)	\$ (3)	\$ 1	\$ 6	\$ 6	\$ 6

The service cost component of net periodic benefit cost is presented within either cost of sales or operating expenses on the Consolidated Statements of Income. The interest cost, expected return on plan assets, amortization of actuarial loss, amortization of prior service credit and settlement loss components of net periodic benefit cost are presented as other, non-operating income on the Consolidated Statements of Income.

For the U.S. plans, the Company estimates that net periodic benefit cost for 2019 will include approximately \$1 million relating to the amortization of the prior service credit included in accumulated other comprehensive loss as of December 31, 2018.

For the non-U.S. plans, the Company estimates that net periodic benefit cost for 2019 will include approximately \$2 million relating to the amortization of its accumulated actuarial loss.

Actuarial gains and losses in excess of 10 percent of the greater of the projected benefit obligation or the market-related value of plan assets are recognized as a component of net periodic benefit cost over the average remaining service period of a plan's active employees for active defined benefit pension plans and over the average remaining life of a plan's active employees for frozen defined benefit pension plans.

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Total amounts recorded in other comprehensive income and net periodic benefit cost was as follows:

(in millions, pre-tax)	U.S. Plans			Non-U.S. Plans		
	2018	2017	2016	2018	2017	2016
Net actuarial loss (gain)	\$ 19	\$ (7)	\$ 10	\$ 4	\$ (3)	\$ 6
Prior service credit	—	—	(6)	—	—	(1)
Amortization of actuarial loss	—	—	(1)	(2)	(2)	(2)
Amortization of prior service credit	—	1	—	—	—	—
Total recorded in other comprehensive income	19	(6)	3	2	(5)	3
Net periodic benefit cost	(2)	(3)	1	6	6	6
Total recorded in other comprehensive income and net periodic benefit cost	\$ 17	\$ (9)	\$ 4	\$ 8	\$ 1	\$ 9

The following weighted average assumptions were used to determine the Company's obligations under the pension plans:

	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Discount rate	4.38 %	3.70 %	4.33 %	4.02 %
Rate of compensation increase	4.31	4.42	3.63	3.58

The following weighted average assumptions were used to determine the Company's net periodic benefit cost for the pension plans:

	U.S. Plans			Non-U.S. Plans		
	2018	2017	2016	2018	2017	2016
Discount rate	3.70 %	4.30 %	4.30 %	4.02 %	4.34 %	4.57 %
Expected long-term return on plan assets	5.30	5.75	5.75	4.31	5.29	5.41
Rate of compensation increase	4.42	4.54	4.71	3.58	3.62	3.73

For 2018, the Company assumed an expected long-term rate of return on assets of 5.30 percent for U.S. plans and approximately 3.86 percent for Canadian plans. In developing the expected long-term rate of return assumption on plan assets, which consist mainly of U.S. and Canadian debt and equity securities, management evaluated historical rates of return achieved on plan assets and the asset allocation of the plans, input from the Company's independent actuaries and investment consultants, and historical trends in long-term inflation rates. Projected return estimates made by such consultants are based upon broad equity and bond indices.

The discount rate reflects a rate of return on high-quality fixed income investments that match the duration of the expected benefit payments. The Company has typically used returns on long-term, high-quality corporate AA bonds as a benchmark in establishing this assumption. In 2016, the Company changed the method used to estimate the service and interest cost components of net periodic benefit cost for certain of its defined benefit pension and postretirement benefit plans. Historically, the Company estimated the service and interest cost components using a single weighted-average discount rate derived from the yield curve used to measure the benefit obligation at the beginning of the period. Beginning in 2016, the Company has elected to use a full yield curve approach in the estimation of these components of benefit cost by applying the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows.

Plan Assets: The Company's investment policy for its pension plans is to balance risk and return through diversified portfolios of fixed income securities, equity instruments, and short-term investments. Maturities for fixed income securities are managed such that sufficient liquidity exists to meet near-term benefit payment obligations. For U.S. pension plans, the weighted average target range allocation of assets was 15-25 percent in equities and 75-85 percent in fixed income inclusive of other short-term investments. The asset allocation is reviewed regularly, and portfolio investments are rebalanced to the targeted allocation when considered appropriate.

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The Company's weighted average asset allocation as of December 31, 2018 and 2017 for U.S. and non-U.S. pension plan assets is as follows:

Asset Category	U.S. Plans		Non-U.S. Plans	
	2018	2017	2018	2017
Equity securities	19 %	26 %	16 %	39 %
Debt securities	80	73	64	46
Cash and other	1	1	20	15
Total	100 %	100 %	100 %	100 %

The fair values of the Company's plan assets by asset category and level in the fair value hierarchy are as follows:

(in millions)	Fair Value Measurements at December 31, 2018			
	Level 1	Level 2	Level 3	Total
U.S. Plans:				
Equity index:				
U.S. (a)	\$ —	\$ 33	\$ —	\$ 33
International (b)	—	35	—	35
Fixed income index:				
Long bond (c)	—	258	—	258
Long government bond (d)	—	24	—	24
Cash (e)	—	3	—	3
Total U.S. Plans	\$ —	\$ 353	\$ —	\$ 353
Non-U.S. Plans:				
Equity index:				
U.S. (a)	\$ —	\$ 3	\$ —	\$ 3
Canada (f)	—	13	—	13
International (b)	—	15	—	15
Real estate (g)	—	2	—	2
Fixed income index:				
Intermediate bond (h)	—	34	—	34
Long bond (i)	—	99	—	99
Other (j)	—	24	—	24
Cash (e)	2	15	—	17
Total Non-U.S. Plans	\$ 2	\$ 205	\$ —	\$ 207

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(in millions)	Fair Value Measurements at December 31, 2017			
	Level 1	Level 2	Level 3	Total
U.S. Plans:				
Equity index:				
U.S. (a)	\$ —	\$ 51	\$ —	\$ 51
International (b)	—	55	—	55
Fixed income index:				
Long bond (c)	—	273	—	273
Long govt bond (d)	—	21	—	21
Cash (e)	—	4	—	4
Total U.S. Plans	\$ —	\$ 404	\$ —	\$ 404
Non-U.S. Plans:				
Equity index:				
U.S. (a)	\$ —	\$ 12	\$ —	\$ 12
Canada (f)	—	22	—	22
International (b)	—	52	—	52
Real estate (g)	—	5	—	5
Fixed income index:				
Intermediate bond (h)	—	25	—	25
Long bond (i)	—	84	—	84
Other (j)	—	24	—	24
Cash (e)	2	9	—	11
Total Non-U.S. Plans	\$ 2	\$ 233	\$ —	\$ 235

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- (a) This category consists of both passively and actively managed equity index funds that track the return of large capitalization U.S. equities.
- (b) This category consists of both passively and actively managed equity index funds that track an index of returns on international developed market equities as well as infrastructure assets.
- (c) This category consists of an actively managed fixed income index fund that invests in a diversified portfolio of fixed-income corporate securities with maturities generally exceeding 10 years.
- (d) This category consists of an actively managed fixed income index fund that invests in a diversified portfolio of fixed-income U.S. treasury securities with maturities generally exceeding 10 years.
- (e) This category represents cash or cash equivalents.
- (f) This category consists of an actively managed equity index fund that tracks against an index of large capitalization Canadian equities.
- (g) This category consists of an actively managed equity index fund that tracks against real estate investment trusts and real estate operating companies.
- (h) This category consists of both passively and actively managed fixed income index funds that track the return of intermediate duration government and investment grade corporate bonds.
- (i) This category consists of both passively and actively managed fixed income index funds that track the return of Canada government bonds, investment grade corporate bonds and hedge funds.
- (j) This category mainly consists of investment products provided by an insurance company that offers returns that are subject to a minimum guarantee and mutual funds.

All significant pension plan assets are held in collective trusts by the Company's U.S. and non-U.S. plans. The fair values of shares of collective trusts are based upon the net asset values of the funds reported by the fund managers based on quoted market prices of the underlying securities as of the balance sheet date and are considered to be Level 2 fair value measurements. This may produce a fair value measurement that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the Company believes its valuation methods are appropriate and consistent with those of other market participants, the use of different methodologies could result in different fair value measurements at the reporting date.

In 2018, the Company made cash contributions of \$2 million and \$4 million to its U.S. and non-U.S. pension plans, respectively. The Company anticipates that in 2019 it will make cash contributions of \$1 million and \$3 million to its U.S. and non-U.S. pension plans, respectively. Cash contributions in subsequent years will depend on a number of factors including the performance of plan assets.

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The following benefit payments, which reflect anticipated future service, as appropriate, are expected to be made:

(in millions)	U.S. Plans	Non-U.S. Plans
2019	\$ 19	\$ 11
2020	20	11
2021	22	11
2022	22	12
2023	24	13
Years 2024 - 2028	123	66

The Company and certain subsidiaries also maintain defined contribution plans. The Company makes matching contributions to these plans that are subject to certain vesting requirements and are based on a percentage of employee contributions. Amounts charged to expense for defined contribution plans totaled \$21 million, \$22 million, and \$20 million in 2018, 2017, and 2016, respectively.

Postretirement Benefit Plans: The Company's postretirement benefit plans currently are not funded. The information presented below includes plans in the U.S., Brazil, and Canada. The changes in the benefit obligations of the plans during 2018 and 2017, and the amounts recognized in the Company's Consolidated Balance Sheets at December 31, 2018 and 2017, are as follows:

(in millions)	2018	2017
Accumulated postretirement benefit obligation		
At January 1	\$ 70	\$ 67
Service cost	1	1
Interest cost	3	3
Employee contributions	—	1
Plan curtailments	(1)	—
Actuarial (gain) loss	(2)	2
Benefits paid	(4)	(4)
Foreign currency translation	(3)	—
At December 31	64	70
Fair value of plan assets	—	—
Funded status	\$ (64)	\$ (70)

Amounts recognized in the Consolidated Balance Sheets consist of:

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(in millions)	2018	2017
Current liabilities	\$ (4)	\$ (4)
Non-current liabilities	(60)	(66)
Net liability recognized	\$ (64)	\$ (70)

Amounts recognized in accumulated other comprehensive loss (income), excluding tax effects, that have not yet been recognized as components of net periodic benefit cost at December 31, 2018 and 2017 were as follows:

(in millions)	2018	2017
Net actuarial loss	\$ 8	\$ 11
Prior service credit	(4)	(6)
Net amount recognized	\$ 4	\$ 5

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Components of net periodic benefit cost consisted of the following for the years ended December 31, 2018, 2017, and 2016:

(in millions)	Year Ended December 31,		
	2018	2017	2016
Service cost	\$ 1	\$ 1	\$ 1
Interest cost	3	3	2
Amortization of prior service credit	(2)	(3)	(2)
Net periodic benefit cost	\$ 2	\$ 1	\$ 1

The service cost component of net periodic benefit cost is presented within either cost of sales or operating expenses on the Consolidated Statements of Income. The interest cost and amortization of prior service credit components of net periodic benefit cost are presented as other, non-operating income on the Consolidated Statements of Income.

The Company estimates that postretirement benefit expense for these plans for 2019 will include approximately \$2 million relating to the amortization of the prior service credit included in accumulated other comprehensive income as of December 31, 2018.

Total amounts recorded in other comprehensive income and net periodic benefit cost was as follows:

(in millions, pre-tax)	2018	2017	2016
Net actuarial loss (gain)	\$ (3)	\$ 2	\$ 2
Amortization of prior service credit	2	3	2
New prior service credit	—	—	—
Total recorded in other comprehensive income	(1)	5	4
Net periodic benefit cost	2	1	1
Total recorded in other comprehensive income and net periodic benefit cost	\$ 1	\$ 6	\$ 5

The following weighted average assumptions were used to determine the Company's obligations under the postretirement plans:

	2018	2017
Discount rate	5.24 %	4.92 %

The following weighted average assumptions were used to determine the Company's net postretirement benefit cost:

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	2018	2017	2016
Discount rate	4.93 %	5.46 %	5.30 %

The discount rate reflects a rate of return on high-quality fixed-income investments that match the duration of expected benefit payments. The Company has typically used returns on long-term, high-quality corporate AA bonds as a benchmark in establishing this assumption.

The healthcare cost trend rates used in valuing the Company's postretirement benefit obligations are established based upon actual healthcare trends and consultation with actuaries and benefit providers. The following assumptions were used as of December 31, 2018:

	U.S.	Canada	Brazil
2018 increase in per capita cost	6.30 %	5.92 %	7.90 %
Ultimate trend	4.50 %	4.00 %	7.90 %
Year ultimate trend reached	2037	2040	2018

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The sensitivities of service cost and interest cost and year-end benefit obligations to changes in healthcare cost trend rates for the postretirement benefit plans as of December 31, 2018, are as follows:

(in millions)	2018
One-percentage point increase in trend rates:	
- Increase in service cost and interest cost components	\$ 1
- Increase in year-end benefit obligations	5
One-percentage point decrease in trend rates:	
- Decrease in service cost and interest cost components	1
- Decrease in year-end benefit obligations	7

The following benefit payments, which reflect anticipated future service, as appropriate, are expected to be made under the Company's postretirement benefit plans:

(in millions)	
2019	\$ 4
2020	4
2021	4
2022	5
2023	5
Years 2024 - 2028	23

Multi-employer Plans: The Company participates in and contributes to one multi-employer benefit plan under the terms of collective bargaining agreements that cover certain union-represented employees and retirees in the U.S. The plan covers medical and dental benefits for active hourly employees and retirees represented by the U.S. Steel Workers Union for certain U.S. locations.

The risks of participating in this multi-employer plan are different from single-employer plans. This plan receives contributions from two or more unrelated employers pursuant to one or more collective bargaining agreements and the assets contributed by one employer may be used to fund the benefits of all employees covered within the plan.

The Company is required to make contributions to this plan as determined by the terms and conditions of the collective bargaining agreements and plan terms. For the years ended December 31, 2018, 2017, and 2016, the Company made regular contributions of \$12 million, \$13 million, and \$14 million, respectively, to this multi-employer plan. The Company cannot currently estimate the amount of multi-employer plan contributions that will be required in 2019 and future years, but these contributions could increase due to healthcare cost trends. The

collective bargaining agreements associated with this plan expire during 2019 - 2023.

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NOTE 11 – Supplementary Information

Consolidated Balance Sheets

(in millions)	2018	2017
Accounts receivable, net:		
Accounts receivable — trade	\$ 802	\$ 760
Accounts receivable — other	157	209
Allowance for doubtful accounts	(8)	(8)
Total accounts receivable, net	\$ 951	\$ 961
Inventories:		
Finished and in process	\$ 522	\$ 495
Raw materials	250	278
Manufacturing supplies	52	50
Total inventories	\$ 824	\$ 823
Accrued liabilities:		
Compensation-related costs	\$ 81	\$ 101
Income taxes payable	27	22
Unrecognized tax benefits	—	—
Dividends payable	42	44
Accrued interest	15	15
Taxes payable other than income taxes	33	37
Other	127	125
Total accrued liabilities	\$ 325	\$ 344
Non-current liabilities:		
Employees' pension, indemnity, and postretirement	122	121
Other	95	106
Total non-current liabilities	\$ 217	\$ 227

Consolidated Statements of Income

(in millions)	2018	2017	2016
Other income, net:			
Insurance settlement	\$ —	\$ 9	\$ —
Value-added tax recovery	5	6	5
Other	5	3	(1)
Other income, net	\$ 10	\$ 18	\$ 4

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(in millions)	2018	2017	2016
Financing costs, net:			
Interest expense, net of amounts capitalized (a)	\$ 81	\$ 79	\$ 73
Interest income	(9)	(11)	(10)
Foreign currency transaction losses	14	5	3
Financing costs, net	\$ 86	\$ 73	\$ 66

(a) Interest capitalized amounted to \$3 million, \$4 million, and \$4 million in 2018, 2017 and 2016, respectively.

Consolidated Statements of Cash Flow

(in millions)	2018	2017	2016
Other non-cash charges to net income:			
Share-based compensation expense	\$ 21	\$ 26	\$ 28
Other	18	13	16
Total other non-cash charges to net income	\$ 39	\$ 39	\$ 44

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(in millions)	2018	2017	2016
Interest paid	\$ 73	\$ 77	\$ 59
Income taxes paid	231	289	254

NOTE 12 – Equity

Preferred stock: The Company has authorized 25 million shares of \$0.01 par value preferred stock, none of which were issued or outstanding at December 31, 2018 and 2017.

Treasury stock: On October 22, 2018, the Board of Directors authorized a new stock repurchase program permitting the Company to purchase up to an additional 8 million of its outstanding common shares from November 5, 2018 through December 31, 2023. On December 12, 2014, the Board of Directors authorized a stock repurchase program permitting the Company to purchase up to 5 million of its outstanding common shares from January 1, 2015, through December 12, 2019. The parameters of the Company’s stock repurchase program are not established solely with reference to the dilutive impact of shares issued under the Company’s stock incentive plan. However, the Company expects that, over time, share repurchases will offset the dilutive impact of shares issued under the stock incentive plan.

On November 5, 2018, the Company entered into a Variable Timing Accelerated Share Repurchase (“ASR”) program with JPMorgan (“JPM”). Under the ASR program, the Company paid \$455 million on November 5, 2018 and acquired 4 million shares of its common stock having an approximate value of \$423 million. At the end of the program, the Company and JPM will settle any difference between the initial price and average daily volume-weighted average price (“VWAP”) less the agreed upon discount during the term of the agreement. On February 5, 2019 the Company was notified that JPM finalized the ASR with a resulting VWAP of \$98.04 that was less than initially paid. The Company elected to settle the difference in cash resulting in a \$63 million of the upfront payment returned to the Company on February 6, 2019 and lowering the total cost of repurchasing the 4.0 million shares of common stock to \$392 million.

In 2018, the Company repurchased 5.8 million common shares in open market transactions at a cost of \$657 million. In 2017, the Company repurchased 1.0 million common shares in open market transactions at a cost of \$123 million.

Set forth below is a reconciliation of common stock share activity for the years ended December 31, 2018, 2017, and 2016:

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(Shares of common stock, in thousands)	Issued	Held in Treasury	Outstanding
Balance at December 31, 2015	77,811	6,195	71,616
Issuance of restricted stock units as compensation	—	(94)	94
Performance shares and other share-based awards	—	(70)	70
Stock options exercised	—	(636)	636
Purchase/acquisition of treasury stock	—	2	(2)
Balance at December 31, 2016	77,811	5,397	72,414
Issuance of restricted stock units as compensation	—	(103)	103
Performance shares and other share-based awards	—	(75)	75
Stock options exercised	—	(443)	443
Purchase/acquisition of treasury stock	—	1,039	(1,039)
Balance at December 31, 2017	77,811	5,815	71,996
Issuance of restricted stock units as compensation	—	(100)	100
Performance shares and other share-based awards	—	(68)	68
Stock options exercised	—	(209)	209
Purchase/acquisition of treasury stock	—	5,847	(5,847)
Balance at December 31, 2018	77,811	11,285	66,526

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Share-based payments: The following table summarizes the components of the Company's share-based compensation expense for the last three years:

(in millions)	2018	2017	2016
Stock options:			
Pre-tax compensation expense	\$ 5	\$ 7	\$ 9
Income tax benefit	(1)	(2)	(3)
Stock option expense, net of income taxes	4	5	6
RSUs:			
Pre-tax compensation expense	12	13	12
Income tax benefit	(2)	(4)	(5)
RSUs, net of income taxes	10	9	7
Performance shares and other share-based awards:			
Pre-tax compensation expense	4	6	7
Income tax benefit	—	(2)	(3)
Performance shares and other share-based compensation expense, net of income taxes	4	4	4
Total share-based compensation:			
Pre-tax compensation expense	21	26	28
Income tax benefit	(3)	(8)	(11)
Total share-based compensation expense, net of income taxes	\$ 18	\$ 18	\$ 17

The Company has a stock incentive plan ("SIP") administered by the compensation committee of its Board of Directors that provides for the granting of stock options, restricted stock, restricted stock units, and other share-based awards to certain key employees. A maximum of 8 million shares were originally authorized for awards under the SIP. As of December 31, 2018, 3.3 million shares were available for future grants under the SIP. Shares covered by awards that expire, terminate or lapse will again be available for the grant of awards under the SIP.

Stock Options: Under the Company's SIP, stock options are granted at exercise prices that equal the market value of the underlying common stock on the date of grant. The options have a 10-year term and are exercisable upon vesting, which occurs over a three-year period at the anniversary dates of the date of grant. Compensation expense is generally recognized on a straight-line basis for all awards over the employee's vesting period or over a one-year required service period for certain retirement eligible executive level employees. The Company estimates a forfeiture rate at the time of grant and updates the estimate throughout the vesting of the stock options within the amount of compensation costs recognized in each period.

The Company granted non-qualified options to purchase 215 thousand shares and 278 thousand shares for the years ended December 31, 2018 and 2017, respectively. The fair value of each option grant was estimated using the Black-Scholes option-pricing model with the following assumptions:

	For the Year Ended		
	December 31,		
	2018	2017	2016
Expected life (in years)	5.5	5.5	5.5
Risk-free interest rate	2.5 %	1.9 %	1.4 %
Expected volatility	19.8 %	22.5 %	23.4 %
Expected dividend yield	1.8 %	1.7 %	1.8 %

The expected life of options represents the weighted average period of time that options granted are expected to be outstanding giving consideration to vesting schedules and the Company's historical exercise patterns. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the grant date for the period corresponding to the expected life of the options. Expected volatility is based on historical volatilities of the Company's common stock. Dividend yields are based on current dividend payments.

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A summary of stock option transactions for the year follows:

	Number of Options (in thousands)	Weighted Average Exercise Price per Share	Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2017	2,095	\$ 71.81	5.87	\$ 142
Granted	215	133.61		
Exercised	(209)	48.50		
Cancelled	(22)	99.81		
Outstanding as of December 31, 2018	2,079	\$ 80.25	5.51	\$ 42
Exercisable as of December 31, 2018	1,599	\$ 67.85	4.68	\$ 42

For the years ended December 31, 2018, 2017, and 2016, cash received from the exercise of stock options was \$10 million, \$20 million, and \$29 million, respectively. As of December 31, 2018, the unrecognized compensation cost related to non-vested stock options totaled \$3 million, which is expected to be amortized over the weighted-average period of approximately 1.8 years.

Additional information pertaining to stock option activity is as follows:

(dollars in millions, except per share)	Year Ended December 31,		
	2018	2017	2016
Weighted average grant date fair value of stock options granted (per share)	\$ 24.01	\$ 23.90	\$ 18.73
Total intrinsic value of stock options exercised	15	35	46

Restricted Stock Units: The Company has granted restricted stock units (“RSUs”) to certain key employees. The RSUs are subject to cliff vesting, generally after three years provided the employee remains in the service of the Company. Compensation expense is generally recognized on a straight-line basis for all awards over the employee’s vesting period or over a one-year required service period for certain retirement eligible executive level employees. The Company estimates a forfeiture rate at the time of grant and updates the estimate throughout the vesting of the RSUs within the amount of compensation costs recognized in each period. The fair value of the RSUs is determined based upon the number of shares granted and the quoted market price of the Company’s common stock at the date of the grant.

The following table summarizes RSU activity for the year:

(shares in thousands)	Number of Restricted Shares	Weighted Average Fair Value per Share
Non-vested at December 31, 2017	387	\$ 100.13
Granted	114	128.76
Vested	(137)	84.05
Cancelled	(20)	114.98
Non-vested at December 31, 2018	344	\$ 115.06

The total fair value of RSUs that vested in 2018, 2017, and 2016 was \$15 million, \$18 million, and \$15 million, respectively.

At December 31, 2018, the total remaining unrecognized compensation cost related to RSUs was \$13 million which will be amortized on a weighted-average basis over approximately 1.8 years. Recognized compensation cost related to unvested RSUs is included in share-based payments subject to redemption in the Consolidated Balance Sheets and totaled \$26 million and \$25 million at December 31, 2018 and 2017, respectively.

Performance Shares: The Company has a long-term incentive plan for senior management in the form of performance shares. The ultimate payments for performance shares awarded and vested will be based solely on the Company's stock performance as compared to the stock performance of its peer group. The number of shares that ultimately vest can range from zero to 200 percent of the awarded grant depending on the Company's stock performance as compared to the stock performance of the peer group. The share award vesting will be calculated at the end of the three-year period and are subject to approval by management and the Compensation Committee. Compensation expense is based

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on the fair value of the performance shares at the grant date, established using a Monte Carlo simulation model. The total compensation expense for these awards is amortized over a three-year graded vesting schedule.

The Company awarded 27 thousand, 38 thousand, and 44 thousand performance shares in 2018, 2017, and 2016, respectively. The weighted average fair value of the shares granted during 2018, 2017, and 2016 was \$141.91, \$114.08, and \$131.34, respectively.

The 2015 performance share award vested in February 2018, achieving a 200 percent pay out of the grant, or 92 thousand total vested shares. As of December 31, 2018, the performance awards granted in 2018, 2017, and 2016 are estimated to pay out at zero percent, respectively. There were 16 thousand shares cancelled during the year ended December 31, 2018.

As of December 31, 2018, the unrecognized compensation cost relating to these plans was \$3 million, which will be amortized over the remaining requisite service periods of 1.7 years. Recognized compensation cost related to these unvested awards is included in share-based payments subject to redemption in the Consolidated Balance Sheets and totaled \$10 million and \$11 million at December 31, 2018 and 2017, respectively.

Other share-based awards under the SIP: Under the compensation agreement with the Board of Directors, \$110,000 of a director's annual retainer and 50 percent of the additional retainers paid to the Lead Director and the Chairmen of committees of the Board of Directors are awarded in shares of common stock or restricted units based on each director's elections to receive his or her compensation or a portion thereof in the form of restricted units. These restricted units vest immediately, and the director is allowed to either receive these shares immediately or defer them. Deferred shares cannot be transferred until a date not less than six months after the director's termination of service from the board at which time the restricted units will be settled by delivering shares of common stock. The compensation expense relating to this plan included in the Consolidated Statements of Income was approximately \$1 million in 2018, 2017, and 2016. At December 31, 2018, there were approximately 191 thousand restricted units outstanding under this plan at a carrying value of approximately \$11 million.

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Accumulated Other Comprehensive Loss: A summary of accumulated other comprehensive income (loss) for the years ended December 31, 2016, 2017 and 2018 is presented below:

(in millions)	Cumulative Translation Adjustment	Deferred (Loss) Gain on Hedging Activities	Pension and Postretirement Adjustment	Unrealized (Loss) Gain on Investment	Accumulated Other Comprehensive Loss
Balance, December 31, 2015	\$ (1,025)	\$ (29)	\$ (47)	\$ (1)	\$ (1,102)
Other comprehensive income (loss) before reclassification adjustments	17	(17)	(14)	1	(13)
Amount reclassified from accumulated OCI	—	49	1	—	50
Tax (provision) benefit	—	(10)	4	—	(6)
Net other comprehensive income (loss)	17	22	(9)	1	31
Balance, December 31, 2016	(1,008)	(7)	(56)	—	(1,071)
Other comprehensive income (loss) before reclassification adjustments	57	(16)	8	3	52
Amount reclassified from accumulated OCI	—	6	(2)	—	4
Tax benefit (provision)	—	4	(1)	(1)	2
Net other comprehensive income (loss)	57	(6)	5	2	58
Balance, December 31, 2017	(951)	(13)	(51)	2	(1,013)
Other comprehensive (loss) income before reclassification adjustments	(129)	8	(20)	—	(141)
Amount reclassified from accumulated OCI	—	6	—	—	6
Tax (provision) benefit	—	(4)	5	—	1
Net other comprehensive (loss) income	(129)	10	(15)	—	(134)
Adoption of ASU 2016-01*	—	—	—	(2)	(2)
Adoption of ASU 2018-02*	—	(2)	(3)	—	(5)
Other	—	(2)	(3)	(2)	(7)
Balance, December 31, 2018	\$ (1,080)	\$ (5)	\$ (69)	\$ —	\$ (1,154)

* See Note 2 for further discussion on adoption of these standards.

The following table provides detail pertaining to reclassifications from AOCI into net income for the periods presented:

Amount Reclassified from AOCI	Affected Line Item in Consolidated
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(in millions)	2018	2017	2016	Statements of Income
(Losses) gains on cash flow hedges:				
Commodity contracts	\$ (6)	\$ (5)	\$ (45)	Cost of sales
Foreign currency contracts	1	1	(2)	Net sales/Cost of sales
Interest rate contracts	(1)	(2)	(2)	Financing costs, net
Gains related to pension and other postretirement obligations	-	2	(1)	(a)
Total before-tax reclassifications	(6)	(4)	(50)	
Tax benefit	2	1	16	
Total after-tax reclassifications	\$ (4)	\$ (3)	\$ (34)	

(a) This component is included in the computation of net periodic benefit cost and affects both cost of sales and operating expenses on the Consolidated Statements of Income.

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The following table provides the computation of basic and diluted earnings per common share (“EPS”) for the periods presented.

	2018			2017			2016
	Net Income	Weighted	Per	Net Income	Weighted	Per	Net Income
	Available	Average	Share	Available	Average	Share	Available
(in millions)	to Ingredion	Shares	Amount	to Ingredion	Shares	Amount	to Ingredion
	\$ 443	70.9	\$ 6.25	\$ 519	72.0	\$ 7.21	\$ 485
		0.9			1.5		
	\$ 443	71.8	\$ 6.17	\$ 519	73.5	\$ 7.06	\$ 485

NOTE 13 – Segment Information

The Company is principally engaged in the production and sale of starches and sweeteners for a wide range of industries, and is managed geographically on a regional basis. The Company’s operations are classified into four reportable business segments: North America, South America, Asia Pacific, and Europe, Middle East, and Africa (“EMEA”). Its North America segment includes businesses in the U.S., Canada, and Mexico. The Company’s South America segment includes businesses in Brazil, Colombia, Ecuador, and the Southern Cone of South America, which includes Argentina, Chile, Peru, and Uruguay. Its Asia Pacific segment includes businesses in South Korea, Thailand, Malaysia, China, Japan, Indonesia, the Philippines, Singapore, India, Australia, and New Zealand. The Company’s EMEA segment includes businesses in the United Kingdom, Germany, South Africa, Pakistan, and Kenya. The Company does not aggregate its operating segments when determining its reportable segments. Net sales by product are not presented because to do so would be impracticable.

(in millions)	2018	2017	2016
Net sales to unaffiliated customers:			
North America:			
Net sales before shipping and handling costs	\$ 3,857	\$ 3,843	\$ 3,734
Less: shipping and handling costs	346	314	287
Net sales	\$ 3,511	\$ 3,529	\$ 3,447
South America:			
Net sales before shipping and handling costs	\$ 988	\$ 1,052	\$ 1,054
Less: shipping and handling costs	45	45	44
Net sales	\$ 943	\$ 1,007	\$ 1,010

Asia Pacific:

Net sales before shipping and handling costs	\$ 837	\$ 772	\$ 738
Less: shipping and handling costs	34	32	29
Net sales	\$ 803	\$ 740	\$ 709

EMEA:

Net sales before shipping and handling costs	\$ 607	\$ 577	\$ 556
Less: shipping and handling costs	23	21	18
Net sales	\$ 584	\$ 556	\$ 538

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(in millions)	2018	2017	2016
Operating income:			
North America	\$ 545	\$ 654	\$ 606
South America	99	81	90
Asia Pacific	104	115	113
EMEA	116	114	107
Corporate	(97)	(86)	(88)
Subtotal	767	878	828
Restructuring/impairment charges (a)	(64)	(38)	(19)
Acquisition/integration costs	—	(4)	(3)
Charge for fair value markup of acquired inventory	—	(9)	—
Insurance settlement	—	9	—
Total operating income	703	836	806
Financing costs, net	86	73	66
Other, non-operating income	(4)	(6)	(2)
Income before income taxes	\$ 621	\$ 769	\$ 742

(a) For 2018, includes \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, \$11 million of restructuring costs related to Cost Smart SG&A program, \$3 million of costs related to the North America finance transformation program, and \$1 million of costs related to the leaf extraction process in Brazil. For 2017, includes \$17 million of employee-related severance and other costs associated with the restructuring in Argentina, \$13 million of restructuring of related to the leaf extraction process in Brazil, \$6 million of employee-related severance and other costs associated with the Finance Transformation initiative, and \$2 million of other restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities. For 2016, includes \$11 million of employee-related severance and other costs associated with the execution of IT outsourcing contracts, \$6 million of employee-related severance costs associated with the optimization initiative in North America and South America, and \$2 million of costs attributable to the Port Colborne plant sale.

For 2018, includes \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, \$11 million of restructuring costs related to Cost Smart SG&A program, \$3 million of costs related to the North America finance transformation program, and \$1 million of costs related to the leaf extraction process in Brazil. For 2017, includes \$17 million of employee-related severance and other costs associated with the restructuring in Argentina, \$13 million of restructuring of related to the leaf extraction process in Brazil, \$6 million of employee-related severance and other costs associated with the Finance Transformation initiative, and \$2 million of other restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities. For 2016, includes \$11 million of employee-related severance and other costs associated with the execution of IT outsourcing contracts, \$6 million of employee-related severance costs associated with the optimization initiative in North America and South America, and \$2 million of costs attributable to the Port Colborne plant sale. For 2018, includes \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, \$11 million of restructuring costs related to Cost Smart SG&A program, \$3 million of costs related to the North America

finance transformation program, and \$1 million of costs related to the leaf extraction process in Brazil. For 2017, includes \$17 million of employee-related severance and other costs associated with the restructuring in Argentina, \$13 million of restructuring of related to the leaf extraction process in Brazil, \$6 million of employee-related severance and other costs associated with the Finance Transformation initiative, and \$2 million of other restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities. For 2016, includes \$11 million of employee-related severance and other costs associated with the execution of IT outsourcing contracts, \$6 million of employee-related severance costs associated with the optimization initiative in North America and South America, and \$2 million of costs attributable to the Port Colborne plant sale. For 2018, includes \$49 million of restructuring expenses as part of the Cost Smart cost of sales program in relation to the cessation of wet-milling at the Stockton, California plant, \$11 million of restructuring costs related to Cost Smart SG&A program, \$3 million of costs related to the North America finance transformation program, and \$1 million of costs related to the leaf extraction process in Brazil. For 2017, includes \$17 million of employee-related severance and other costs associated with the restructuring in Argentina, \$13 million of restructuring of related to the leaf extraction process in Brazil, \$6 million of employee-related severance and other costs associated with the Finance Transformation initiative, and \$2 million of other restructuring charges including employee-related severance costs in North America and a refinement of estimates for prior year restructuring activities. For 2016, includes \$11 million of employee-related severance and other costs associated with the execution of IT outsourcing contracts, \$6 million of employee-related severance costs associated with the optimization initiative in North America and South America, and \$2 million of costs attributable to the Port Colborne plant sale.

(in millions)	As of December 31,	
	2018	2017
Total assets:		
North America (a)	\$ 3,737	\$ 3,967
South America	711	812
Asia Pacific	792	774
EMEA	488	527
Total	\$ 5,728	\$ 6,080

(a) For purposes of presentation, North America includes Corporate assets.

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(in millions)	2018	2017	2016
Depreciation and amortization:			
North America (a)	\$ 180	\$ 140	\$ 130
South America	24	27	26
Asia Pacific	27	25	23
EMEA	16	17	17
Total	\$ 247	\$ 209	\$ 196
Mechanical stores expense (b):			
North America (a)	\$ 38	\$ 37	\$ 37
South America	11	12	12
Asia Pacific	5	5	5
EMEA	3	3	3
Total	\$ 57	\$ 57	\$ 57
Capital expenditures and mechanical stores purchases:			
North America (a)	\$ 232	\$ 180	\$ 167
South America	61	50	56
Asia Pacific	39	51	41
EMEA	18	33	20
Total	\$ 350	\$ 314	\$ 284

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- (a) For purposes of presentation, North America includes Corporate activities of depreciation, amortization, capital expenditures, and mechanical stores purchase, respectively.
- (b) Represents spare parts used in the production process. Such spare parts are recorded in PP&E as part of machinery and equipment until they are utilized in the manufacturing process and expensed as a period cost.

The following table presents net sales to unaffiliated customers by country of origin for the last three years:

	Net Sales		
(in millions)	2018	2017	2016
U.S.	\$ 2,133	\$ 2,191	\$ 2,117
Mexico	997	952	955
Brazil	462	519	522
Canada	381	385	375
Korea	286	275	266
Others	1,582	1,510	1,469
Total	\$ 5,841	\$ 5,832	\$ 5,704

The following table presents long-lived assets (excluding intangible assets and deferred income taxes) by country at December 31:

(in millions)	Long-lived Assets	
	2018	2017
U.S.	\$ 1,004	\$ 977
Mexico	318	306
Brazil	207	235
Canada	165	179
Thailand	137	137
Germany	129	133
Korea	110	109
Others	259	284
Total	\$ 2,329	\$ 2,360

NOTE 14 – Commitments and Contingencies

The Company is currently subject to claims and suits arising in the ordinary course of business, including labor matters, certain environmental proceedings, and other commercial claims. The Company also routinely receive inquiries from regulators and other government authorities relating to various aspects of its business, including with respect to

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compliance with laws and regulations relating to the environment, and at any given time, the Company has matters at various stages of resolution with the applicable governmental authorities. The outcomes of these matters are not within the Company's complete control and may not be known for prolonged periods of time. The Company does not believe that the results of currently known legal proceedings and inquiries will be material to us. There can be no assurance, however, that such claims, suits or investigations or those arising in the future, whether taken individually or in the aggregate, will not have a material adverse effect on the Company's financial condition or results of operations.

Quarterly Financial Data (Unaudited)

Summarized quarterly financial data is as follows:

(in millions, except per share amounts)	1st QTR (a)	2nd QTR (b)	3rd QTR (c)	4th QTR (d)
2018				
Net sales before shipping and handling costs	\$ 1,581	\$ 1,608	\$ 1,563	\$ 1,537
Less: shipping and handling costs	112	112	113	111
Net sales	1,469	1,496	1,450	1,426
Gross profit	354	360	334	320
Net income attributable to Ingredion	140	114	95	94
Basic earnings per common share of Ingredion	1.94	1.59	1.33	1.38
Diluted earnings per common share of Ingredion	1.90	1.57	1.32	1.36
Per share dividends declared	\$ 0.60	\$ 0.60	\$ 0.625	\$ 0.625

(in millions, except per share amounts)	1st QTR (e)	2nd QTR (f)	3rd QTR (g)	4th QTR (h)
2017				
Net sales before shipping and handling costs	\$ 1,552	\$ 1,558	\$ 1,591	\$ 1,543
Less: shipping and handling costs	99	101	106	106
Net sales	1,453	1,457	1,485	1,437
Gross profit	351	373	388	360
Net income attributable to Ingredion	124	130	166	99
Basic earnings per common share of Ingredion	1.72	1.81	2.31	1.37
Diluted earnings per common share of Ingredion	1.68	1.78	2.26	1.35
Per share dividends declared	\$ 0.50	\$ 0.50	\$ 0.60	\$ 0.60

(a) In the first quarter of 2018, the Company recorded \$3 million in after-tax, net restructuring costs.

(b)

In the second quarter of 2018, the Company recorded \$5 million in after-tax, net restructuring costs and \$2 million in after-tax, interest penalty related to an income tax settlement.

- (c) In the third quarter of 2018, the Company recorded a \$27 million in after-tax, net restructuring costs, \$2 million in after-tax charges for the refinement of provisional charges related to the enactment of the TCJA, and \$2 million after-tax gain related to a refinement of reserve for an income tax settlement.
- (d) In the fourth quarter of 2018, the Company recorded a \$16 million in after-tax, net restructuring costs and \$1 million in after-tax charges for the refinement of provisional charges related to the enactment of the TCJA.
- (e) In the first quarter of 2017, the Company recorded \$11 million in after-tax, net restructuring costs, \$3 million in after-tax non-cash inventory charges related to the TIC acquisition, and \$1 million in after-tax acquisition and integration costs.
- (f) In the second quarter of 2017, the Company recorded \$5 million in after-tax, net restructuring costs and \$3 million in after-tax, non-cash inventory charges.
- (g) In the third quarter of 2017, the Company recorded a \$10 million gain related to an income tax settlement, \$5 million in after-tax, net restructuring costs, and \$1 million in after-tax acquisition and integration costs.
- (h) In the fourth quarter of 2017, the Company recorded a \$23 million after-tax charge related to the enactment of the TCJA, \$10 million in after-tax, net restructuring costs, a \$6 million after-tax gain related to insurance settlement, and \$1 million in after-tax acquisition and integration costs.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

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ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, including our Chief Executive Officer and our Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures as of December 31, 2018. Based on that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures (a) are effective in providing reasonable assurance that all material information required to be filed in this report has been recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (b) are designed to ensure that information required to be disclosed in the reports we file or submit under the Securities Exchange Act of 1934, as amended is accumulated and communicated to our management, including our principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

There have been no changes in our internal control over financial reporting during the quarter ended December 31, 2018, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. This system of internal controls is designed to provide reasonable assurance that assets are safeguarded and transactions are properly recorded and executed in accordance with management's authorization.

Internal control over financial reporting includes those policies and procedures that:

1. Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets.
2. Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in conformity with accounting principles generally accepted in the U.S., and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors.

3. Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on our financial statements.

Management conducted an evaluation of the effectiveness of internal control over financial reporting based on the framework of Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The scope of the assessment included all of the subsidiaries of the Company. Based on the evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2018. The effectiveness of our internal control over financial reporting has been audited by KPMG LLP, an independent registered public accounting firm, as stated in their attestation report included herein.

ITEM 9B. OTHER INFORMATION

None.

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information contained under the headings “Proposal 1. Election of Directors,” “The Board and Committees” and “Section 16(a) Beneficial Ownership Reporting Compliance” in the Company’s definitive proxy statement for the Company’s 2019 Annual Meeting of Stockholders (the “Proxy Statement”) is incorporated herein by reference. The information regarding executive officers called for by Item 401 of Regulation S-K is included in Part 1 of this report under the heading “Executive Officers of the Registrant.” The Company has adopted a code of ethics that applies to its principal executive officer, principal financial officer, and controller. The code of ethics is posted on the Company’s Internet website, which is found at www.ingredion.com. The Company intends to include on its website any amendments to, or waivers from, a provision of its code of ethics that applies to the Company’s principal executive officer, principal financial officer or controller that relates to any element of the code of ethics definition enumerated in Item 406(b) of Regulation S-K.

ITEM 11. EXECUTIVE COMPENSATION

The information contained under the headings “Executive Compensation,” “Compensation Committee Report,” “Director Compensation” and “Compensation Committee Interlocks and Insider Participation” in the Proxy Statement is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information contained under the headings “Equity Compensation Plan Information as of December 31, 2019” and “Security Ownership of Certain Beneficial Owners and Management” in the Proxy Statement is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information contained under the headings “Review and Approval of Transactions with Related Persons,” “Certain Relationships and Related Transactions” and “Independence of Board Members” in the Proxy Statement is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information contained under the heading “2018 and 2017 Audit Firm Fee Summary” in the Proxy Statement is incorporated herein by reference.

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PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

Item 15(a)(1) Consolidated Financial Statements

Financial Statements (see the Index to the Consolidated Financial Statements on page 52 of this report).

Item 15(a)(2) Financial Statement Schedules

All financial statement schedules have been omitted because the information either is not required or is otherwise included in the consolidated financial statements and notes thereto.

Item 15(a)(3) Exhibits

The following list of exhibits includes both exhibits submitted with this Form 10-K as filed with the SEC and those incorporated by reference from other filings.

Exhibit No. Description

3.1 Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.1 to the Company's Registration Statement on Form 10 filed on

September 19, 1997) (File No. 1-13397).

3.2 Certificate of Elimination of Series A Junior Participating Preferred Stock of Corn Products International, Inc. (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K dated May 19, 2010, filed on May 25, 2010) (File No. 1-13397).

3.3 Amendments to Amended and Restated Certificate of Incorporation (incorporated by reference to Appendix A to the Company's Proxy Statement for its 2010 Annual Meeting of Stockholders filed on April 9, 2010) (File No. 1-13397).

3.4 Certificate of Amendment of Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012, filed on

February 28, 2013)
(File No. 1-13397).

3.5 Amended By-Laws
of the Company
(incorporated by
reference to
Exhibit 3.1 to the
Company's Current
Report on
Form 8-K dated
December 9, 2016,
filed on
December 14,
2016) (File
No. 1-13397).

4.1 Revolving Credit
Agreement dated
October 11, 2016,
by and among
Ingredion
Incorporated, the
lenders signatory
thereto, any
subsidiary
borrowers that may
become party
thereto from time
to time, JPMorgan
Chase Bank, N.A.,
as Administrative
Agent, Bank of
America, N.A., as
Syndication Agent,
and Branch
Banking and Trust
Company, Bank of
Montreal, Wells
Fargo Bank,
National
Association,
Mizuho Bank, Ltd.,
HSBC Bank USA,
N.A., Citibank,
N.A., ING Capital
LLC and PNC
Bank, National
Association, as
Co-Documentation
Agents

(incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated October 11, 2016, filed on October 17, 2016) (File No. 1-13397)

•

4.2 Private Shelf Agreement, dated as of March 25, 2010 by and between Corn Products International, Inc. and Prudential Investment Management, Inc. (incorporated by reference to Exhibit 4.10 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2010, filed on May 5, 2010) (File No. 1-13397).

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- 4.3 Amendment No. 1 to Private Shelf Agreement, dated as of February 25, 2011 by and between Corn Products International, Inc. and Prudential Investment Management, Inc. (incorporated by reference to Exhibit 4.11 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2011, filed on May 6, 2011) (File No. 1-13397).
- 4.4 Amendment No. 2 to Private Shelf Agreement, dated as of December 21, 2012 by and between Ingredion Incorporated and Prudential Investment Management, Inc. (incorporated by reference to Exhibit 4.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012, filed on February 28, 2013) (File No. 1-13397).
- 4.5 Indenture Agreement dated

as of August 18, 1999 between the Company and The Bank of New York, as Trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K, filed on August 27, 1999) (File No. 1-13397).

4.6 Fourth Supplemental Indenture dated as of April 10, 2007 between Corn Products International, Inc. and The Bank of New York Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.4 to the Company's Current Report on Form 8-K dated April 10, 2007, filed on April 10, 2007) (File No. 1-13397).

4.7 Sixth Supplemental Indenture, dated September 17, 2010, between Corn Products International, Inc. and The Bank of New York Mellon Trust Company, N.A. (as successor trustee to The Bank of New York), as trustee

(incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K dated September 14, 2010, filed on September 20, 2010) (File No. 1-13397).

4.8 Seventh Supplemental Indenture, dated September 17, 2010, between Corn Products International, Inc. and The Bank of New York Mellon Trust Company, N.A. (as successor trustee to The Bank of New York), as trustee (incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K dated September 14, 2010, filed on September 20, 2010) (File No. 1-13397).

4.9 Ninth Supplemental Indenture, dated as of September 22, 2016, between the Company and The Bank of New York Mellon Trust Company, N.A. (as successor trustee to The Bank of New York), as trustee

(incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated September 22, 2016, filed on September 22, 2016) (File No. 1-13397).

4.10 Term Loan Credit Agreement dated as of August 18, 2017, among Ingredion Incorporated, the lenders signatory thereto, Bank of America, N.A., as Administrative Agent, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, as Sole Bookrunner and Sole Lead Arranger (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated August 18, 2017, filed on August 24, 2017 (File No. 1-13397).

10.1* Stock Incentive Plan as effective February 7, 2017 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on

Form 8-K dated
February 7, 2017,
filed on
February 14,
2017) (File
No. 1-13397).

10.2* Form of Executive
Severance
Agreement
entered into by
Ilene S. Gordon
and Jack C.
Fortnum
(incorporated by
reference to
Exhibit 10.5 to the
Company's
Quarterly Report
on Form 10-Q, for
the quarter ended
March 31, 2008,
filed on May 6,
2008) (File
No. 1-13397).

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10.3* Form of Indemnification Agreement entered into by each of the members of the Company's Board of Directors and the Company's executive officers (incorporated by reference to Exhibit 10.14 to the Company's Annual Report on Form 10-K for the year ended December 31, 1997 filed on March 31, 1998) (File No. 1-13397).

10.4* Deferred Compensation Plan for Outside Directors of the Company (Amended and Restated as of September 19, 2001), filed on December 21, 2001 as Exhibit 4(d) to the Company's Registration Statement on Form S-8, File No. 333-75844, as amended by Amendment No. 1 dated December 1, 2004 (incorporated by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004, filed on

March 11, 2005)
(File No. 1-13397).

10.5* Supplemental
Executive
Retirement Plan as
effective July 18,
2012 (incorporated
by reference to
Exhibit 10.7 to the
Company's
Quarterly Report
on Form 10-Q, for
the quarter ended
September 30,
2012, filed on
November 2, 2012)
(File No. 1-13397).

10.6* Executive Life
Insurance Plan
(incorporated by
reference to
Exhibit 10.17 to the
Company's Annual
Report on
Form 10-K for the
year ended
December 31,
1997, filed on
March 31, 1998)
(File No. 1-13397).

10.7* Deferred
Compensation
Plan, as amended
by Amendment
No. 1 (incorporated
by reference to
Exhibit 10.21 to the
Company's Annual
Report on
Form 10-K/A for
the year ended
December 31,
2001, filed on
June 26, 2002)
(File No. 1-13397).

10.8* Annual Incentive
Plan as effective

July 18, 2012
(incorporated by
reference to
Exhibit 10.1 to the
Company's
Quarterly Report
on Form 10-Q, for
the quarter ended
September 30,
2012, filed on
November 2, 2012)
(File No. 1-13397).

10.9* Executive Life
Insurance Plan,
Compensation
Committee
Summary
(incorporated by
reference to
Exhibit 10.14 to the
Company's Annual
Report on
Form 10-K for the
year ended
December 31,
2004, filed on
March 11, 2005)
(File No. 1-13397).

10.10* Form of Executive
Life Insurance Plan
Participation
Agreement and
Collateral
Assignment entered
into by Jack C.
Fortnum
(incorporated by
reference to
Exhibit 10.15 to the
Company's Annual
Report on
Form 10-K for the
year ended
December 31,
2004, filed on
March 11, 2005)
(File No. 1-13397).

10.11*

Form of Performance Share Award Agreement for use in connection with awards under the Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated February 6, 2018, filed on February 12, 2018) (File No. 1-13397).

10.12* Form of Stock Option Award Agreement for use in connection with awards under the Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated February 6, 2018, filed on February 12, 2018) (File No. 1-13397).

10.13* Form of Restricted Stock Units Award Agreement for use in connection with awards under the Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated February 6, 2018, filed on February 12, 2018) (File No. 1-13397).

10.14 Natural Gas
Purchase and Sale
Agreement
between Corn
Products
Brasil-Ingredientes
Industrias Ltda. and
Companhia de Ga
de Sao
Paulo-Comgas
(incorporated by
reference to
Exhibit 10.17 to the
Company's Annual
Report on
Form 10-K for the
year ended
December 31,
2005, filed on
March 9, 2006)
(File No. 1-13397).

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- 10.15* Confidential Separation Agreement and General Release, dated as of January 2, 2018 between the Company and Diane Frisch (incorporated by reference to Exhibit 10.29 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).
- 10.16* Form of Executive Severance Agreement entered into by James Zallie, Christine M. Castellano, Anthony P. DeLio, James D. Gray, Jorgen Kokke and Robert F. Stefansic (incorporated by reference to Exhibit 10.17 to the Company's Quarterly Report on Form 10-Q for the quarter

ended June 30, 2018, filed on August 3, 2018) (File No. 1-13397).

10.17* Form of Executive Severance Agreement entered into by JElizabeth Adefioye, Valderine Bastos-Licht, Larry Fernandes and Pierre Perez y Lanadazuri (incorporated by reference to Exhibit 10.18 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2018, filed on August 3, 2018) (File No. 1-13397).

10.18* Letter of Agreement dated as of November 10, 2016 between the Company and Jorgen Kokke (incorporated by reference to Exhibit 10.28 to the Company's Annual Report on Form 10-K, for the year

ended
December 31,
2016, filed on
February 22,
2017) (File
No. 1-13397).

10.19* Confidentiality
Agreement
dated March 1,
2017 between
the Company
and Jack C.
Fortnum
(incorporated
by reference to
Exhibit 10.5 to
the Company's
Quarterly
Report on
Form 10-Q,
for the quarter
ended March
31, 2017, filed
on May 5,
2017) (File
No. 1-13397).

10.20* Non-Compete
Agreement
dated March 1,
2017 between
the Company
and Jack C.
Fortnum
(incorporated
by reference to
Exhibit 10.6 to
the Company's
Quarterly
Report on
Form 10-Q,
for the quarter
ended March
31, 2017, filed
on May 5,
2017) (File
No. 1-13397)

10.21*

Letter of Agreement dated as of December 1, 2017 between the Company and Jorgen Kokke (incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K, for the year ended December 31, 2017, filed on February 21, 2018) (File No. 1-13397).

10.22* Executive Severance Agreement dated March 1, 2016 between the Company and Stephen K. Latreille (incorporated by reference to Exhibit 10.25 to the Company's Annual Report on Form 10-K, for the year ended December 31, 2017, filed on February 21, 2018) (File No. 1-13397).

10.23* Confidential Separation Agreement and General

Release, dated as of February 12, 2018 between the Company and Martin Sonntag (incorporated by reference to Exhibit 10.30 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.24* Letter of Agreement., dated as of January 11, 2018 between the Company and Elizabeth Adefioye (incorporated by reference to Exhibit 10.31 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.25* Letter of Agreement., dated as of January 31, 2018 between the Company

and Valdirene Bastos-Licht (incorporated by reference to Exhibit 10.32 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.26* Addendum to Letter of Agreement, dated as of February 23, 2018 between the Company and Valdirene Bastos-Licht (incorporated by reference to Exhibit 10.32.1 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

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10.27* Addendum II to Letter of Agreement., dated as of March 23, 2018 between the Company and Valdirene Bastos-Licht (incorporated by reference to Exhibit 10.32.2 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.28* Letter of Agreement., dated as of January 23, 2018 between the Company and Larry Fernandes (incorporated by reference to Exhibit 10.33 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.29* Letter of Agreement., dated as of November 28, 2015 between the Company and Ernesto Pousada (incorporated by reference to Exhibit 10.34 to

the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.30* Employment Agreement., dated as of February 1, 2016 between Ingredion Brasil – Ingredientes Industrias Ltda. and Ernesto Pousada (incorporated by reference to Exhibit 10.35 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.31* Executive Severance and Non-Competition Agreement., dated as of February 1, 2016 between Ingredion Brasil – Ingredientes Industrias Ltda. and Ernesto Pousada (incorporated by reference to Exhibit 10.36 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No.

1-13397).

10.32* Letter of Agreement., dated as of December 23, 2015 between the Company and Pierre Perez y Landazuri (incorporated by reference to Exhibit 10.37 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.33* Managing Director Service Agreement., dated as of April 15, 2016 between Ingredion Germany GmbH and Pierre Perez y Landazuri (incorporated by reference to Exhibit 10.38 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, filed on May 4, 2018) (File No. 1-13397).

10.34* Confidential Separation Agreement and General Release, dated as of December 14, 2018 between the Company and Christine M.

Castellano
(incorporated by
reference to
Exhibit 10.1 to
the Company's
Current Report on
Form 8-K, dated
December 14,
2018, filed on
December 17,
2018) (File No.
1-13397).

- 21.1 Subsidiaries of
the Registrant
- 23.1 Consent of
Independent
Registered Public
Accounting Firm
- 24.1 Power of
Attorney
- 31.1 CEO Section 302
Certification
Pursuant to the
Sarbanes-Oxley
Act of 2002
- 31.2 CFO Section 302
Certification
Pursuant to the
Sarbanes-Oxley
Act of 2002
- 32.1 CEO Certification
Pursuant to
Section 1350 of
Chapter 63 of
Title 18 of the
United States
Code as created
by the
Sarbanes-Oxley
Act of 2002
- 32.2 CFO Certification
Pursuant to
Section 1350 of
Chapter 63 of

Title 18 of the
United States
Code as created
by the
Sarbanes-Oxley
Act of 2002

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101	The following financial information from the Ingredion Incorporated Annual Report on Form 10-K for the year ended December 31, 2017 formatted in Extensible Business Reporting Language (XBRL): (i) the Consolidated Statements of Income; (ii) the Consolidated Statements of Comprehensive Income; (iii) the Consolidated Balance Sheets; (iv) the Consolidated Statements of Equity and Redeemable Equity; (v) the Consolidated Statements of Cash Flows; and (vi) the Notes to the Consolidated Financial Statements.
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* Management contract or compensatory plan or arrangement required to be filed as an exhibit to this form pursuant to Item 15(b) of this report.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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, on the 25th day of February, 2019.

INGREDION INCORPORATED

By: /s/ James P. Zallie
James P. Zallie
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report has been signed below by the following persons on behalf of the Registrant, in the capacities indicated and on the 25th day of February, 2019.

Signature	Title
/s/ James P. Zallie James P. Zallie	President, Chief Executive Officer, and Director
/s/ James D. Gray James D. Gray	Chief Financial Officer
/s/ Stephen K. Latreille Stephen K. Latreille	Controller
*Luis Aranguren-Trellez Luis Aranguren-Trellez	Director
*David B. Fischer David B. Fischer	Director
*Paul Hanrahan Paul Hanrahan	Director
*Rhonda L. Jordan	Director

Rhonda L. Jordan

*Gregory B. Kenny Director
Gregory B. Kenny

*Barbara A. Klein Director
Barbara A. Klein

*Victoria J. Reich Director
Victoria J. Reich

* Jorge A. Uribe Director
Jorge A. Uribe

*Dwayne A. Wilson Director
Dwayne A. Wilson

*By: /s/ John E. Lowe
 John E. Lowe
 Attorney-in-fact

(Being the principal executive officer, the principal financial officer, the principal accounting officer, and a majority of the directors of Ingredion Incorporated)